Interventions for female drug-using offenders (Review)

Perry AE, Neilson M, Martyn-St James M, Glanville JM, Woodhouse R, Hewitt C

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[Intervention Review]

Interventions for female drug-using offenders

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ABSTRACT

Background

This is an updated version of a Cochrane review first published in Issue 3, 2006 (Perry 2006). The review represents one in a family of four reviews focusing on the effectiveness of interventions in reducing drug use and criminal activity for offenders. This specific review considers interventions for female drug-using offenders.

Objectives

To assess the effectiveness of interventions for female drug-using offenders in reducing criminal activity, or drug use, or both.

Search methods

We searched 14 electronic bibliographic databases up to May 2014 and five additional Website resources (between 2004 and November 2011). We contacted experts in the field for further information.

Selection criteria

We included randomised controlled trials (RCTs) designed to reduce, eliminate or prevent relapse of drug use or criminal activity in female drug-using offenders. We also reported data on the cost and cost-effectiveness of interventions.

Data collection and analysis

We used standard methodological procedures expected by The Cochrane Collaboration.

Main results

Nine trials with 1792 participants met the inclusion criteria. Trial quality and risks of bias varied across each study. We rated the majority of studies as being at 'unclear' risk of bias due to a lack of descriptive information. We divided the studies into different categories for the purpose of meta-analyses: for any psychosocial treatments in comparison to treatment as usual we found low quality evidence that there were no significant differences in arrest rates, (two studies; 489 participants; risk ratio (RR) 0.82, 95% confidence interval (CI) 0.45 to 1.52) or drug use (one study; 77 participants; RR 0.65, 95% CI 0.20 to 2.12), but we found moderate quality evidence that there was a significant reduction in reincarceration, (three studies; 630 participants; RR 0.46, 95% CI 0.34 to 0.64). Pharmacological intervention using buprenorphine in comparison to a placebo did not significantly reduce self reported drug use (one study; 36 participants; RR 0.58, 95% CI 0.25 to 1.35). No cost or cost-effectiveness evidence was reported in the studies.

Authors' conclusions

Three of the nine trials show a positive trend towards the use of any psychosocial treatment in comparison to treatment as usual showing an overall significant reduction in subsequent reincarceration, but not arrest rates or drug use. Pharmacological interventions in comparison to a placebo did not significantly reduce drug use and did not measure criminal activity. Four different treatment comparisons showed varying results and were not combined due to differences in the intervention and comparison groups. The studies overall showed a high degree of heterogeneity for types of comparisons and outcome measures assessed, which limited the possibility to pool the data. Descriptions of treatment modalities are required to identify the important elements for treatment success in drug-using female offenders. More trials are required to increase the precision of confidence with which we can draw conclusions about the effectiveness of treatments for female drug-using offenders.

PLAIN LANGUAGE SUMMARY

Interventions for female drug-using offenders

Background

Drug-using offenders naturally represent a socially excluded group where drug use is more prevalent than in the rest of the population. A growing number of female offenders are being incarcerated for drug-related crimes. For this reason, it is important to investigate what we know about what works for female offenders.

Study characteristics

The review authors searched scientific databases and Internet resources to identify randomised controlled trials (where participants are allocated at random to one of two or more treatment groups) of interventions to reduce, eliminate, or prevent relapse of drug use or criminal activity of female drug-using offenders. We included females of any age or ethnicity.

Key results

We identified nine trials of female drug-using offenders. Three studies included evaluations of therapeutic communities in comparison to: i) an alternative sentencing option; ii) a substance misuse educational cognitive skills programme; and iii) gender-responsive substance abuse treatment for women in prison in comparison to standard therapeutic communities. Two studies evaluated community-based management; one compared to standard probation and the other compared to standard parole supervision. Two studies evaluated a cognitive behavioural programme versus treatment as usual and combined cognitive behavioural treatment and acceptance and commitment therapy versus waiting list control. One study of a pharmacological intervention in comparison to a placebo or treatment as usual. One study compared interpersonal psychotherapy to an attention matched control psychoeducational control.

Overall, the findings suggest that any psychosocial treatment in comparison to treatment as usual had an impact on reducing subsequent reincarceration, but not rearrest or drug misuse. We found individual treatment interventions had differing effects. We identified too few studies to evaluate whether the treatment setting (for example, court or community) had an impact on the success of such programmes. Promising results highlight the use of psychosocial treatments in the reduction of reincarceration. No information is provided on the cost and cost-effectiveness of these studies. In conclusion, high quality research is required to evaluate the effectiveness of different treatment options for female drug-using offenders. Further information on the processes involved in the engagement of women mandated to substance abuse programmes, together with evaluations of cost-effectiveness research, will enable policy makers to make informed choices about commissioning the use of adapted programmes specifically targeted at female offenders.

Quality of the evidence

This review was limited by the lack of information reported in this group of trials and the quality of evidence was moderate to low. The evidence is current to May 2014.

SUMMARY OF FINDINGS FOR THE MAIN COMPARISON *[Explanation]*

Any psychosocial intervention compared to treatment as usual: Drug use for female drug-using offenders

Patient or population: Patients with female drug-using offenders
Settings: Community/parole
Intervention: Any psychosocial intervention
Comparison: Treatment as usual: Drug use

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No. of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Treatment as usual: Drug use	Any psychosocial intervention				
Self reported drug use dichotomous Follow-up: mean 9 months	**Study population**		**RR 0.65** (0.2 to 2.12)	77 (1 study)	⊕⊕◯◯ **low**[1,2]	
	158 per 1000	**103 per 1000** (32 to 335)				
	Moderate					
	158 per 1000	**103 per 1000** (32 to 335)				

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio;

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1] 7 of 9 items judged at unclear risk of bias.

[2] Only 1 study with 77 participants.

BACKGROUND

This review forms part of a family of four reviews providing a close examination of what works in reducing drug use and criminal activity in drug-using offenders. Overall, the four reviews contain over 100 trials, generating a number of publications and numerous comparisons (Perry 2013; Perry 2014b; Perry 2014a). The four reviews represent a specific interest in pharmacological interventions, non-pharmacological interventions, female offenders and offenders with concurrent mental illness. All four reviews stem from an updated Cochrane systematic review Perry 2006. In this set of four reviews we consider not only the effectiveness of interventions based on two key outcomes, but also analyse the impact of setting and intervention type. We present here the revised methodology for this updated review, focusing on the impact of interventions for female drug-using offenders.

Description of the condition

Within the criminal justice system the number of women incarcerated for drug offences has significantly increased over the last decade, with rates of incarcerated women rising faster than for men (Bureau of Justice Statistics 2005). The latest UK Government figures show that around 4.7% of the prison population in the UK are women (Ministry of Justice 2012). In the United States of America (USA), this figure is around 7% (Guerino 2011), with around a quarter of all arrests being attributed to crimes committed by women (FBI 2011).

As with male offenders, drug use is an important issue for women. A 2006 study of female prisoners found that 75.3% had used drugs in the six months prior to prison entry, with 58% reporting daily drug use in this period (Plugge 2006). Furthermore, the pattern of drug use in female offenders has been recognised to differ from that of the male population. Female offenders have been observed to use cannabis less on average than men, but are more prone to using so-called 'harder' drugs such as heroin and amphetamines (Forsythe 2009). Other gender differences have been noted in variables that might have a bearing on drug use and drug treatment, such as mental illness, raising children, employment prospects, and patterns of offending (Forsythe 2009; Gelsthorpe 2007).

Early victimisation and severity of addiction are stronger predictors of criminal activity and subsequent mental and physical health problems for women than for men (Bloom 2004; Messina 2007). Furthermore, women entering substance abuse treatment in prison are at a substantial disadvantage compared with their male counterparts (Messina 2007). Female offenders represent an under-researched, vulnerable population with specific needs distinct from their male counterparts (Corston 2007). Treatment for drug-involved offenders is scarce, with estimates that fewer than 10% receive substance abuse treatment services (Taxman 2007).

Description of the intervention

There are many different treatments available for substance misuse (e.g. detoxification, and therapeutic communities in the criminal justice system. This review includes any intervention that was designed to reduce, eliminate or prevent relapse to drug use or criminal activity, or both. This resulted in the inclusion of a wide range of treatment interventions focusing on: therapeutic community and gender-responsive treatment programmes, community-based management, cognitive skills and cognitive behavioural therapy, pharmacological intervention (using buprenorphine), and interpersonal psychotherapy. The evidence supporting the effectiveness of these interventions differs and is dependent upon the quality of the experimental evaluations employed to assess whether they are successful in reducing drug use or criminal activity, or both.

Previous meta-analyses and systematic reviews of therapeutic community interventions, specifically with aftercare, have shown modest effects in the reduction of recidivism and drug use (Mitchell 2012; Pearson 1999). gender-responsive treatment programmes are designed to provide a secure environment for women offenders to safely discuss histories of trauma, abuse, and addiction without fear of judgment (Grella 2008).

Community-based management evolved traditionally to address the needs of prisoner re-entry programmes covering employment, education, health, housing, and family support via assessment and connecting clients with the appropriate services (Austin 1994). Case management in the USA has been applied in Treatment Accountability for Safer Communities (TASC) programmes (Marlowe 2003 a) and has shown initial effectiveness, but without systematic evidence in support of the process. Contingency management, alongside voucher incentives have shown some modest effects. To our knowledge, there has been no specific systematic review evaluating the effectiveness of voucher incentive schemes with drug-using offenders.

Cognitive-behavioural approaches, including self monitoring, goal setting, self control training, interpersonal skills training, relapse prevention, group work, lifestyle modification, and acceptance commitment therapy, have shown signs of success with offenders generally (Lipsey 2007), but the evidence excluded evaluations focused specifically on drug-using offenders.

There have been a number of pharmacological reviews focusing on the non-correctional population. Naltrexone maintenance treatment for opioid dependence (Amato 2005; Lobmaier 2008; Minozzi 2011) and the efficacy of methadone maintenance (Faggiano 2003; Marsch 1998; Mattick 2009) and buprenorphine maintenance (Mattick 2009) have been examined. Minozzi 2013 systematically reviewed the evidence on pharmacological maintenance for non-correctional pregnant women and identified three small trials from which they were unable to draw firm conclusions about the effectiveness of treatment. Other non-correctional reviews have investigated pharmacological interventions, but not specifically for female offenders. These have included evaluations of naltrexone maintenance treatment for opioid depen-

dence (Lobmaier 2008), the efficacy of methadone maintenance including the management of opioid withdrawal (Amato 2013; Faggiano 2003; Marsch 1998, Mattick 2009), and buprenorphine maintenance and impact on dosage (Fareed 2012; Mattick 2009). There is also recent guidance from the National Institute for Health and Clinical Excellence (NICE) on the evidence-based use of naltrexone, methadone, and buprenorphine for the management of opioid dependence (NICE 2007a; NICE 2007b). However, none of these reviews focuses specifically on treatment outcomes for female offenders.

Internationally, methadone maintenance has been the primary choice for chronic opioid dependence in prisons and jails, including those in the Netherlands, Australia, Spain and Canada, and it is being increasingly implemented in the criminal justice setting (Moller 2007; Stallwitz 2007). The USA has not generally endorsed the use of methadone treatment, and only 12% of correctional settings offer this option for incarcerated inmates (Fiscella 2004). Reasons for this lack of expansion suggest that methadone amongst the public and criminal justice system providers has been considered a substitute for another addiction. In contrast, buprenorphine appears not to carry the same social stigma associated with methadone treatment and has been used in France, Austria and Puerto Rico (Catania 2003; Garcia 2007; Reynaud-Maurupt 2005). Naltrexone treatment has shown some promising findings, but associated problems surrounding high attrition and low medication compliance in the community and high mortality rates (Gibson 2007; Minozzi 2011) pose concerns. Trials conducted in the criminal justice setting are still lacking, and continuity of care is considered crucial in the treatment of drug-involved offenders who move between the prison and the community.

Interpersonal psychotherapy has been used in the community with proven effectiveness with non-criminal justice settings. Such studies have not found interpersonal psychotherapy to be superior to other treatments, but few of these studies include female offenders (Johnson 2012).

How the intervention might work

Therapeutic community programmes have been used in the USA since the 1960s and, combined with work release programmes, they attempt to rehabilitate offenders via a supportive environment over a relatively long period which encompasses the transition between the prison and working within the community (Prendergast 2011). The ethos of therapeutic community interventions is to focus on treatment of the whole self, such that residents are instrumental in running the therapeutic community (Mitchell 2012).

Gender-responsive treatment is a theoretically-based programme which is used to develop trauma-informed services. Based upon the relational-cultural theory (Miller 1976), the programme is used to describe women's psychological development in relationships and their connection to others.

Case management is a problematic term which describes a range of diverse practices and supervision models spanning a number of different services, including probation. The process is generally used to co-ordinate and integrate all aspects of community supervision, from the initial offender needs assessment, through to programme delivery and the intended completion of the order or sentencing requirement (Partridge 2004). Cognitive behavioural approaches using programmes based on psychological theory have been employed to try and help people address their offending behaviour, and generally have good support from the literature in their reduction of recidivism (Andrews 1990; Lipsey 1998; Lipsey 2007).

Interpersonal psychotherapy addresses personal stress and life changes. The emphasis is to engage with clients to develop their network of social and peer support. A lack of support has been shown to associate with dropping out of addiction treatment and failure to maintain abstinence (Dobkin 2002; Holahan 2004).

Without exception, these programmes and community-based interventions have been used repeatedly with male drug-using offenders, but to our knowledge little evidence has been collated about how these programmes and other available interventions have been adapted or used with female drug-using offenders. Given that very little is known about what interventions exist for female drug-using offenders, the focus of this review is to include all known interventions that have been applied, or specifically adapted for use with female drug-using offenders. Our only requirement of these programmes is that they are aimed at reducing drug use or criminal activity, or both.

Why it is important to do this review

Policy interests have also placed an increasing demand on knowing more about the cost and cost-effectiveness of such interventions. Some evidence can be drawn from systematic reviews completed in the area. Despite the growing knowledge of evidence about the effectiveness of treatment programmes for offenders, in general there have been no systematic reviews of treatment outcomes aimed specifically at drug- using female offenders.

Several reviews have called for additional research on gender differences in response to substance use treatment (Plant 2008) and practice standards (Substance Abuse and Mental Health Services Administration, SAMHSA 1999), but the outcomes in literature supporting gender-sensitive treatments in corrections are sparse (Dolan 2003b; Veysey 2008). Several authors have expressed concerns that substance abuse programmes for women prisoners may not target the unique needs of incarcerated women or address their experiences of abuse and victimisation (Mosher 2006). The evidence suggests that service provision in the USA is low, with fewer than 1% of correctional agencies offering pharmacotherapy for their community correctional populations (Taxman 2007).

For these reasons, this updated review provides a systematic examination of trial evidence relating to the effectiveness of interven-

tions for female drug-using offenders, given the increasing number of female offenders who have been incarcerated for substance misuse problems and drug-related crimes, the lack of knowledge about how to treat female drug-using offenders, and no previous systematic review of this question. In order to address this broad topic, we considered a series of questions to assess the effectiveness of different interventions, in relation to criminal activity, drug misuse, treatment setting and type of treatment. The review also reported descriptively on the costs and cost-effectiveness of such treatment programmes.

OBJECTIVES

To assess the effectiveness of interventions for female drug-using offenders in reducing criminal activity, or drug use, or both.

METHODS

Criteria for considering studies for this review

Types of studies

Randomised controlled trials (RCTs).

Types of participants

We included female drug-using offenders in the review, regardless of age or ethnicity. Drug misuse included individuals using occasional drugs, or who are dependent, or are known to abuse drugs. Offenders were defined as individuals who were subject to the criminal justice system. Studies containing male participants were included in the review only when the trial results reported the outcomes separately by gender. In these instances we included only the results for the female participants in the review.

Types of interventions

Included interventions were designed, wholly or in part, to eliminate or prevent relapse to drug-use or criminal activity, or both, among participants. We defined relapse as individuals who may have returned to an incarcerated setting, or subsequently been arrested, or relapsed into drug misuse. We included a range of different types of interventions in the review.

Experimental interventions included in the review

1. Any pharmacological intervention (e.g. buprenorphine, methadone).
2. Any psychosocial intervention (e.g. therapeutic community, case management, cognitive behavioural therapy, interpersonal psychotherapy, motivational interviewing).

Control Interventions included in the review

1. No treatment.
2. Minimal treatment.
3. Waiting list.
4. Treatment as usual.
5. Other treatment.

Types of outcome measures

Primary outcomes

For the purpose of our review we categorised our primary outcomes into those relating to dichotomous and continuous drug use or criminal activity, or both. Where papers reported a number of different follow-up periods, we reported the longest time period, as we felt that such measures provide the most conservative estimate of effectiveness. For specific meta-analyses of subgroupings, we reviewed all reported follow-up periods to select the most appropriate time period for combining comparable studies.

1) Drug use measures were reported as:

- self reported drug use (unspecified drug use, specific drug use not including alcohol, Addiction Severity Index drug composite scores); and
- biological drug use (measured by drug testing, using either urine or hair analysis).

2) Criminal activity was measured by:

- self-report or official report of criminal activity, including arrest for any offence, drug offences, reincarceration, convictions, charges and recidivism.

Secondary outcomes

Our secondary outcome reported on costs or cost-effectiveness information. We used a descriptive narrative for these findings. We undertook a full critical appraisal based on the Drummond 1997 checklist for those studies presenting sufficient information.

Search methods for identification of studies

Electronic searches

The updated searches identified records from 2004 to May 2014.

- CENTRAL (issue 5, 2014).
- MEDLINE (1966 to May 2014).
- EMBASE (1980 to May 2014).
- PsycINFO (1978 to April 2014).
- Pascal (1973 to November 2004).[a]
- SciSearch (Science Citation Index) (1974 to April 2014).
- Social SciSearch (Social Science Citation Index) (1972 to April 2014).
- ASSIA (1987 to April 2014).
- Wilson Applied Science and Technology Abstracts (1983 to October 2004).[a]
- Inside Conferences (1993 to November 2004).[a]
- Dissertation Abstracts (1961 to October 2004).[a]
- NTIS (1964 to April 2014).
- Sociological Abstracts (1963 to April 2014).
- HMIC (to April 2014).
- PAIS (1972 to April 2014).
- SIGLE (1980 to June 2004).[b]
- Criminal Justice Abstracts (1968 to April 2014).
- LILACS (2004 to April 2014).
- National Research Register (March 2004).[c]
- Current Controlled Trials (December 2009).

- Drugscope (February 2004)- unable to access.
- SPECTR (March 2004).[d]

[a] Unable to access beyond 2004 search.
[b] Database not updated since original 2004 search.
[c] No longer exists.
[d] Now Campbell Collaboration - searched online.

To update the review, we restricted the search strategy to studies that were published since the end date of the previous search (March 2013). We did not search a number of original databases for this update (indicated by the key at the end of the database list), including Pascal, ASSIA, Wilson Applied Science and Technology Abstracts, Inside Conferences, and Dissertation Abstracts. These databases are available only via the fee-charging DIALOG online host service, and we did not have the resources to undertake these searches. The National Research Register no longer exists, and SIGLE has not been updated since 2005. Drugscope is available only to subscribing members. Drugscope staff undertook the original searches.

We developed search strategies for each database to exploit the search engine most effectively and to make use of any controlled vocabulary. We included methodological search filters designed to identify RCTs. Whenever possible, we used filters retrieved from the InterTASC Information Specialists' Sub-Group (ISSG) Search Filter Resource site (www.york.ac.uk/inst/crd/intertasc/). If filters were unavailable from this site, we substituted search terms based on existing versions.

In addition to the electronic databases, we searched a range of relevant Internet sites: Home Office, National Institute of Drug Abuse (NIDA), and European Association of Libraries and Information Services on Alcohol and Other Drugs (ELISAD). We searched directory Websites, including OMNI (www.omni.ac.uk) up until November 2011. We did not place any language restrictions on identification and inclusion of studies in the review.

Details of the updated search strategies and results, and of the Internet sites searched are listed in Appendix 1; Appendix 2; Appendix 3; Appendix 4; Appendix 5; Appendix 6; Appendix 7; Appendix 8; Appendix 9; Appendix 10; Appendix 11; Appendix 12; Appendix 13.

Searching other resources

Reference Checking

We scrutinised the reference lists of all retrieved articles for further references, and also undertook searches of the catalogues of relevant organisations and research founders.

Personal communication

We contacted experts for their knowledge of other studies, published or unpublished, relevant to the review.

Data collection and analysis

Selection of studies

Two authors independently inspected the search hits by reading the titles and abstracts, and obtained each potentially relevant study located in the search as a full-text article in order to independently assess them for inclusion. In the case of discordance, a third independent author arbitrated. One author undertook translation of articles not written in the English language.

We divided the screening process into two key phases. Phase one used the initial eight key questions reported in the original review, as follows.

Prescreening criteria: Phase one

1. Is the document an empirical study? If not, exclude the document.
2. Does the study evaluate an intervention, a component of which is designed to reduce, eliminate, or prevent relapse with drug-using offenders?
3. Are the participants referred by the criminal justice system at baseline?
4. Does the study report pre- and post-programme measures of drug use?
5. Does the study report pre- and post-programme measures of criminal behaviour?
6. Is the study a RCT?

7. Do the outcome measures refer to the same length of follow-up for two groups?

After we identified relevant papers from phase one screening, we sought to identify those papers reporting on outcomes for female offenders in phase two. We obtained this information primarily from the participant description in the reporting of the results section.

Prescreening: Phase two

1. Is the study population composed wholly of female participants? (If not, then refer to question 2 below).
2. Are the results of the study reported separately by gender? (If yes, then include the document).

Drug-using interventions were implied if the programme targeted reduced drug use in a group of individuals. Offenders were individuals either residing in special hospitals, prisons, the community (i.e. under the care of the probation service), diverted from court, or placed on arrest referral schemes for treatment. We included studies in the review where the entire sample were not drug-using, but reported pre- and post-measures. The study setting could change throughout the process of the study, e.g. offenders could begin in prison but progress through a work release project into a community setting. Finally, studies need not report both drug and criminal activity outcomes. If either of these were reported we included the study in the review.

See Figure 1; Figure 2; Figure 3 for the flow charts of the process

Figure 1. Study flow diagram of paper selection: Original Review

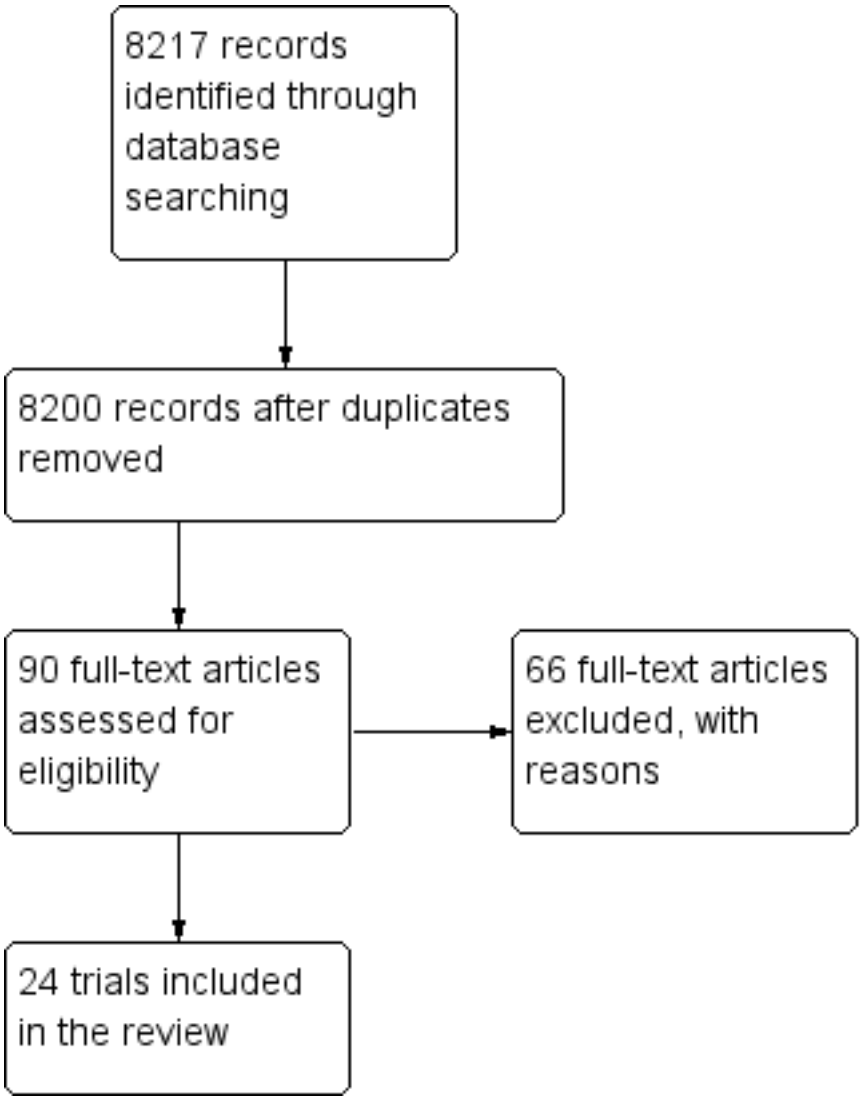


Figure 2. Study flow diagram of paper selection: First Update

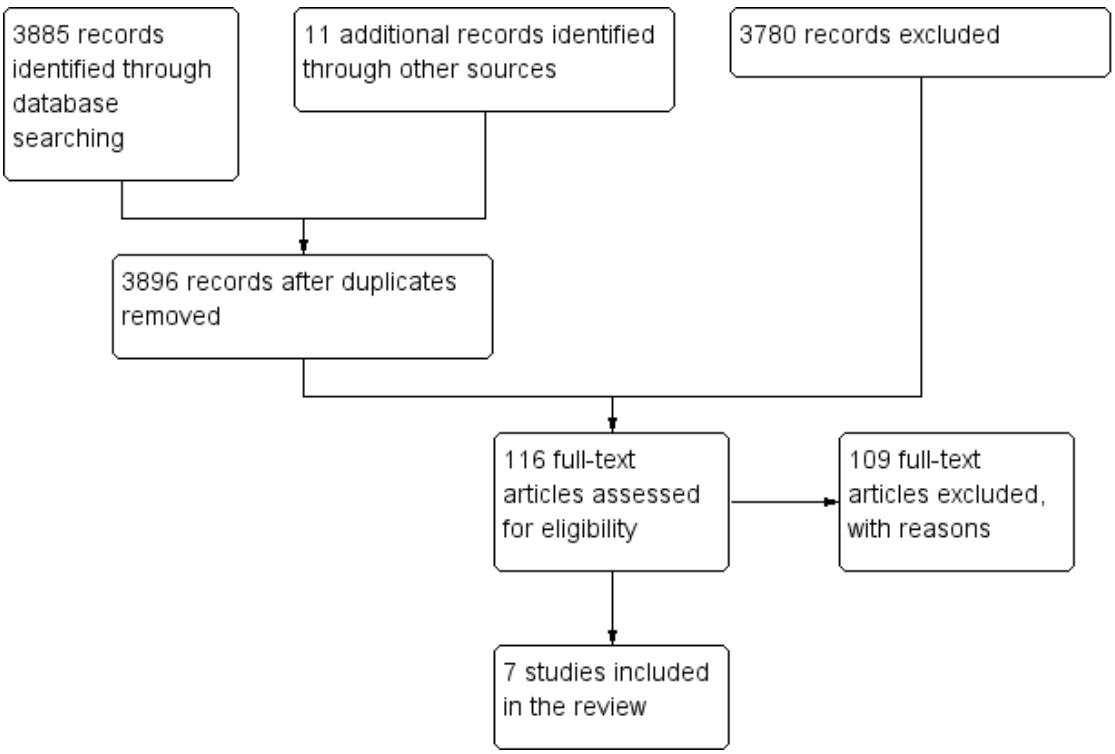
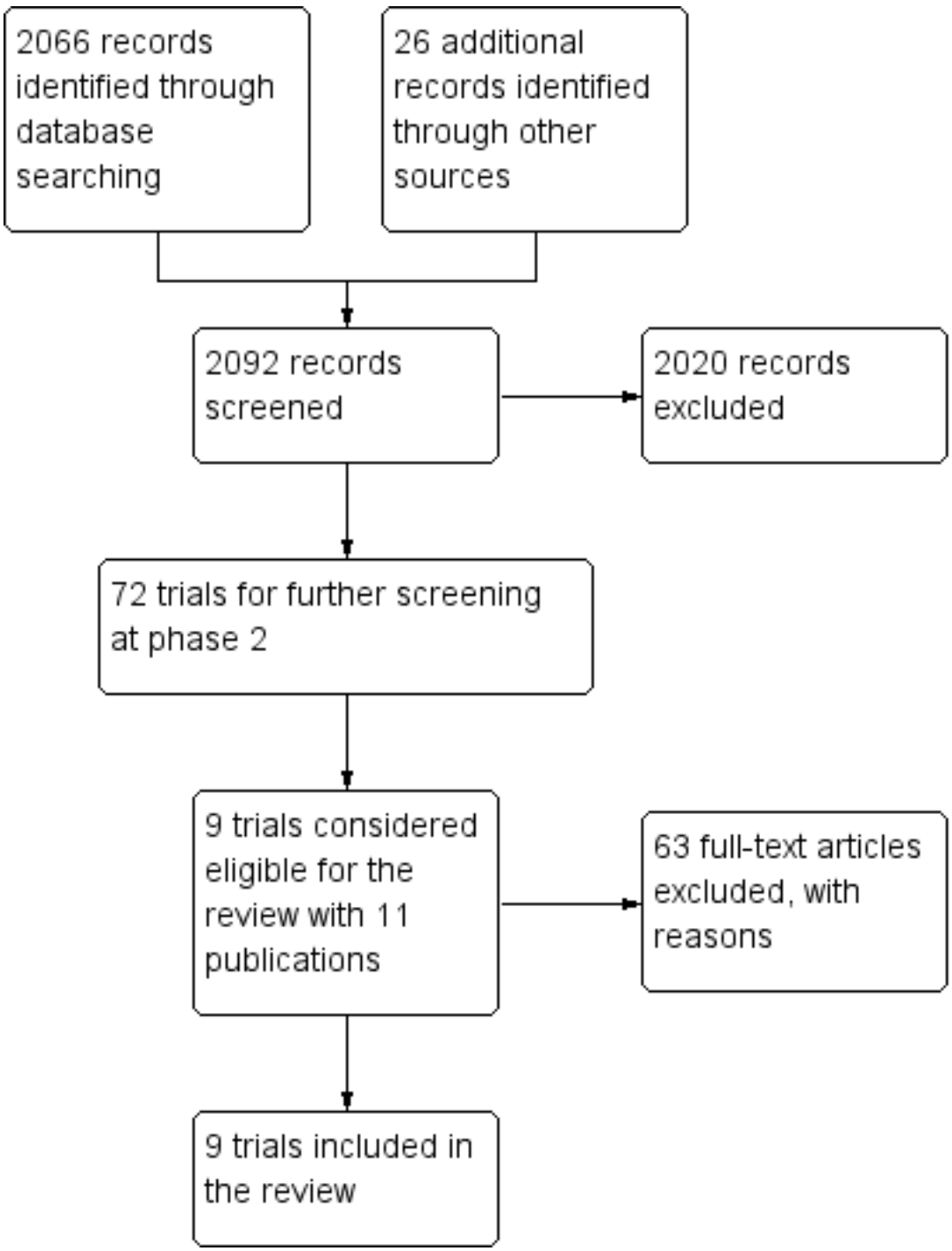


Figure 3. Study flow diagram and paper selection: Second update



Data extraction and management

We used data extraction forms to standardise the reporting of data from all studies obtained as potentially relevant. Two authors independently extracted data and subsequently checked them for agreement.

Assessment of risk of bias in included studies

Four authors (AJP, JMG, MMSJ, MJN) independently assessed risks of bias of all included studies using the 'Risk of bias' assessment criteria recommended in the *Cochrane Handbook for Systematic Reviews of Interventions* (Higgins 2011).

The recommended approach for assessing risk of bias in studies included in a Cochrane review is a two-part process, addressing seven specific domains, namely sequence generation and allocation concealment (selection bias), blinding of participants and providers (performance bias), blinding of outcome assessors (detection bias), incomplete outcome data (attrition bias), selective outcome reporting (reporting bias), and other potential sources of bias. The first part of the process involves describing what was reported to have happened in the study. The second part involves assigning a judgement relating to the risk of bias for that domain, in terms of low, high or unclear risk of bias. To make these judgements we used the criteria indicated by the *Cochrane Handbook for Systematic Reviews of Interventions* adapted to the addiction field. See Appendix 14 for details.

We addressed the domains of sequence generation and allocation concealment (avoidance of selection bias) by a single entry for each study.

We considered blinding of participants, personnel and outcome assessors (avoidance of performance bias and detection bias) separately for objective outcomes (e.g. drop out, use of substance abuse measured by urine analysis, participants relapsed at the end of follow-up, participants engaged in further treatments), and for subjective outcomes (e.g. duration and severity of signs and symptoms of withdrawal, participants' self reported use of substance, side effects, social functioning as integration at school or at work, family relationships).

We considered incomplete outcome data (avoidance of attrition bias) for all outcomes except for drop out from the treatment, which is very often the primary outcome measure in trials of addiction.

For studies identified in the most recent search, we attempted to contact study authors to establish whether a study protocol was available.

Measures of treatment effect

We used mean differences (MDs) for outcomes measured on the same scale and standardised mean differences (SMDs) for outcomes measured on different scales. Higher scores for continuous measures are representative of greater harm. We present dichotomous outcomes as risk ratios (RRs), with 95% confidence interval (CIs).

Unit of analysis issues

To avoid double-counting of outcome measures (e.g. arrest and parole violation) and follow-up time periods (e.g. 12, 18 months) we checked all trials to ensure that multiple studies reporting the same evaluation did not contribute towards multiple estimates of programme effectiveness. We followed Cochrane guidance and where appropriate we combined intervention and control groups to create a single pair-wise comparison. Where this was not appropriate, we selected one treatment arm and excluded the others.

Dealing with missing data

Where we found missing data in the original publication, we attempted to contact the study authors via email to obtain the missing information.

Assessment of heterogeneity

We assessed heterogeneity using the I^2 statistic and Chi^2 statistic (Higgins 2011).

Data synthesis

We used Review Manager software (RevMan 2014) to perform a series of meta-analyses for continuous and dichotomous outcome measures. We used a random-effects model to account for the fact that participants did not come from a single underlying population. The narrative tables include a presentation of the study details (e.g. author, year of publication, and country of study), study methods (e.g. random assignment), participants (e.g. number in sample, age, gender, ethnicity, mental health status), interventions (e.g. description, duration, intensity and setting), outcomes (e.g. description, follow-up period and reporting mechanism), resource and cost information and resource savings (e.g. number of staff, intervention delivery, estimated costs and estimated savings) and notes (e.g. methodological and quality assessment information). For outcomes of criminal activity, there were enough data to allow us to divide into rearrest and reincarceration.

Subgroup analysis and investigation of heterogeneity

We planned to conduct a separate subgroup analysis of the studies by different types of treatments and different settings.

Sensitivity analysis

When appropriate, we had planned to conduct sensitivity analyses to assess the impact of studies at high risk of bias compared with those at low or unclear risk. However, because of the overall high risk of bias of the included studies, we were unable to perform this analysis.

RESULTS

Description of studies

Results of the search

Original review

The original searches spanned from database inception to October 2004. This identified a total of 8217 records, and after duplication, 8200. We acquired a total of 90 full-text papers for assessment and excluded 66 papers, bringing 24 trials to the review (see Figure 1).

First update

The updated searches spanned from October 2004 until March 2013. This identified a total of 3896 records after duplication. We acquired a total of 116 full-text papers for assessment and excluded 109 papers, bringing seven new trials to the review (see Figure 2).

Second update

The updated searches spanned from March 2013 until April 2014. This identified a total of 2092 records after duplication. We acquired a total of 72 full-text papers for assessment and excluded 63 papers, bringing nine trials (represented by 11 publications) (see Figure 3). See Characteristics of included studies table for full details.

Included studies

- The nine trials (from 11 publications) included 1792 participants and were published between 1996 and 2014.

Treatment regimes and settings

- Three studies focused on the impact of therapeutic community programmes in comparison to: i) an alternative sentencing option; ii) a substance misuse educational cognitive skills programme; and iii) gender-responsive substance abuse treatment for women in prison in comparison to standard therapeutic community programmes (Messina 2010; Nielsen 1996; Sacks 2008).
- Two evaluations of community-based management (Guydish 2011; Johnson 2011) compared to standard probation and standard parole supervision, respectively.
- Two studies evaluated: i) a cognitive behavioural programme versus treatment as usual (Zlotnick 2009); and ii) combined cognitive behavioural treatment and acceptance and commitment therapy versus waiting list control (Lanza 2014).
- One study was of a pharmacological intervention in comparison to a placebo or treatment as usual (Cropsey 2011).
- One study compared interpersonal psychotherapy to an attention matched psychoeducational control (Johnson 2012).

The studies were categorised by setting, providing three community-based studies (Cropsey 2011; Guydish 2011; Johnson 2011) and six secure-based studies (Johnson 2012; Lanza 2014; Messina 2010; Nielsen 1996; Sacks 2008; Zlotnick 2009).
We identified no studies in a court setting.

Countries in which studies were conducted

Eight studies were set in the USA and one study was conducted in Spain (Lanza 2014).

Duration of trials

The trial duration varied between three months (Cropsey 2011; Johnson 2012; Zlotnick 2009) and 18 months (Nielsen 1996). The majority of studies reported outcomes up to six and twelve months (Lanza 2014; Guydish 2011; Johnson 2011; Messina 2010; Sacks 2008).

Participants

- The nine studies included adult drug-using women offenders, with the exception of one study which investigated the impact of a therapeutic community with adults and young offenders (Nielsen 1996).
- Two studies also included male offenders (Johnson 2011; Nielsen 1996), but results for the women were reported separately, enabling us to extract data specifically for this review.
- The average age of the study participants ranged from a mean of 31.8 years to 35.6 years.
- In all but one study, the participants were of white ethnic origin (Nielsen 1996).

Excluded studies

We excluded a total of 172 studies. See Characteristics of excluded studies for further details. Reasons for exclusion were: lack of criminal justice involvement in referral to the intervention; not reporting relevant drug or crime outcome measures, or both, in both the pre- and post-intervention periods; and allocation of participants to study groups that were not strictly randomised or did not contain original trial data. We excluded the majority of studies because the study population did not include female participants, or they were not offenders, or the studies did not report the data for the female participants separately. We excluded one study because follow-up periods were not equivalent across study groups (Di Nitto 2002) and one (Berman 2004) because the intervention (acupuncture) did not measure our specified outcomes of drug use or criminal activity. One study reported the protocol of a trial only (Baldus 2011), while another only contained conference proceedings (Kinlock 2009a).

Risk of bias in included studies

See Figure 4 and Figure 5.

Figure 4. Risk of bias graph: review authors' judgements about each risk of bias item presented as percentages across all included studies.

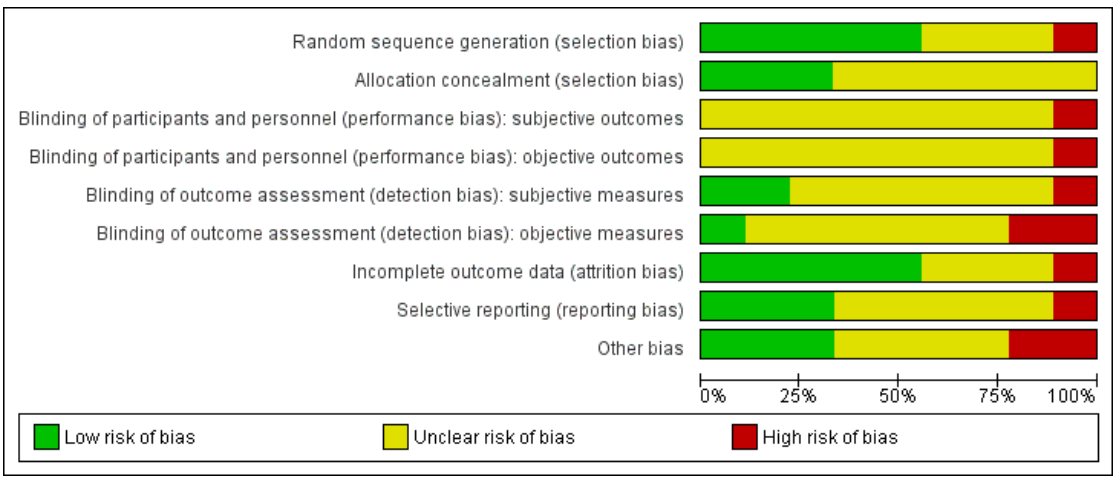
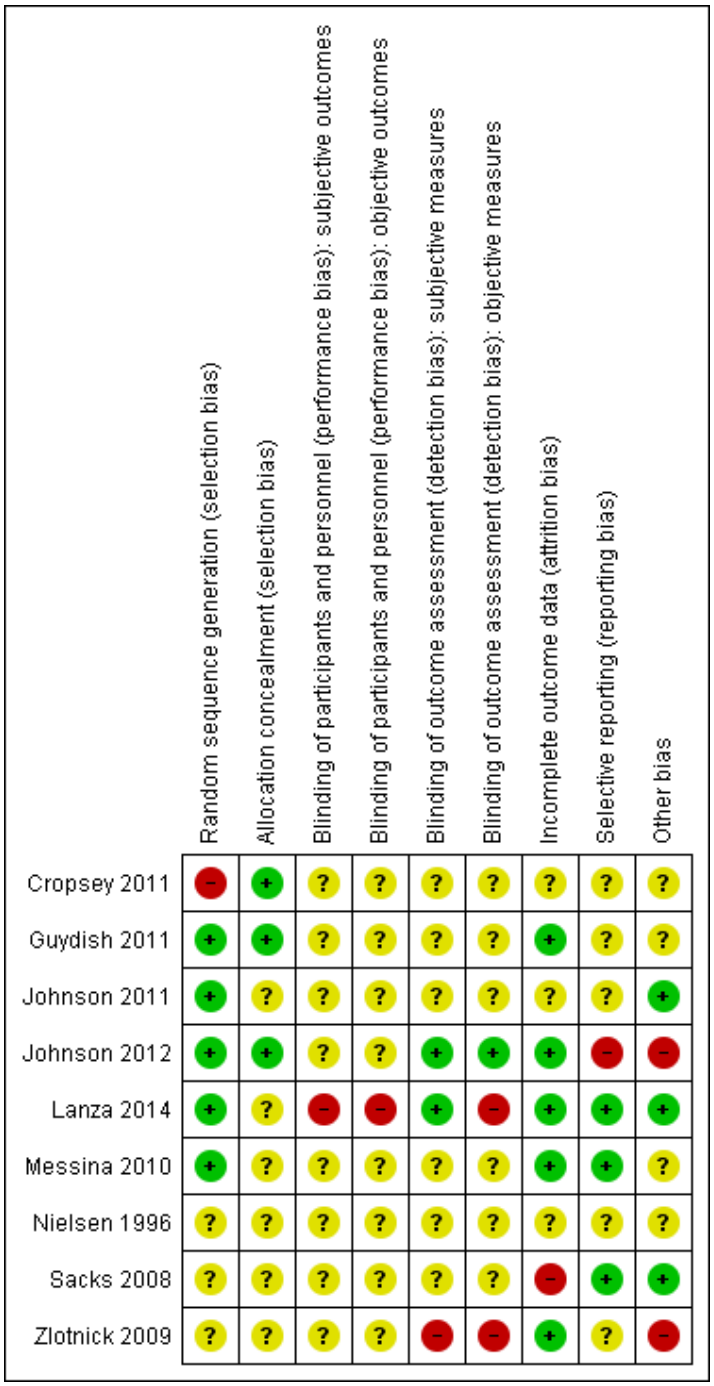


Figure 5. Risk of bias summary: review authors' judgements about each risk of bias item for each included study.



Allocation

All nine studies were described as randomised. A number of different methods were used to perform the random assignment. These included use of a random number table (Cropsey 2011; Lanza 2014), urn randomisation (Johnson 2011), the use of odd and even identification numbers (Guydish 2011; Messina 2010), and wave randomisation (Johnson 2012). The description of the randomisation methodology remained unclear in . For allocation concealment, two studies noted use of sealed envelopes, (Cropsey 2011; Guydish 2011), and one study noted concealment from personnel within the study (Johnson 2012). In the remaining six studies, no information was reported about allocation concealment and we therefore rated them as 'unclear' (Johnson 2011; Lanza 2014; Messina 2010; Nielsen 1996; Sacks 2008; Zlotnick 2009).
All studies except Nielsen 1996 reported on similar drug use and criminal behaviour at baseline.

Blinding

We assessed blinding across four dimensions, considering performance and detection bias across subjective and objective measures (see Appendix 14). Reporting of blinding methodology across all nine studies was not well reported and we judged many studies as having unclear risk of bias. A handful of studies noted some elements of blinding across one or more of the four domains. For example, Cropsey 2011 considered blinding using a placebo option but reported concerns about potential contamination which were difficult to judge. Zlotnick 2009 reported that the outcome assessors were aware of the individual assignment of clients, leading us to a judgement of high risk for detection bias across all possible outcome measures. We rated one study at low risk of blinding across the two measures of outcome blinding, noting that a research assistant was blind at the follow-up assessments after prison release (Sacks 2008).

Incomplete outcome data

Loss to follow-up was reported in five of the nine studies (Cropsey 2011; Guydish 2011; Johnson 2011; Johnson 2012; Lanza 2014). Two studies reported adequately on loss to follow-up (Sacks 2008; Zlotnick 2009). Two studies reported an intention-to-treat analysis, using the data as participants had been randomised (Messina 2010; Sacks 2008).

Selective reporting

We rated three studies as being at unclear risk of reporting bias (Cropsey 2011; Johnson 2011; Nielsen 1996), six studies as being at low risk of selective reporting, and one study as being at high risk of bias (Johnson 2012).

Other potential sources of bias

Two studies had published a study protocol (Johnson 2011; Nielsen 1996). Two studies were at unclear risk of other biases (Cropsey 2011; Messina 2010). We rated four studies at low risk of other biases (Guydish 2011; Johnson 2011; Lanza 2014; Sacks 2008). We rated the remaining two studies at high risk of bias as (i) there was a potential for contamination between treatment and control participants (Zlotnick 2009), and (ii) measurement of relapse was limited, as nearly a third of the sample remained in residential treatment at the end of the study (Johnson 2012).

Effects of interventions

See: **Summary of findings for the main comparison** Any psychosocial intervention compared to treatment as usual: Drug use for female drug-using offenders; **Summary of findings 2** Any psychosocial intervention compared to treatment as usual for female drug-using offenders
We included a number of comparisons in a series of meta-analyses (see Table 1) and a 'Summary of findings' table for the main comparison (Summary of findings 2). We grouped the studies by intervention (including any type of psychosocial intervention in comparison to treatment as usual, and any pharmacological intervention in comparison to a placebo) and outcome type (criminal activity and drug use). Finally, we considered whether individual treatment type had an impact on our outcome measures.

1. Any psychosocial intervention versus treatment as usual

1.1 Drug Use

See Summary of findings for the main comparison
One study (Johnson 2011), did not show a reduction in self reported drug use; 77 participants; RR 0.65, 95% CI 0.20 to 2.12; low quality of evidence, see Analysis 2.1.

1.2 Arrests

See Summary of findings 2
Two studies (Guydish 2011; Nielsen 1996) did not show a reduction in rearrest; 489 participants, RR 0.82, (95% CI 0.45 to 1.52); low quality of evidence See Analysis 1.2.

1.3 Recidivism

See Summary of findings 2
Three studies (Johnson 2011; Nielsen 1996; Zlotnick 2009) showed a reduction in reincarceration; 630 participants; RR 0.46,

95% CI 0.34 to 0.64; moderate quality of evidence, see Analysis 1.3.

2.Pharmacological treatment versus placebo

2.1 Drug use

One study (Cropsey 2011) did not show a reduction in self reported drug use; 36 participants; RR 0.58, 95% CI 0.25 to 1.35; see Analysis 2.1.

3. Psychosocial Interventions

3.1 Interpersonal therapy versus a psychoeducational attention matched control

Johnson 2012 compared interpersonal psychotherapy in comparison to a psychoeducational attention matched control for women suffering from major depression. The findings showed that interpersonal psychotherapy participants had significantly reduced levels of depression and substance misuse over the attention matched control.

3.2 Cognitive behavioural therapy in comparison to an acceptance committment therapy versus a control

Lanza 2014 compared an evaluation of cognitive behavioural therapy in comparison to acceptance committment therapy and a control group. The study results found higher levels of abstinence in the acceptance commitment therapy (43.8%) when compared to the control (18.2%).

3.3 Gender-responsive therapeutic community programme versus a standard therapeutic community regime

Messina 2010 compared a gender-responsive therapeutic community programme to those in a standard therapeutic community regime. The evaluation showed that gender-responsive treatment had a greater impact on reducing both subsequent drug use and reincarceration, with gender-responsive treatment participants voluntarily remaining in aftercare treatment for longer periods and being less likely than those in standard therapeutic community care to be reincarcerated within 12 months of parole.

3.4 Therapeutic community intervention in comparison to a cognitive behavioural therapy

Sacks 2008 compared women assigned to the therapeutic community intervention or standard treatment (referred to in the system as the Intensive Outpatient Programme (IOP)), or cognitive behavioural therapy. At six months the study found that both conditions improved significantly for variables of mental health, substance use, criminal behaviour, and HIV risk.).

Treatment setting

Too few studies were included in the meta-analyses to make a subgroup analysis for type of setting meaningful.

Cost and cost-effectiveness

None of the nine studies included any cost information which enabled a cost-effectiveness evaluation of the interventions. Some descriptive information was provided by one study (Messina 2010). The study refers to the implications of the gender-responsive treatment programme and speculatively suggests that it may be more costly to implement and deliver in comparison to a therapeutic community environment. However, the authors of the study argue that although costly, reducing recidivism by delivering appropriate services provides a large benefit to further expenditures in the criminal justice system, and potentially the child welfare system. The remaining eight studies do not include cost information. Evidence from other research suggests that substance abuse treatments in the community are cost-effective, producing a benefit-cost ratio of 1.74 to 5.74. These findings obviously depend upon the type of programme (Belenko 2005), and do not examine specifically the costs associated with the delivery and outcomes of programmes for female offenders.

ADDITIONAL SUMMARY OF FINDINGS [*Explanation*]

Any psychosocial intervention compared to treatment as usual for female drug-using offenders

Patient or population: Female drug-using offenders
Settings: Community/parole
Intervention: Any psychosocial intervention
Comparison: Treatment as usual

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No. of Participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk	Corresponding risk				
	Treatment as usual	Any psychosocial intervention				
Arrests Self report/ official records Follow-up: 12-18 months	**Study population**		**RR 0.82** (0.45 to 1.52)	489 (2 studies)	⊕⊕◯◯ **low**[1,2]	
	67 per 100	**55 per 100** (30 to 100)				
	Moderate					
	61 per 100	**50 per 100** (27 to 92)				
Re-incarceration (plus arrested and charged data) Self reported Follow-up: 6-9 months	**Study population**		**RR 0.46** (0.34 to 0.64)	630 (3 studies)	⊕⊕⊕◯ **moderate**[3]	
	35 per 100	**16 per 100** (12 to 23)				
	Moderate					
	35 per 100	**16 per 100** (12 to 23)				

*The basis for the **assumed risk** (e.g. the median control group risk across studies) is provided in footnotes. The **corresponding risk** (and its 95% confidence interval) is based on the assumed risk in the comparison group and the **relative effect** of the intervention (and its 95% CI).
CI: Confidence interval; **RR:** Risk ratio;

GRADE Working Group grades of evidence
High quality: Further research is very unlikely to change our confidence in the estimate of effect.
Moderate quality: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
Low quality: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low quality: We are very uncertain about the estimate.

[1] The majority of risk of bias outcomes were marked as unclear in both studies. These included blinding and selective reporting.
[2] $P < 0.05$, and $I^2 = 93\%$ suggesting significant levels of heterogeneity across the studies.
[3] The majority of risk of bias outcomes in the three studies were marked as unclear. One study marked three items as high risk of bias, including blinding and other bias.

DISCUSSION

Summary of main results

This systematic review provides evidence from nine trials. The nine studies were based in the community (three studies) and a secure setting (seven studies). We identified no studies which evaluated interventions for female offenders in court settings (e.g. pretrial diversion schemes or mental health courts). For this reason we do not know whether such interventions work better in one setting than another. The studies overall, showed a high degree of statistical variation requiring a degree of caution in the interpretation of the magnitude of effect and direction of benefit for treatment outcomes. Four different types of interventions were classified across the nine studies: (1) therapeutic community and gender-responsive treatment programmes; (2) case management and cognitive skills; (3) pharmacological treatments; and (4) interpersonal psychotherapy. Below follows a more detailed description of the study interventions.

Three trials and four publications reported on the effectiveness of therapeutic communities. First we refer to the two studies which used the therapeutic community as the intervention group. In these studies the Continual Recovery through Education and Skills Training (CREST) work release programme was compared to participants in the Delaware conventional work release programme. The evaluation showed that it is possible to successfully combine the elements of therapeutic community treatment with the goals of work release (Nielsen 1996). More specifically, for participants attending CREST, increased length of time spent in the programme was associated with lower relapse and recidivism rates, and those that graduated from the programme fared better than non-graduates.

The specifically-adapted gender responsive therapeutic community programme for women offenders was evaluated by Sacks and colleagues. This study compared women assigned to the therapeutic community or standard treatment (referred to in the system as the Intensive Outpatient Programme), or cognitive behavioural therapy. This consisted of a cognitive behavioural recovery and relapse prevention curriculum (Sacks 2008). At six months the study found that both conditions improved significantly on variables of mental health, substance use, criminal behaviour and HIV risk. They note that further exploration of each model for different offender groups is required to permit a more precise utility of each model. The study authors conclude that these preliminary findings suggest the importance of providing gender-specific sensitive and comprehensive approaches within the correctional system to respond to the complex substance abuse needs of female offenders (Sacks 2008). The more recent follow-up study investigated outcomes at 6 months and 12 months. The outcomes followed a similar pattern with both groups of women benefiting from treatment. The therapeutic community programme was found to be more beneficial than cognitive behavioural therapy at improving reincarceration rates and lengthening the amount of time spent in the community before subsequent reincarceration (Sacks 2012).

The final study in this group of therapeutic community evaluations compared a gender-responsive treatment programme to those in a standard therapeutic community programme. The evaluation showed that gender-responsive treatment had a greater impact on reducing both subsequent drug use and reincarceration, with gender-responsive treatment participants voluntarily remaining in aftercare treatment for longer periods and being less likely than those in standard therapeutic community care to be reincarcerated within 12 months of parole. One of the main differences between gender-responsive treatment and therapeutic community programmes was the recognition of trauma. The authors argue that trauma seemed to impact on a range of other outcomes and was an important aspect of recovery which needed to be addressed. The possible reason for this benefit may be due to the overall enhanced treatment satisfaction of participants compared with those in the standard treatment group. This finding is supported by other qualitative research which showed that women attending the gender-responsive treatment programme were extremely invested and satisfied with treatment outcomes, and felt supported by other group members, which may have increased treatment adherence and recovery (Calhoun 2009; Messina 2010). Additionally, those women who stayed in treatment voluntarily remained in aftercare for a longer period of time. A number of implementation barriers were presented in the study, including the need for ongoing staff training, technical assistance and monitoring of adherence to the study protocol.

Evaluations of case management and standard parole showed disappointing results. The Guydish 2011 probation case management study found no differential effect. Women in both groups were equally likely to be arrested during the one-year follow-up period. The study authors note that although the results indicated no advantage for probation case management over standard probation, this finding is similar to other research showing mixed effects. In particular Treatment Accountability for Safer Communities interventions incorporating case management and trials of case management in drug abuse treatment have shown similar results (Sorenson 2003). The authors note that one key limitation of the probation case management was the low-level face-to-face contact. Although probation case management is designed to be more engaging than standard probation, only 54% of the probation case management participants reported face-to-face contact with their manager in the six months after programme entry. The implications suggest that case management based on reduced caseloads, specialised probation officer training and efforts to increase contact between probation officer and probationer may not be effective.

Similarly, use of collaborative behavioural management techniques in comparison to standard parole did not significantly reduce reincarceration (21% of the collaborative behavioural management participants versus 29% of the control participants) in the nine-

month follow-up (Johnson 2011). The study did show a reduction in monthly primary drug use. This is consistent with past findings which have indicated that women who engage in prison substance use treatment programmes have lower drug use rates than men in the months after release from prison (Pelissier 2003). Other researchers have highlighted this gender effect, suggesting that factors predicting aftercare treatment completion, post-treatment drug use and recidivism were slightly different for women than for men, suggesting the possibility of gender-specific pathways to successful community re-entry (Pelissier 2003). This finding is important because it may support the idea that optimal transitional treatments may differ for men and women, however more randomised trials of transitional interventions for drug-involved offenders are required (Taxman 2002). The authors suggest that any gender differences displayed between men and women should be revisited to assess what important lessons can be applied for the successful integration of theory- and gender-responsive treatment. Some successful elements of treatment seemed to include a recognition of success, an emphasis on consistency and fairness from within the programme, and a focus on overall life functioning and support (Johnson 2011).

The study evaluating acceptance committment therapy in comparison to traditional cognitive behavioural therapy and a control group found higher levels of abstinence in the acceptance commitment therapy group (43.8%) when compared to the control (18.2%). These findings are similar to other studies that have used acceptance commitment therapy, albeit in non-incarcerated populations (Hayes 2004). The authors note the success of acceptance commitment therapy to the nature of the 'co-joint' work between the therapist and client. The aim of which is to increase the flexibility and structure of the therapy, allowing the client to have greater autonomy over making decisions. In contrast, they argue that cognitive behavioural therapy is more systematically directed by the therapist, leaving little scope for responsive change (Lanza 2014).

The final study evaluated in this group of analyses compared the use of a cognitive skills and cognitive behavioural therapy, referred to as the Seeking Safety Programme. The study compared seeking safety to the standard prison-based substance abuse treatment, and found no significant differences between conditions on any measure in the primary analysis (Zlotnick 2009). This finding is contrary to other research conducted using the Seeking Safety Programme with non-correctional clients in the community (Najavits 2006). The authors note that future research should focus specifically on whether dosage has an impact on the successful outcome of seeking safety, with participants randomly assigned to different lengths of treatment. Further difficulties in the evaluation of the study led to concerns about adherence to the programme once the women were released into the community. A series of 12 booster sessions were offered, but on average women only attended three sessions. The challenge of programme adherence is common across the criminal justice system, especially with those programmes conducted in the community. Given this context, the authors suggest that perhaps longer treatment during prison and increased frequency of treatment following release may be helpful. A major question for future research relates to the development of models for dealing with simultaneous problems and concurrent mental health issues (Zlotnick 2009).

Pharmacological interventions using buprenorphine for opioid-dependent women with a HIV risk found that use of buprenorphine in prison and continued into the community was beneficial in preventing or delaying relapse to opioid use (Cropsey 2011). The findings of this study add to the growing body of evidence (which primarily includes men) suggesting that buprenorphine is comparable with both methadone and methadone maintenance in other studies (Kinlock 2008; Lobmaier 2010). The findings were not sustained post-treatment, with most women relapsing to active opioid use at the three-month follow-up point. Support for this conclusion using the meta-analysis data suggests no long-term significant effect. The study did not measure criminal activity, so we do not know whether such interventions are likely to reduce subsequent criminal activity in the future.

Interpersonal psychotherapy was evaluated using a pilot study with women suffering from major depression and substance use disorder (Johnson 2012). This study is primarily a feasibility study to assess the applicability of using interpersonal psychotherapy in a prison environment. Despite being small, it is one of the largest trials including women with co-occurring substance misuse and mental health problems. The findings showed that interpersonal psychotherapy participants had significantly reduced levels of depression and substance misuse over the attention matched control. The study authors note that the intensity of treatment delivered, once released into the community, is key to maintaining good outcomes. However, they go on to state that women often experience delays in treatment and service provision on release and they suggest that alternative service provision such as phone treatment might be helpful in providing a more intensive post-release treatment, and may form a useful contact in times of crisis.

Overall completeness and applicability of evidence

The paucity of evidence within the review is covered in three key areas.

General applicability

The applicability of this evidence is hindered in general by a lack of trials covering a range of different treatment options for female offenders with drug misuse problems. All but one trial was conducted in the USA and therefore they have limited external validity to other criminal justice systems outside of the USA. The current evidence suggests that therapeutic community programmes

and the gender-responsive treatment programmes may have some effect in reducing reincarceration rates, but we do not know how such treatments facilitate the rehabilitation of female offenders. Additionally, we can say nothing about whether such treatments are effective in reducing drug use and subsequent criminal behaviour in court.

Adaptation of programmes for female offenders

Most of the studies described the programmes under evaluation as 'adapted' or 'amended' programmes tailored to the needs of women, but few studies described how the programmes had been adapted or what considerations had been taken into account. It is therefore difficult to draw conclusions about the successful elements of treatment programmes for female offenders.

Cost information

Cost information within the studies was sparse. This lack of information allowed for little comparison of cost-effectiveness between different types of drug treatment programmes. Additional time spent in programmes also raises questions about reincarceration and days until first incarceration, generating important cost-avoidance implications which require further examination. Regular reporting of effect sizes would aid calculations for power analysis and provides estimates of the magnitude of treatment effect needed for cost-benefit and cost-effectiveness analysis. Specific cost information for female offenders would also need to consider, for example, child welfare systems and costs to the wider family network.

Quality of the evidence

We rated the majority of studies as being at 'unclear' risk of bias with poor reporting of information by study authors making it difficult for the authors of this review to assess the extent of potential bias within the studies. The main limiting factor was the lack of reporting evidence which prevented the reviewers from making a clear judgement of bias. Since the imprecision of reporting lowers the quality of evidence, we judged the evidence to be of low quality which means that further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate. Additional concerns with the research included attrition bias, the series of pilot trials, and the limited external generalisability associated with such studies and contamination effects.

A number of studies posed a threat of attrition bias, with over 50% rated at high risk of attrition. Five of the nine studies were classified as pilot studies, using sample sizes of 55 or less. The Cropsey 2011 study identified a sample of 36 women, randomly allocating 27 (15 to the intervention and 12 to the placebo group). They note that although the potency of buprenorphine for control of opioid use is clearly demonstrated, a larger sample size may be needed to detect significant differences between groups on other variables of interest. The study was limited to three months of treatment, and future studies should explore the provision of buprenorphine for longer periods of time, to prolong opioid abstinence and to prevent associated criminal activity.

The Zlotnick 2009 study used a slightly larger sample of 55 women with post-traumatic stress disorder in an incarcerated setting, comparing cognitive behavioural therapy plus treatment as usual to treatment as usual alone. The Messina 2010 study called for larger sample sizes and bigger experimental studies. Similarily, the Lanza 2014 study assigned only 50 participants with complex needs, they note that future research should include larger samples. The Johnson 2012 study assigned 19 participants to each arm of the trial and also had difficulties in measuring relapse rates, as 26% of the sample remained in residential treatment for the entire follow-up period.

Other potential biases were presented in the Zlotnick 2009 study, which noted potential contamination problems between the treatment and control conditions across the prison setting. Offenders from different wings or locations within the prison frequently mixed or moved locations. Finally, they noted that the facilitators delivered both the treatment intervention and treatment as usual, and that an immediate post-assessment was not completed. The authors argue this could have had an unknown effect on the immediate impact of the intervention.

Overall, we judged quality of evidence as moderate to low for the main comparison, 'any psychosocial intervention versus treatment as usual'.

Potential biases in the review process

Besides the limitations already discussed, there are also two limitations in the search methodology of the review. Specifically, the original review included an additional five fee-paying databases and one search using DrugScope. In this current update, resources did not allow such extensive searching. Whilst the electronic database searches have been updated to May 2014, the Website searching has only been updated to November 2011. As a result, some literature may have been missed from this updated version.

AUTHORS' CONCLUSIONS

Implications for practice

Three of the nine trials show a positive trend towards the use of any psychosocial treatment in comparison to treatment as usual, showing an overall significant reduction in subsequent reincarceration, but not arrest or drug use. Pharmacological interventions in comparison to a placebo did not significantly reduce drug use

and did not measure criminal activity. Four different treatment comparisons showed varying results and were not combined due to differences in the intervention and comparison groups. The studies overall showed a high degree of heterogeneity for types of comparisons and outcome measures assessed, which limited the possibility to pool the data. Descriptions of treatment modalities are required to identify the important elements for treatment success in drug-using female offenders. More trials are required to increase the precision of confidence with which we can draw conclusions about the effectiveness of treatments for female drug-using offenders.

Implications for research

Specific questions in the research literature identify a number of different gaps in current research.

1. Future work should consider the most appropriate use of outcomes and produce some standardisation from which comparisons can be made across the literature.

2. Researchers should also explore the needs of women attending such courses (e.g. child care restrictions). Qualitative research into the experiences of women attending, or starting and not finishing programmes, could help researchers to learn important lessons in the design of interventions that are appropriate for this population.

3. Larger-scale trial evaluations need to include information about the exact nature of the programme, the content, intensity, delivery and administration. Specific information about how programmes are adapted or amended for women will provide important theoretical gender differences for future treatment programmes targeting female offenders.

4. Very limited information is provided on the costs and resources involved in the delivery of such interventions. Specific cost analyses should take into account the large number of women who also have children and access other sectors of the welfare system. Developing a cost-benefit methodology alongside a trial evaluation would help to generate further information about the potential financial benefits of such programmes.

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* *Indicates the major publication for the study*

CHARACTERISTICS OF STUDIES

Characteristics of included studies *[ordered by study ID]*

Cropsey 2011

Methods	Allocation: random assignment Randomisation method: random number table - first 9 people put on intervention Similar on drug use: yes Similar on criminal activity: yes Blinding methodology: Sealed envelopes, only opened at end of treatment Double-blinded. Placebo was used, and was not known to evaluators or dispensers during treatment Loss to follow-up: Partial - large proportion lost to follow-up
Participants	36 adults Mean age 31.8 (SD 8.4) 100% Female 89% white 100 drug users Alcohol use: Yes - percentage not available 54.3% prescribed medication for mental illness Eligibility criteria: adult women, opioid dependent, interest in treatment for opioid dependence, no contraindications for buprenorphine, due for release from residential treatment within month, returning to the community, release to correct area
Interventions	Community-based pharmacological intervention vs placebo (I) buprenorphine (n = 24) vs (C) placebo (n = 12) (I) group was started on 2 mg of buprenorphine, increased to target dose of 8 mg at discharge. Only 37.2% reached target dose at discharge. (Doses were lower than standard induction as participants had been in a controlled environment for some time without access to opiates). Doses were then titrated up to a maximum of 32 mg per day in the community as clinically indicated. Participants were assessed weekly for side effects, given drug testing, and counselled by study physician if using drugs. The treatment course was 12 weeks. The (C) group was given a placebo on the same regimen as the (I) group
Outcomes	% injection drug use and % urine opiates at end of treatment and 3 months follow-up
Notes	No declaration of interest reported by the authors

Risk of bias

Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	High risk	First 9 participants deliberately allocated to intervention for practical reasons, use of a random number table
Allocation concealment (selection bias)	Low risk	Use of sealed envelopes

Cropsey 2011 (*Continued*)

Blinding of participants and personnel (performance bias) subjective outcomes	Unclear risk	This trial began as an open-label trial then became a double-blind trial of participants and providers on all outcomes. Some concerns about contamination issues with the placebo group but difficult to assess to what extent the blinding might have been affected
Blinding of participants and personnel (performance bias) objective outcomes	Unclear risk	This trial began as an open-label trial then became a double-blind trial of participants and providers on all outcomes. Some concerns about contamination issues with the placebo group but difficult to assess to what extent the blinding might have been affected
Blinding of outcome assessment (detection bias) subjective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Blinding of outcome assessment (detection bias) objective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	A total of 8 individuals were not included in the final analysis following randomisation
Selective reporting (reporting bias)	Unclear risk	No information reported
Other bias	Unclear risk	Some concerns about potential contamination between the groups and awareness that the placebo group might know they were not receiving the drug but no clear evidence upon which to make a decision

Guydish 2011

Methods	Allocation: random Randomisation method: sealed envelopes Similar on drug use: Yes Similar on criminal activity: Yes Blinding methodology: Unknown Loss to follow-up: Partial
Participants	188 adults Mean age 34.7 (SD 9.2) 100% Female 57.4% African-American

	Addiction Severity Index: 50.5 (intervention) 51.6 (control) Alcohol use: 7.7% intervention, 5.6% control Beck Depression Inventory mean: 14.6 (intervention) 14.6 (control) Eligibility criteria: willing to enter substance use treatment, residents of San Francisco, 18 years of age or older, substance use, involved in the criminal justice system Excluded if multiple violent episodes, current involvement in drug court, court order to receive probation case management services, or referral by probation officer directly to the probation case management programme
Interventions	Community case management intervention vs standard probation (I) Probation case management (n = 92). Smaller caseload for officer to allow more client contact. Client contact at least twice per month. Officers would attend treatment planning meetings, make home visits, and accompany the client to important meetings. Could also refer client to other appropriate agencies. Included therapeutic and advocacy orientation and counselling (C) Standard probation (n = 96) including preparation of reports for court, supervision of offender, enforcement of probation conditions, assistance to offender in accessing necessary services
Outcomes	% participants arrested and mean time to first arrest (from administrative data) during 12 month follow-up period Addiction Severity Index composite scores, reported as relative risk, at 6 months and 12 months Beck Depression Inventory Brief Symptom Inventory Service utilisation
Notes	No declaration of interest reported by the authors

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random assignment, using even and odd numbers drawn from sealed envelopes
Allocation concealment (selection bias)	Low risk	Use of sealed envelopes containing a randomly-generated number
Blinding of participants and personnel (performance bias) subjective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment
Blinding of participants and personnel (performance bias) objective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment

Guydish 2011 (*Continued*)

Blinding of outcome assessment (detection bias) subjective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Blinding of outcome assessment (detection bias) objective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Incomplete outcome data (attrition bias) All outcomes	Low risk	Follow-up rates at each time point did not differ significantly between the groups. At 12 months 82.6% of the probation case management and 78.0% of the standard probation were followed up
Selective reporting (reporting bias)	Unclear risk	No information reported
Other bias	Unclear risk	No information reported

Johnson 2011

Methods	Allocation: random Randomisation method: urn randomisation Similar on drug use: Yes Similar on criminal activity: Not reported Blinding methodology: Unknown Loss to follow-up: Partial
Participants	476 adults (n = 77 women) Men mean age 34.4 years (SD 8.6); Women mean age 35.6 years (SD 8.5) 82% male 51% black 82% used primary drug in pre-prison 6 months 63% men and 39% women self reported alcohol use during pre-prison 6 months 25% lifetime depression Eligibility criteria: Inclusion: at least 18 years of age, English speaking, probable drug dependence immediately prior to incarceration (score of 3 or more on drug screen), substance use treatment as a mandated or recommended condition of parole, moderate to high risk of drug use relapse and/or recidivism (score of 7 or more on LCSF) Exclusion: psychotic symptoms, correctional or supervision conditions that prohibited participation in the study
Interventions	Community collaborative behavioural management intervention vs standard parole supervision (I) Collaborative behavioural management (n = 221). 12-week intervention based on premise that reinforcement of desired behaviour is more likely to result in sustained positive change than punishment of undesired behaviour. Involves treatment sessions with offender, officer, and substance use counsellor at least once every 2 weeks, plus

Johnson 2011 (*Continued*)

	further officer/offender contacts (C) Standard parole supervision (n = 210) including weekly to monthly face-to-face officer/client contact, and drug testing. Officers were affiliated with a substance abuse treatment programme. Average 1 - 4 contacts per month
Outcomes	% reincarcerated (self reported) at 9-month follow-up % using primary drug (self reported) during 9-month follow-up
Notes	Results given separately for men and women, so women-only results presented in this review No declaration of interest reported by the authors

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	"Subjects were randomised using urn randomisation to ensure balance of gender and other factors"
Allocation concealment (selection bias)	Unclear risk	No information was provided
Blinding of participants and personnel (performance bias) subjective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment
Blinding of participants and personnel (performance bias) objective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment
Blinding of outcome assessment (detection bias) subjective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Blinding of outcome assessment (detection bias) objective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	Some attrition and loss is reported in the sample. 476 were interviewed at baseline but it is unclear how many were randomised and the number of candidates rejected is not reported with reasons for exclusion
Selective reporting (reporting bias)	Unclear risk	No information reported

Johnson 2011 (*Continued*)

Other bias	Low risk	Protocol referred to in the method section of the study

Johnson 2012

Methods	Allocation: random - wave randomisation Randomisation method: independently generated randomisation sequence. Exact methodology unclear Similar on drug use: yes Similar on criminal activity: yes Blinding methodology: Principal investigator blinded to initial allocation, data collectors blinded throughout study period Loss to follow-up: none reported
Participants	38 adults Average age: 35 years (SD 9.2) 100 % female 18% Hispanic, 18% African American 58% cocaine dependence, 24% opiate dependence, 21% marijuana dependence, 21% sedative/hypnotic dependence 58% Alcohol dependence 100 % Psychiatric history Criteria used for mental health diagnoses - "MDD as determined by the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; First et al., 1996a) after at least 4 weeks of abstinence and prison substance use treatment" Description of mental health problem - MDD Eligibility criteria: primary MDD as determined by the Structured Clinical Interview for DSM-IV Axis I Disorders after at least 4 weeks of abstinence and prison substance use treatment, minimum 17-item Hamilton Depression Scale score of 18, substance use disorder one month prior to incarceration as determined by the SCID, 10-24 weeks away from prison release. Women with bipolar disorder & psychotic disorder were excluded
Interventions	Prison based non-pharmacological intervention vs attention-matched control condition (I) Interpersonal psychotherapy (n = 19) vs (C) psycho-education (n = 19) **Intervention group** Intervention participants received manualised 60-75 min group sessions three times per week for 8 weeks plus pre-group, mid group, and post-group individual sessions in prison for the treatment of substance misuse and mental health problems. Participants in both conditions also received 6 weekly post-release individual sessions to help maintain gains and address crises as women transitioned to the community. Session lengths varied between 60 and 75 min because of time taken to assemble women within the facilities, occasional early prison counts, and other facility logistics. In-prison treatment was condensed into two months because many incarcerated women serve short sentences (30 days, 60 days, 90 days, 180 days). Group sessions were kept short (60 to 75 min) because prison providers advised us that incarcerated women would have difficulty tolerating treatment sessions longer than 60 to 75 min

	Control group Control condition participants received attention-matched manualised in-prison and post-release psycho-education, which is described as co-occurring mental health and substance use disorders (PSYCHOED). The psycho-education condition was adapted from a class on co-occurring disorders for prisoners which had been used at the women's facilities in the past, but was not being used at the time of the study. It was designed to be credible and engaging without focusing on the theorised active ingredients of interpersonal psychotherapy (e.g. focus on social support, relationships, life changes, analysis of communication, and exploration of emotions). The stated purpose of PSYCHOED was to help women become informed and empowered consumers of mental health treatment services. The 24 in-prison sessions focused on the meaning of dual diagnosis, women's experience with dual diagnosis, major depression, bipolar disorder, each of the anxiety disorders, post-traumatic stress disorder, personality disorders, psychotic disorders, eating disorders, and self care. Sessions for each disorder described symptoms (including relevant self report tests), interactions between the disorder and substance use, effects of the disorder on women in prison (including film clips and written stories), and disorder specific medication and psychosocial treatment options. When a woman in group had symptoms of a disorder, the group discussed her treatment options and preferences. The six post-release sessions focused on women's symptoms and connection with various mental health and substance use treatment options in the community. Study treatments took place in addition to prison treatment as usual. Treatment as usual consisted of prison residential or day treatment for SUD (typically 16 to 30 hrs per week) for all participants and prison mental health treatment as usual for most participants
Outcomes	Relapse within 3-month follow-up period, defined as using drugs on at least 10% of non-incarcerated days or any positive breath test/urine drug screen. HRSD scores
Notes	Work supported by United States National Institute of Drug Abuse No declarations of interest are noted by the authors

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Low risk	Random sequence generated by person independent of rest of study. Wave randomisation used with at least 8 weeks between allocation to avoid contamination across prison wings
Allocation concealment (selection bias)	Low risk	Allocation adequately concealed from principal investigator and research assistants. An individual independent concealed the assignment of each wave before the study started. After the intake assessment were complete the PI unsealed the waves treatment assignment

Johnson 2012 (*Continued*)

Blinding of participants and personnel (performance bias) subjective outcomes	Unclear risk	Not reported
Blinding of participants and personnel (performance bias) objective outcomes	Unclear risk	Not reported
Blinding of outcome assessment (detection bias) subjective measures	Low risk	Adequate blinding throughout study. Research assistants who conducted the follow-up assessment at 3 months after prison release were kept blind to the condition
Blinding of outcome assessment (detection bias) objective measures	Low risk	Adequate blinding throughout study. Research assistants who conducted the follow-up assessment at 3 months after prison release were kept blind to the condition
Incomplete outcome data (attrition bias) All outcomes	Low risk	No loss to follow-up, intention-to-treat analysis
Selective reporting (reporting bias)	High risk	Did not report on SCID-1/SCID-II, Trauma History Questionnaire or TLFB
Other bias	High risk	Authors note that due to the short time line and limited outcomes made it was difficult to assess relapse rates as 26% of the sample remained in residential treatment at the end of the study

Lanza 2014

Methods	Allocation: Allocation did not seem to be concealed Randomisation method: randomisation table Similar on drug use: No differences between the groups for "demographic characteristics" but not sure if this includes drug use. Between group percentages seem very different Similar on criminal activity: No differences between the groups for "demographic characteristics" but not sure if this includes criminal activity. Between group percentages seem very different Blinding methodology: Participants, investigators and assessors were not blinded Loss to follow-up: All patients lost to follow-up were reported in study flow diagram, but the authors do not report if there were between group differences
Participants	50 adults average age: overall mean 33.2 (SD 7.2) (range: 21-49) (CBT 35.2 (mean) ACT 31.1 (mean); Control 33.1 (mean)) 0% male

	NR % white % drug users: CBT 100%, ACT 83.3%, CONTROL 100% % Alcohol CBT 0%, ACT 16.7%, CONTROL 100% % Psychiatric history: 86% had at least one mental disorder Eligibility criteria: -met diagnostic criteria for current substance use disorder -serving sentence of more than 6 months
Interventions	CBT n = 13 vs ACT (n = 18) vs Control group (n = 13) **Intervention one**: CBT sessions were held in 16 weekly group sessions lasting 90 minutes led by a trained therapist. CBT was used to change behaviour through cognitive restructuring where therapist works with offender to identify thoughts that cause distress and uses cognitive and behavioural therapy to alter resulting behaviour. After treatment offenders were assessed by the therapist, and follow-up was conducted at six months. The main outcome of the CBT intervention was to increase abstinence from drug use, this was measured an corroborated by urine analysis testing **Intervention two:** ACT - consisted of 16 weekly group sessions lasting 90 minutes led by a trained therapist. ACT seeks to undermine the grip of the literal verbal content of cognition that provokes avoidance behaviour and constructs an alternative context in which behaviour aligned with one's values is more likely to occur. Sessions involve both experiential and didactic learning to enable clients to experience and understand the size key ACT processes. ACT helps offenders to respond to previously avoided events in new ways and uses validation and empowerment. The ACT therapy was aimed at increasing substance use abstinence within the prison population. After treatment offenders were assessed by the therapist, and follow-up was conducted at six months **Control group:** Control group received a mental health assessment and then after 6 months received treatment. The offenders received a re-educational programme for inmates during the six months
Outcomes	Abstinence: 3 months without drug use, self report, corroborated by urinalysis Anxiety sensitivity measured by Anxiety Sensitivity Index Mental disorders measured on MINI International Nueropsychiatric interview
Notes	Work supported by Trust for the Promotion of Scientific Applied Research and Technology in Asturias, Spain A second publication reporting on the same trial comparing two of the three-armed trial can be found at: Lanza, P., Menedez, G.A. (2013). Acceptance and commitment therapy for drug abuse in incarcerated women. Psicothema, 25,3,307-312 No conflict of interest reported by authors

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**

Lanza 2014 (*Continued*)

Random sequence generation (selection bias)	Low risk	Use of random number table noted
Allocation concealment (selection bias)	Unclear risk	No information reported
Blinding of participants and personnel (performance bias) subjective outcomes	High risk	Participants, investigators and assessors were not blinded to treatment allocation
Blinding of participants and personnel (performance bias) objective outcomes	High risk	Participants and personnel were not blinded to treatments
Blinding of outcome assessment (detection bias) subjective measures	Low risk	Urinalysis was used to corroborate self reported abstinence
Blinding of outcome assessment (detection bias) objective measures	High risk	Therapists assessed the participants in their group
Incomplete outcome data (attrition bias) All outcomes	Low risk	Similiar loss to follow-up across all three groups. A total of 9/50 lost (n = 4 for ACT, n = 3 for CBT and n = 2 for control)
Selective reporting (reporting bias)	Low risk	All outcome measures reported as expected
Other bias	Low risk	No other concerns

Messina 2010

Methods	Allocation: random assignment Randomisation method: odd and even numbers Similar on drug use: yes Similar on criminal activity: yes Blinding methodology: unknown Loss to follow-up: partial
Participants	115 women Age not reported 100% women 48% white 100% drug-using Alcohol use not reported 79% reported a history of depression, 26% met the criteria for PTSD Eligibility criteria: Women with a history of substance use with between 6 and 24 months left to serve on the sentence

Interventions	(I) Gender-responsive treatment (n = 60) The GRT model encompasses manualised curricula designed to be relevant to the needs of drug-dependent women in correctional programs. Each provides a facilitator's guide and a participant's workbook. Both curricula use cognitive-behavioral approaches, mindfulness meditation, experiential therapies (guided imagery, visualisation, art therapy, movement), psychoeducational, relational, and expressive arts techniques. Helping Women Recover (Covington 2008b) is a 17- session programme organised into four modules: (a) Self module: women discover what the "self" is; learn that addiction can be understood as a disorder of the self; learn the sources of self esteem; consider the effects of sexism, racism, and stigma on a sense of self; and learn that recovery includes the growth of the self; (b) Relationship module: women explore their roles in their families of origin; discuss myths and realities about motherhood and their relationships with their mothers; review relationship histories; and consider how they can build healthy support systems; (c) Sexuality module: women explore the connections between addiction and sexuality and discuss body image, sexual identity, sexual abuse, and the fear of sex when sober; (d) Spirituality module: women are introduced to the concepts of spirituality, prayer, and meditation. Spirituality deals with transformation, connection, meaning, and wholeness Beyond Trauma (Covington 2003) consists of 11 sessions focused on three areas: teaching women what trauma and abuse are, helping them to understand typical reactions to trauma and abuse, and developing coping skills (C) Standard TC (n = 55) Prison-based TC programmes in California are based on the traditional aspects of TC treatment and include the following: (a) activities that embody positive values that start a process of socialisation; (b) treatment staff who provide positive role models (and many are recovering addicts themselves); and (c) an alternative concept of inmates that is usually much more positive than the prevailing beliefs and attitudes held by correctional staff. Programming takes place during the week, and participants spend approximately 20 hours per week in treatment. A voluntary aftercare component for graduates from the prison-based TC programmes provides funding for up to 6 months of continued treatment (residential or outpatient services) in the community following release to parole. Typically, gender issues and trauma histories were not addressed in these prison TC programmes. In addition, both men and women were employed as treatment staff to facilitate the groups and counsel the women
Outcomes	Community-based aftercare participation Drug use ASI Severity Index Lite Psychological well being Self efficacy Recidivism All outcomes measured at 6 and 12 months
Notes	No declaration of interest reported by the authors

Risk of bias

Bias	Authors' judgement	Support for judgement

Messina 2010 (*Continued*)

Random sequence generation (selection bias)	Low risk	Random sequence based on an even and odd identification number
Allocation concealment (selection bias)	Unclear risk	No evidence reported with regards to concealment
Blinding of participants and personnel (performance bias) subjective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment
Blinding of participants and personnel (performance bias) objective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment
Blinding of outcome assessment (detection bias) subjective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Blinding of outcome assessment (detection bias) objective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Incomplete outcome data (attrition bias) All outcomes	Low risk	Intention-to-treat analysis was conducted
Selective reporting (reporting bias)	Low risk	No evidence of selective reporting
Other bias	Unclear risk	Protocol not mentioned, but the study represents a pilot project

Nielsen 1996

Methods	Allocation: random assignment Randomisation method: unclear Similar on drug use: no Similar on criminal activity: no Blinding methodology: unknown Loss to follow-up: partial
Participants	689 adults and young offenders (women n = 144) Age not reported 79.1% male 28.9% white 100% drug-using Alcohol use not reported Psychiatric history not reported Eligibility criteria: offenders with a history of drug use who were eligible for work release or parole and about to be released from prison

Nielsen 1996 (*Continued*)

Interventions	Secure establishment-based TC vs routine work release (I) CREST work-release TC (n = 248) 1 month of orientation followed by 2 months of primary treatment followed by 3 months of work release. This was intensive given the nature of the intervention (C) routine work-release (n = 441) Duration also 6 months, intensity not reported
Outcomes	Drug use (self reported) during the last 6 months at 6-month follow-up Drug use (self reported) during the last 18 months at 18-months follow-up Recidivism (arrested and charged) for any offence (self reported) during the last 6 months at 6-month follow-up Recidivism (arrested and charged) for any offence (self reported) during the last 18 months at 18-months follow-up
Notes	Farrell 2000 analysed a subset of this work, examining female offenders No declaration of interest reported by the authors

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information reported
Allocation concealment (selection bias)	Unclear risk	No information reported
Blinding of participants and personnel (performance bias) subjective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment
Blinding of participants and personnel (performance bias) objective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment
Blinding of outcome assessment (detection bias) subjective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Blinding of outcome assessment (detection bias) objective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Incomplete outcome data (attrition bias) All outcomes	Unclear risk	No intention-to-treat analysis conducted. No explanation of the impact of withdrawals
Selective reporting (reporting bias)	Unclear risk	Not reported

Other bias	Unclear risk	Groups are noted as similar except for type of crime and primary substance use

Sacks 2008

Methods	Allocation: random assignment Randomisation method: unclear Similar on drug use: yes Similar on criminal activity: yes Blinding methodology: unknown Loss to follow-up: high risk; intention-to-treat noted
Participants	**Sacks 2008** 573 adult women Mean age 35.6 (SD 7.5) 100% female 47.8% white 99% drug-using Eligibility criteria: female inmates with at least 6 months remaining until parole with serious substance abuse problems requiring treatment and presenting a minimum/medium security risk **Sacks 2012 - follow-up study at 6 and 12 months** 468 adult females Average age: 35.1 years (SD 7.9) 100% female 47 % white 26% Hispanic 100 % drug users (as measured by Standardised Offender Assessment score) Alcohol use: not reported 58% lifetime mental health treatment Eligibility criteria: female offenders at Denver Women's Correctional Facility; at least 6 months, but no greater than 24 months, remaining before parole eligibility; Colorado Department of Corrections Standardised Offender Assessments score of 4 or higher (indicating substance use disorder severe enough to require treatment); security risk level allowing participation in programme; consented
Interventions	(I) TC programme (n = 257) vs (C) cognitive behavioural intervention (n = 211) **Intervention group** TCs were initially designed for use in community-based residential settings, and the model has been successfully adapted for inmate populations. The model has been further modified for male inmates with co-occurring serious mental and substance use disorders, with previous evidence showing positive outcomes for re incarceration, substance use, and mental health symptoms. The intervention involved a 6-month tenure in separate residential building with programme activities 4 hours per day, 5 days per week, supplemented by peer-led activities at weekends, and a further 4 hours per day, 5 days per week working within the prison complex. The programme followed TC principles, with additional gender specific aspects **Control group**

	The control programme, based at Colorado Department of Corrections (CDOC) standard treatment, known in the CDOC system as the *Intensive Outpatient Programme* (IOP). This is the standard treatment that CDOC offers to all female offenders who have been classified as substance abusers. The intervention is designed to address substance abuse and criminality, with a focus on prevention of relapse and recidivism. The IOP substance abuse treatment curriculum consists of a 90-hour course, presented in an educational format (*Strategies for Self-Improvement and Change*, Wanburg & Milkman, 1998), utilizing a cognitive behavioural format to address underlying issues of substance use/abuse and criminal behavior. The course is completed within 15 weeks. The women in IOP can participate in multiple other services facility wide including mental health assessments
Outcomes	Criminal activity, arrest, and drug-related activity (self reported) at 6 and 12 months, and criminal record data (% incarcerated, mean days to incarceration) at 12 months post-prison release Self reported illegal drug use at 6 and 12 months
Notes	Work supported by US Department of Health and Human Services (DHHS), National Institutes of Health (NIH), National Institute on Drug Abuse (NIDA) No declarations of interest are noted by the authors

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information other than "were randomly assigned"
Allocation concealment (selection bias)	Unclear risk	No information provided
Blinding of participants and personnel (performance bias) subjective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment
Blinding of participants and personnel (performance bias) objective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment
Blinding of outcome assessment (detection bias) subjective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Blinding of outcome assessment (detection bias) objective measures	Unclear risk	No evidence to provide information about whether the assessors were blind
Incomplete outcome data (attrition bias) All outcomes	High risk	No loss to follow-up for reincarceration outcome but unclear loss to follow-up

		for other outcomes. Intention-to treat reported. Differences also noted between data collected using self report and official records. Intention-to-treat analysis used to analyse the outcome measures
Selective reporting (reporting bias)	Low risk	No evidence of selective reporting
Other bias	Low risk	Protocol noted

Zlotnick 2009

Methods	Allocation: random assignment Randomisation method: unclear Similar on drug use: yes Similar on criminal activity: yes Blinding methodology: unknown Loss to follow-up: adequate
Participants	103 female inmates Mean age 34.6 (SD 7.9) 100% women 46.7% white 100% drug-using Alcohol use not reported Eligibility criteria: female inmates requesting intensive substance abuse treatment
Interventions	CBT and standard therapy (n = 27) vs standard therapy (n = 22) Intervention group - CBT using a Seeking Safety programme plus standard therapy The primary goals of the intervention include the development of coping skills to help clients attain safety from both PTSD and SUD. The intervention is present-focused, abstinence-oriented, and emphasises an empowering, compassionate approach. The intervention is conducted using a group modality for 90 min, typically three times a week for 6 to 8 weeks while the women were in prison, with three to five women per group. Standard therapy comprises 180-240 hours of group treatment over 6-8 weeks. After release from prison, each woman was offered weekly individual 60-min "booster" sessions for 12 weeks to reinforce material from the group sessions Control group - Standard therapy Women in the treatment as usual group (or standard therapy) were enrolled in a substance use treatment programme in the minimum security wing (approximately 30 hours per week). Women typically attend this programme for 3 to 6 months, depending on the length of their sentences. Substance use treatment was abstinence-oriented, focused on the 12-step model (Alcohol Anonymous, Cocaine Anonymous, Narcotics Anonymous) , and took place in a psychoeducational large-group format, with weekly individual case management and drug counselling. To remain in the TAU programme, the women had to attend all components of the treatment. Psychoeducational groups included attention

	to women's health, domestic violence, affect management, relapse prevention, career exploration, anger management, and parenting, conducted by the same clinicians who conducted the Seeking Safety treatment. This programme did not offer any treatment specifically for trauma. Prior to prison release, the women received case management services, although this discontinued once the women were released from prison. All women leaving prison were referred for further substance use treatment. The TAU programme was similar to other state prison substance use programs in that more than 75% of states offer programs in TC settings, in day treatment settings, teach relapse prevention, and offer substance use education
Outcomes	Drug use (self reported) and recidivism at 3 months and 6 months post-release
Notes	No declaration of interest reported by the authors

Risk of bias

Bias	**Authors' judgement**	**Support for judgement**
Random sequence generation (selection bias)	Unclear risk	No information reported other than 'random'
Allocation concealment (selection bias)	Unclear risk	No information reported
Blinding of participants and personnel (performance bias) subjective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment
Blinding of participants and personnel (performance bias) objective outcomes	Unclear risk	No evidence to suggest blinding formed part of the trial but lack of information makes it difficult to make an assessment
Blinding of outcome assessment (detection bias) subjective measures	High risk	p.328 confirms that the assessors were not blind and were aware of the assignment
Blinding of outcome assessment (detection bias) objective measures	High risk	p.328 confirms that the assessors were not blind and were aware of the assignment
Incomplete outcome data (attrition bias) All outcomes	Low risk	Very low and equally balanced attrition indicated in flow chart
Selective reporting (reporting bias)	Unclear risk	No information reported
Other bias	High risk	Potential contamination of treatment and control reported

ACT: acceptance commitment therapy
C: control
CBT: cognitive behavioural therapy
I: intervention
LCSF: lifestyle criminality screening form
MDD: major depressive disorder
PTSD: post-traumatic stress disorder
SD: standard deviation
TC: therapeutic community

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Alemi 2010	No separate results given for female offenders
Alessi 2011	Not an original RCT. Data are from previous, older studies
Andersson 2014	No intervention aimed at reducing drug use in drug-using offenders
Anglin 1999	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Awgu 2010	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Azbel 2013	No intervention aimed at reducing drug use for drug-using offenders
Baldus 2011	Study protocol only, no further data available as author has since died
Baltieri 2014	No intervention aimed at reducing drug use for drug-using offenders
Barnes 2012	Not drug-using offender programme
Bayanzadeh 2004	No separate data for female offenders
Berman 2004	The intervention was not aimed at reducing drug use in drug-using offenders
Black 2011	Not an offender population
Brady 2010	Not randomised controlled trial
Braithwaite 2005	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Breckenridge 2000	Evaluated a DWI Court for alcoholic offenders, not illicit drug use, did not present separate female offender information

(*Continued*)

Britt 1992	No separate results given for female offenders
Brown 2001	3-arm study in which only 2 arms were randomised: 1 treatment arm and control arm. Results presented as both treatment arms combined vs control
Brown 2013	No separate results given for female offenders
Burdon 2013	No separate results given for female offenders
Carr 2008	The population of the study was not 100% drug-using offenders that were specifically referred by the criminal justice system to the intervention
Carroll 2006	No separate results given for female offenders
Carroll 2011	Not an offender population
Carroll 2012	No separate results given for female offenders
Chandler 2006	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Chaple 2014	No pre- and post-test measures of drug and/or crime
Clair 2013	No data presented on pre- and post-test outcome measures
Cogswell 2011	Paper reports on a psychiatric population, not offenders
Cornish 1997	No separate results given for female offenders
Cosden 2003	No separate results given for female offenders
Cosden 2005	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Coviello 2010	No separate results given for female offenders
Coviello 2012	No separate results given for female offenders
Cox 2013	Not a relevant population of criminal justice offenders
Cropsey 2013	No separate results given for female offenders
Cullen 2011	The intervention was not aimed at reducing drug use in drug-using offenders
Cusack 2010	The intervention was not aimed at reducing drug use in drug-using offenders
D'Amico 2013	No separate results given for female offenders

(*Continued*)

Dakof 2010	Study population is mothers of offenders, not offenders themselves
Dana 2013	Not a randomised controlled trial
DeFulio 2013	Not a randomised controlled trial
Dembo 2000	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods. The follow-up periods reported for the different groups were not equivalent
Deschenes 1994	No separate results given for female offenders
Di Nitto 2002	The follow-up periods reported for the different groups were not equivalent
Diamond 2006	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Dolan 2003	No separate results given for female offenders
Dole 1969	No separate results given for female offenders
Dugan 1998	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Evans 2012	Not a randomised controlled trial
Forsberg 2011	No separate results given for female offenders
Freudenberg 2010	No separate results given for female offenders
Friedman 2012	Not a randomised controlled trial
Frost 2013	Not a randomised controlled trial
Gagnon 2010	Not an offender population
Gil 2004	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Gordon 2012	No relevant data all analysis at baseline, no outcomes measured at the post-test time point
Gordon 2013	No relevant data; all analysis secondary data; not a primary empirical study
Gottfredson 2002	No separate results given for female offenders
Grohman 2002	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods

(*Continued*)

Grommon 2013a	No separate results given for female offenders
Grommon 2013b	No separate results given for female offenders
Guydish 2014	Not criminal justice population
Haapanen 2002	No separate results given for female offenders
Haasen 2010	Not an offender population
Hanlon 1999	No separate results given for female offenders
Harada 2012	No data specifying pre- and post-test outcome measures using drug and/or crime measures
Harrell 2001	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Henderson 2010	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Henggeler 1991	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Henggeler 1999	No separate results given for female offenders
Henggeler 2002	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Henggeler 2006	No separate results given for female offenders
Henggeler 2012	No separate results given for female offenders
Howells 2002	No separate results given for female offenders
Hser 2011	Unclear if study looks at offender population
Hser 2013	No separate results given for female offenders
Inciardi 2004	Some participants were not randomly selected into the treatment groups
Jain 2011	Paper does not report on an offender population
Jones 2013	No separate results given for female offenders
Jones, 2011	No separate results given for female offenders, reports primarily on an alcoholic not drug population

(*Continued*)

Katz 2007	The population of the study was not 100% drug-using offenders that were specifically referred by the criminal justice system to the intervention
Kelly 2013	No separate results given for female offenders
Kidorf 2013	Not offender population
King 2014	Not offender population
Kinlock 2005	No separate results given for female offenders
Kinlock 2007	No separate results given for female offenders
Kinlock 2008	No separate results given for female offenders
Kinlock 2009a	Conference proceedings only
Kinlock 2009b	No separate results given for female offenders
Kok 2013	Not offender population
Law 2012	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Lee 2012	No separate results given for female offenders
Liddle 2011	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Ling 2013	Not offender population
Lobmaier 2010	No separate results given for female offenders
Lobmann 2007	No separate results given for female offenders
Lobmann 2009	No data presented for pre- and post-test outcome measures on either drug and/or crime outcomes
MacDonald 2007	Evaluated a DWI Court for alcoholic offenders, not illicit drug use
Magura 2009	No separate results given for female offenders
Marlowe 2003	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Marlowe 2005	No separate results given for female offenders

(*Continued*)

Marlowe 2007	Participants randomised to receive treatment were not randomised into the different treatment intervention arms, but were divided into treatment by level of risk. Not a randomised controlled trial
Marlowe 2008	No separate results given for female offenders
Marsch 2014	Not offender population
Martin 1993	No separate results given for female offenders
Mbilinyi 2011	Participants not recruited through criminal justice system
McKendrick 2007	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
McKenzie 2012	No separate results given for female offenders
Messina 2000	The population of the study was not 100% drug-using offenders that were specifically referred by the criminal justice system to the intervention. The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Milloy 2011	Study contains no pre-and post-test data on outcomes of drug and/or crime
Needels 2005	The population of the study was not 100% drug-using offenders that were specifically referred by the criminal justice system to the intervention
Nemes 1998	The population of the study was not 100% drug-using offenders that were specifically referred by the criminal justice system to the intervention. The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Nemes 1999	The population of the study was not 100% drug-using offenders that were specifically referred by the criminal justice system to the intervention. The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Nosyk 2010	Not an offender population
Petersilia 1992	No separate results given for female offenders
Petry 2005	Population not 100% from the criminal justice population
Petry 2011	Not an offender population
Polsky 2010	Not an offender population
Prendergast 2003	No separate results given for female offenders
Prendergast 2008	No separate results given for female offenders

(*Continued*)

Prendergast 2009	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Prendergast 2011	No separate results given for female offenders
Proctor 2012	No separate results given for female offenders
Reimer 2011	Not an offender population
Robertson 2006	The population of the study was not 100% drug-using offenders that were specifically referred by the criminal justice system to the intervention
Rosengard 2008	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Rossman 1999	No separate results given for female offenders
Rounsaville 2001	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Rowan-Szal 2005	Paper not a population of offenders
Rowan-Szal 2009	Not a randomised controlled trial
Rowe 2007	The population of the study was not 100% drug-using offenders that were specifically referred by the criminal justice system to the intervention
Sacks 2004	No separate results given for female offenders
Sacks 2012	No separate results given for female offenders
Sanchez-Hervas 2010	Not an offender population
Schaeffer 2014	No separate results given for female offenders
Schmiege 2009	No data available on pre- and post-test outcomes for drug and/or crime measures
Schwartz 2006	Not an offender population
Shanahan 2004	No separate results for female offenders
Sheard 2009	The study did not report relevant drug and/or crime outcome measures at both the pre- and post-intervention periods
Siegal 1999	Not a randomised controlled trial
Sinha 2003	No separate results given for female offenders

(*Continued*)

Smith 2010	No separate results given for female offenders
Solomon 1995	Not an offender population
Specka 2013	Not an offender population
Stanger 2009	The population of the study was not 100% drug using offenders that were specifically referred by the criminal justice system to the intervention
Staton-Tindall 2009	No control group; not a randomised controlled trial
Stein 2006	No data available for pre- and post test outcomes on drug and/or crime outcomes
Stein 2010	Not an offender population
Stein 2011	No separate results given for female offenders
Stevens 1998	The study did not include an appropriate comparison group. The population of the study was not 100% drug-using offenders that were specifically referred by the criminal justice system to the intervention
Svikis 2011	Not clear if offender population
Taxman 2006	No separate results given for female offenders
Vagenas 2014	No pre- and post-test outcomes for drug and/or crime measures
Vanderberg 2002	No pre- and post-test outcomes for drug and/or crime measures
Walters 2014	No pre- and post-test outcomes for drug and/or crime measures
Wang 2010	Participants not in criminal justice system
Webster 2014	No pre- and post-test outcomes for drug and/or crime measures
White 2006	Randomisation broken as 40% of control arm were allowed to receive treatment (acupuncture) outside of the intervention
Williams 2011	Not randomised controlled trial
Winstanley 2011	Not an offender population
Witkiewitz 2010	Not an offender population
Wolff 2012	No data for pre- and post-test outcomes of drug and/or crime measures
Wright 2011	No separate results given for female offenders

Characteristics of ongoing studies *[ordered by study ID]*

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Trial name or title	Naltrexone for opioid dependent released HIV+ criminal justice populations Referred to as NEWHOPE
Methods	Our specific aim is to conduct a placebo-controlled RCT of depot NTX (d-NTX) for HIV+ prisoners with OD who are transitioning to the community 150 subjects within CJS in New Haven, Hartford and Springfield. Subjects will be randomised 2:1 to d-NTX or d-placebo for 6 months and observed for 12 months
Participants	HIV-infected prisoners with opioid dependence who are treated with depot- naltrexone as they are transitioning from the correctional to the community setting 150 participants
Interventions	Depot naltrexone versus placebo
Outcomes	6 and 12 months HIV treatment (HIV-1 RNA levels, CD4 count, ART adherence, retention in care), substance abuse (time to relapse to opioid use, % opioid negative urine, opioid craving), adverse side effects and HIV risk behaviour (sexual and drug-related risks) The public health relevance is that outcomes from this study will establish the efficacy, safety and tolerability of pharmacological therapy using naltrexone treatment among HIV+S and establish depot-naltrexone treatment as an effective, evidence-based treatment for opioid dependence for released HIV+ prisoners
Starting date	2012
Contact information	Yale University
Notes	

DATA AND ANALYSES

Comparison 1. Any psychosocial intervention versus treatment as usual: criminal activity

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Self reported drug use dichotmous	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only
2 Arrests	2	489	Risk Ratio (M-H, Random, 95% CI)	0.82 [0.45, 1.52]
3 Recidivism (reincarceration, arrested and charged)	3	630	Risk Ratio (M-H, Random, 95% CI)	0.46 [0.34, 0.64]

Comparison 2. Pharmacological interventions versus placebo: drug use

Outcome or subgroup title	No. of studies	No. of participants	Statistical method	Effect size
1 Self reported drug use	1		Risk Ratio (M-H, Random, 95% CI)	Subtotals only

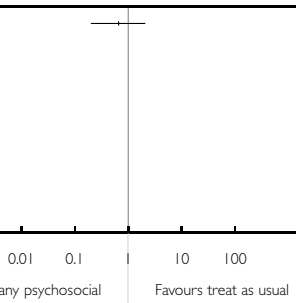
Analysis 1.1. Comparison 1 Any psychosocial intervention versus treatment as usual: criminal activity, Outcome 1 Self reported drug use dichotmous.

Review: Interventions for female drug-using offenders

Comparison: 1 Any psychosocial intervention versus treatment as usual: criminal activity

Outcome: 1 Self reported drug use dichotmous

Study or subgroup	Any Psyccosocial n/N	Treat as usual n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Johnson 2011	4/39	6/38			0.65 [0.20, 2.12]
Subtotal (95% CI)	**0**	**0**			**0.0 [0.0, 0.0]**
Total events: 4 (Any Psyccosocial), 6 (Treat as usual)					
Heterogeneity: not applicable					
Test for overall effect: Z = 0.0 (P < 0.00001)					
Test for subgroup differences: Not applicable					

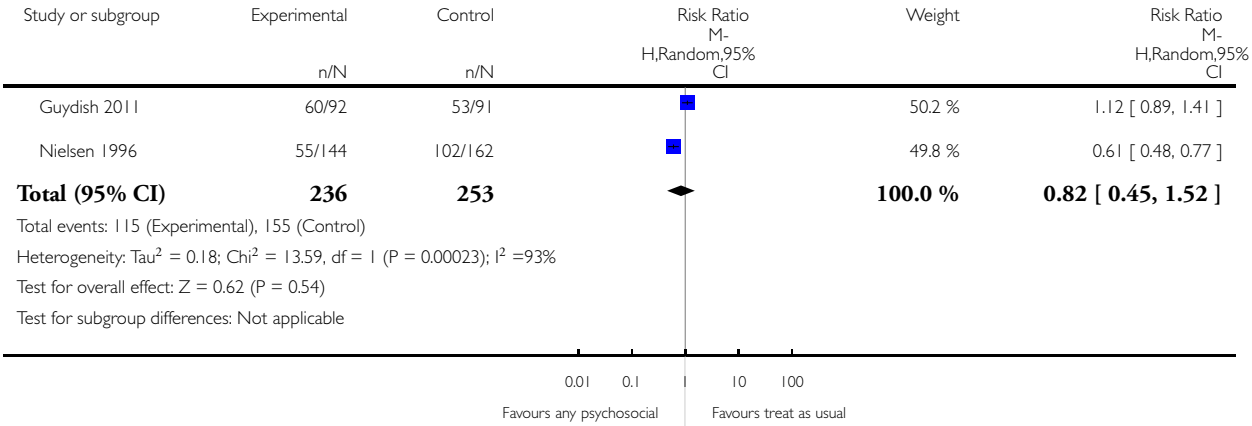


Analysis 1.2. Comparison 1 Any psychosocial intervention versus treatment as usual: criminal activity, Outcome 2 Arrests.

Review: Interventions for female drug-using offenders

Comparison: 1 Any psychosocial intervention versus treatment as usual: criminal activity

Outcome: 2 Arrests



Analysis 1.3. Comparison 1 Any psychosocial intervention versus treatment as usual: criminal activity, Outcome 3 Recidivism (reincarceration, arrested and charged).

Review: Interventions for female drug-using offenders

Comparison: 1 Any psychosocial intervention versus treatment as usual: criminal activity

Outcome: 3 Recidivism (reincarceration, arrested and charged)

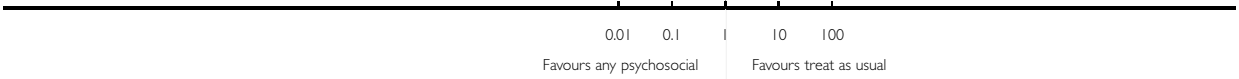
Study or subgroup	any psychosocial n/N	treatment as usual n/N	Risk Ratio M-H,Random,95% CI	Weight	Risk Ratio M-H,Random,95% CI
Johnson 2011	8/39	11/38		15.9 %	0.71 [0.32, 1.57]
Nielsen 1996	28/190	113/319		72.2 %	0.42 [0.29, 0.60]
Zlotnick 2009	5/23	9/21		11.9 %	0.51 [0.20, 1.27]
Total (95% CI)	**252**	**378**		**100.0 %**	**0.46 [0.34, 0.64]**

Total events: 41 (any psychosocial), 133 (treatment as usual)

Heterogeneity: $Tau^2 = 0.0$; $Chi^2 = 1.47$, df = 2 (P = 0.48); $I^2 = 0.0\%$

Test for overall effect: Z = 4.76 (P < 0.00001)

Test for subgroup differences: Not applicable

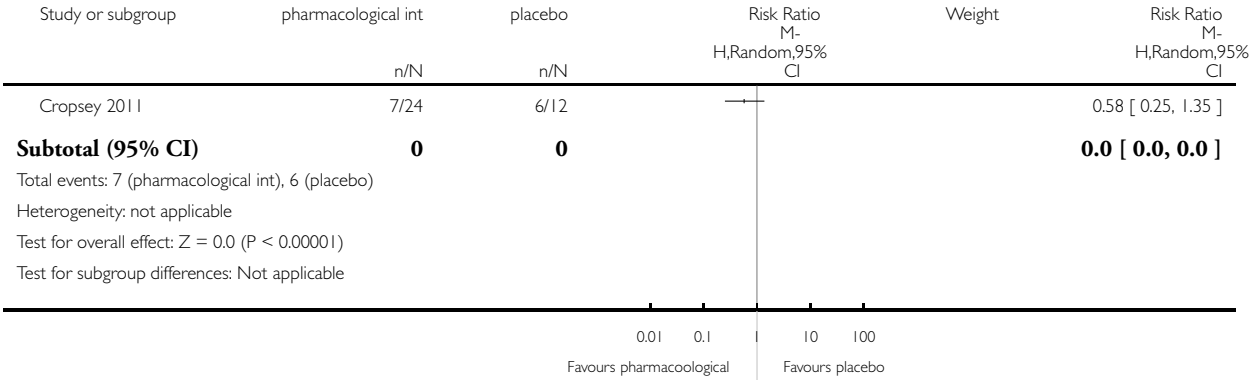


Analysis 2.1. Comparison 2 Pharmacological interventions versus placebo: drug use, Outcome 1 Self reported drug use.

Review: Interventions for female drug-using offenders

Comparison: 2 Pharmacological interventions versus placebo: drug use

Outcome: 1 Self reported drug use



ADDITIONAL TABLES

Table 1. Summary comparison data for meta-analyses

Paper, year	Intervention	Comparison	Follow-up	Outcome type	Measurement	Actual outcome
Cropsey 2011	Buprenorphine	Placebo	End of treatment 3 months	Biological drug use (dichotomous); self reported drug use (dichotomous)	% with total	% positive urine opiates % self reported injection drug use
Guydish 2011	Case management	Standard probation	12 months	Criminal activity (continuous); criminal activity (dichotomous)	Mean and SD % with total	Mean arrests during follow-up (official) % arrested during follow-up period (official)
Johnson 2011 (women)	Collaborative behavioural management	Standard parole supervision	9 months	Criminal activity (dichotomous); self reported drug use (dichotomous)	% with total	% women reincarcerated % women used primary drug

Table 1. Summary comparison data for meta-analyses (*Continued*)

Johnson 2012	Interpersonal Psychotherapy	Attention-matched control condition	3 months	Self reported drug use (dichotomous)	% with total	Relapse within 3 months follow-up period, defined as using drugs on at least 10% of non-incarcerated days or any positive breath test/urine drug screen
Lanza 2014	Acceptance and commitment therapy and cognitive behavioural therapy	Control group	6 months	Self reported drug use (dichotomous); biological drug use (dichotomous)	% with total	Abstinence: 3 months without drug use, self report, corroborated by urinalysis
Messina 2010	Gender-responsive Treatment	Standard Therapeutic Community	6 months 12 months	Criminal activity (dichotomous and continuous); self reported drug use	% with total	Community-based aftercare Participation Drug use ASI Lite Psychological well being Self efficacy Recidivism
Nielsen 1996	Therapeutic community	Routine work release	6 months 18 months	Criminal activity (dichotomous); self reported drug use (dichotomous)	% and total	% recidivism % relapse
Sacks 2008	Therapeutic community and cognitive skills training.	Substance abuse education and cognitive skills therapy	6 months 12 months	Criminal activity (dichotomous); self reported drug use (dichotomous and continuous)	% and total	% arrested for any offence % arrested (not parole violation) % criminal activity % drug-related crime self report % incarcerated and mean days to incarceration Illegal drug use % sex crime

Table 1. Summary comparison data for meta-analyses (*Continued*)

						Mean highest frequency drug use % drug use % received substance abuse treatment in 6 months following programme
Zlotnick 2009	Cognitive behavioural therapy	Treatment as usual	3 months 6 months	Criminal activity (dichotomous); self reported drug use (continuous)	% and total	% return to prison Mean ASI (drug) composite score Self reported weeks abstinent

APPENDICES

Appendix 1. MEDLINE search strategy

MEDLINE search
1. exp "Substance-Related-Disorders"/
2. ((drug or substance) adj (abuse* or addict* or dependen* or misuse*)).ti,ab
3. (drug* adj (treat* or intervention* or program*)
4. substance near (treat* or intervention* or program*)
5.(detox* or methadone) in ti,ab
6. narcotic* near (treat* or intervention* or program*)
7. 1 or 2 or 3 or 4 or 5 or 6
8. prison*. ti,ab
9. exp "Prisoners"/

(*Continued*)

10. offender* or criminal* or inmate* or convict* or probation* or remand or felon*).ti,ab
11. exp "Prisons"/
12. 8 or 9 or 10 or 11
13. 7 and 12

Appendix 2. EMBASE search strategy

EMBASE search
1. (detox$ or methadone or antagonist prescri$).ti,ab.
2. detoxification/ or drug detoxification/ or drug withdrawal/ or drug dependence treatment/ or methadone/ or methadone treatment/ or diamorphine/ or naltrexone/
3. (diamorphine or naltrexone or therapeutic communit$).ti,ab
4. morality/
5. (motivational interview$ or motivational enhancement).ti,ab
6. (counselling or counseling).ti,ab.
7. exp counseling/
8. (psychotherap$ or cognitive behavioral or cognitive behavioural).ti,ab
9. exp psychotherapy/
10. (moral adj3 training).ti,ab.
11. (cognitive restructuring or assertiveness training).ti,ab
12. reinforcement/ or self monitoring/ or self control/
13. (relaxation training or rational emotive or family relationship therap$).ti,ab
14. social learning/ or withdrawal syndrome/ or coping behavior/
15. (community reinforcement or self monitoring or self control or self management or interpersonal skills).ti,ab
16. (goal$ adj3 setting).ti,ab.

(*Continued*)

17. (social skills adj3 training).ti,ab.
18. anger/ or lifestyle/
19. (basic skills adj3 training).ti,ab.
20. (relapse adj3 prevent$).ti,ab.
21. (craving adj3 (minimi$ or reduc$)).ti,ab.
22. (trigger or triggers or coping skills or anger management or group work).ti,ab
23. (lifestyle adj3 modifi$).ti,ab.
24. (high intensity training or resettlement or throughcare or aftercare or after care).ti,ab
25. aftercare/ or halfway house/
26. (brief solution or brief intervention$ or minnesota program$ or 12 step$ or twelve step$).ti,ab
27. (needle exchange or nes or syringe exchange or dual diagnosis or narcotics anonymous).ti,ab
28. self help/ or support group/
29. (self-help or selfhelp or self help or outreach or bail support or arrest referral$).ti,ab
30. exp urinalysis/ or rehabilitation/ or rehabilitation center/
31. (diversion or dtto or dttos or drug treatment or testing order$ or carat or carats).ti,ab
32. (combined orders or drug-free or drug free).ti,ab.
33. (peer support or evaluation$ or urinalysis or drug testing or drug test or drug tests).ti,ab
34. ((rehab or rehabilitation or residential or discrete) adj2 (service$ or program$)).ti,ab
35. (asro or addressing substance$ or pasro or prisons addressing or acupuncture or shock or boot camp or boot camps).ti,ab
36. (work ethic camp$ or drug education or tasc or treatment accountability).ti,ab
37. exp acupuncture/
38. or/1-36
39. (remand or prison or prisoner or prisoners or offender$ or criminal$ or probation or court or courts).ti,ab

(*Continued*)

40. (secure establishment$ or secure facilit$).ti,ab.
41. (reoffend$ or reincarcerat$ or recidivi$ or ex-offender$ or jail or jails or goal or goals).ti,ab
42. (incarcerat$ or convict or convicts or convicted or felon or felons or conviction$ or revocation or inmate$ or high security).ti,ab
43. criminal justice/ or custody/ or detention/ or prison/ or prisoner/ or offender/ or probation/ or court/ or recidivism/ or crime/ or criminal behavior/ or punishment/
44. or/39-43
45. 38 and 44
46. (substance abuse$ or substance misuse$ or substance use$).ti,ab
47. (drug dependanc$ or drug abuse$ or drug use$ or drug misuse$ or drug addict$).ti,ab
48. (narcotics adj3 (addict$ or use$ or misuse$ or abuse$)).ti,ab
49. (chemical dependanc$ or opiates or heroin or crack or cocaine or amphetamines or addiction or dependance disorder or drug involved).ti,ab
50. substance abuse/ or drug abuse/ or analgesic agent abuse/ or drug abuse pattern/ or drug misuse/ or intravenous drug abuse/ or multiple drug abuse/
51. addiction/ or drug dependence/ or narcotic dependence/ or exp narcotic agent/ or narcotic analgesic agent/
52. opiate addiction/ or heroin dependence/ or morphine addiction/
53. cocaine/ or amphetamine derivative/ or psychotropic agent/
54. or/46-53
55. 45 and 54

Appendix 3. PsycInfo search strategy

PsycInfo
1. (detoxification in de) or (drug withdrawal in de)
2. (drug usage screening in de) or (methadone maintenance) in de
3. explode “Narcotic-Antagonists” in DE

(*Continued*)

4. 1 or 2 or 3
5. (counseling in de) or (explode "psychotherapeutic-counseling" in de)
6. (explode "cognitive-therapy" in de) or (explode "psychotherapeutic-techniques" in de)
7. (cognitive restructuring in de) or (assertiveness training in de)
8. explode "relaxation-therapy" in de
9. (rational emotive therapy in de) or (rational-emotive therapy in de)
10. (explode "self monitoring" in de) or (explode self-monitoring) in de
11. (goal setting in de) or (self control in de) or (explode "self-management" in de)
12. (social skills in de) or (relapse prevention in de) or (craving in de) or (coping behavior in de)
13. (anger control in de) or (explode "group-psychotherapy" in de) or (brief psychotherapy in de)
14. (explode "behavior-modification" in de) or (posttreatment followup in de) or (aftercare in de)
15. (halfway houses in de) or (twelve step programs in de)
16. (dual diagnoses in de) or (explode "self help techniques" in de) or (outreach programs in de) or (court referrals in de)
17. (peer pressure in de) or (urinalysis in de)
18. (drug rehabilitation in de) or (residential care institutions in de) or (acupuncture in de) or (drug education in de)
19. (detox* or methadone or antagonist prescri* or diamorphine or naltrexone or therapeutic communit*) in ti,ab
20. (motivational interview* or motivational enhancemen* or counseling or psychotherapy or psychotherapies) in ti,ab
21. (cognitive behav* or cognitive therapy or cognitive therapies or moral training or cognitive restructuring) in ti,ab
22. (assertiveness training or relaxation training or relaxation therapy or relaxation therapies) in ti,ab
23. (rational emotive therap* or rational emotive behav* therap* or family relationship therap* or community reinforcement) in ti,ab
24. (self-monitor* or self monitor* or goal setting or self control or self-control or self management or self-management) in ti,ab
25. (interpersonal skills training or social skills training or basic skills training) in ti,ab
26. (relapse with prevent*) in ti,ab

(*Continued*)

27. (craving near reduc*) in ti,ab
28. craving with (reduc* in ti,ab)
29. (trigger* or coping skills or anger management or group work or lifestyle modif* or high intensity training or resettlement) in ti, ab
30. (throughcare or aftercare or after care or brief solution* or brief intervention*) in ti,ab
31. (minnesota or 12 step* or twelve step* or needle exchange or nes or syringe exchange or dual diagnosis) in ti,ab
32. (narcotics anonymous or self-help or self help or outreach or bail support or arrest referral*) in ti,ab
33. (diversion or dtto* or testing order* or carat* or counseling assessment referral or combined order or combined orders or drug free wing* or drug free environment*) in ti,ab
34. (peer support or user evaluations or urinalysis or urinalyses or mandatory drug test* or rehabilitation or discrete service* or discrete program*) in ti,ab
35. (residential program* or residential scheme* or asro or addressing substance* or pasro or prisons addressing substance) in ti,ab
36. (acupuncture or shock or boot camp* or work ethic or drug education or tasc or treatment accountability) in ti,ab
37. or/4-36
38. (secure facilities or convict* or revocation or inmate* or high security) in ti,ab
39. (prisoners in de) or (explode "correctional-institutions" in de)
40. (perpetrators in de) or (explode criminals in de)
41. (probation in de) or (parole in de) or (incarceration in de) or (recidivism in de) or (criminal conviction in de) or (crime in de)
42. (remand or prison* or offender* or criminal* or probation or court or courts or secure establishment* or reoffend* or reincarcerat* or recidivi* or ex-offender* or jail or jails or incarcerat*) in ti,ab
43. (drug abuse in de) or (explode "inhalant-abuse" in de) or (explode "drug-dependency" in de)
44. (polydrug abuse in de) or (drug abuse in de) or (intravenous drug usage in de)
45. (narcotic drugs in de) or (heroin in de) or (cocaine in de) or (explode amphetamine in de)
46. (substance abuse* or substance misuse* or substance user*) in ti,ab
47. (drug dependen* or drug abuse* or drug misuse* or drug addict* or drug use) in ti,ab
48. (narcotic abuse* or narcotic misuse* or chemical dependen* or opiate misuse* or opiate abuse*) in ti,ab

(*Continued*)

49. (heroin use* or heroin addict* or heroin misuse* or heroin abuse*) in ti,ab
50. (crack use* or crack addict* or crack misuse* or crack abuse*) in ti,ab
51. (cocaine use* or cocaine addict* or cocaine misuse* or cocaine abuse*) in ti,ab
52. (amphetamine* use* or amphetamine* addict* or amphetamine* misuse* or amphetamine* abuse*) in ti,ab
53. (dependence disorder or drug involved or dug-involved) in ti,ab
54. #38 or #39 or #40 or #41 or #42
55. #4 or #43 or #44 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53
56. #37 and #54 and #55

Appendix 4. SPECTRA search strategy

SPECTRA search
1. {remand} or {prison} or {offender} or {criminal} or {probation} or {court} or {tribunal} or {secure establishment} or {secure facilit} or {reoffend} or {reincarcerat} or {recidivi} or {ex-offender} or {jail} or {incarcerat} or {convict} or {felon} or {reconvict} or {high security} or {law enforcement} {remand} or {prison} or {offender} or {criminal} or {probation} or {court} or {tribunal} or {secure establishment} or {secure facilit} or {reoffend} or {reincarcerat} or {recidivi} or {ex-offender} or {jail} or {incarcerat} or {convict} or {felon} or {reconvict} or {high security} or {law enforcement}
2. {substance} or {dependenc} or {drug abuse} or {drug use} or {drug misuse} or {addict} All indexed fields: {remand} or {prison} or {offender} or {criminal} or {probation} or {court} or {tribunal} or {secure establishment} or {secure facilit} or {reoffend} or {reincarcerat} or {recidivi} or {ex-offender} or {jail} or {incarcerat} or {convict} or {felon} or {reconvict} or {high security} or {law enforcement} OR All unindexed fields: {remand} or {prison} or {offender} or {criminal} or {probation} or {court} or {tribunal} or {secure establishment} or {secure facilit} or {reoffend} or {reincarcerat} or {recidivi} or {ex-offender} or {jail} or {incarcerat} or {convict} or {felon} or {reconvict} or {high security} or {law enforcement} AND All unindexed fields: {substance} or {dependenc} or {drug abuse} or {drug use} or {drug misuse} or {addict} or {narcotics} or {opiates} or {heroin} or {crack} or {cocaine} or {amphetamines} or {drug involved} or {substance-related} or {amphetamine-related} or {cocaine-related} or {marijuana} or {opioid} or {street drug} or {designer drug}
3. narcotics
4. opiates

(*Continued*)

5. heroin
6. {crack}
7. cocaine
8. amphetamines
9. drug involved
10. substance-related
11. amphetamine-related
12. cocaine-related
13. marijuana
14. opioid
15. street drug
16. designer drug
17. 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16
18. 1 AND 17

Appendix 5. PASCAL. SciSearch, Social SciSSciSearch, Wilson Applied Science and Technology Abstracts search strategy

PASCAL search
1. (DETOX? OR METHADONE OR ANTAGONIST()PRESCRI?)/TI,AB
2. METHADONE/DE OR NALTREXONE/DE
3. (DIAMORPHINE OR NALTREXONE)/TI,AB
4. THERAPEUTIC()COMMUNITY/DE OR THERAPEUTIC()COMMUNIT?)/TI,AB
5. (MOTIVATIONAL()INTERVIEW? OR MOTIVATIONAL()ENHANCEMENT)/TI,AB
6. (COUNSELLING OR COUNSELING)/TI,AB

(*Continued*)

7. COUNSELING/DE
8. (PSYCHOTHERAP? OR COGNITIVE()BEHAVIORAL OR COGNITIVE()BEHAVIOURAL)/TI,AB
9. PSYCHOTHERAPY!/DE
10. (MORAL(3W)TRAINING)/TI,AB
11. (COGNITIVE()RESTRUCTURING OR ASSERTIVENESS()TRAINING)/TI,AB
12. ASSERTIVENESS/DE OR RELAXATION()TECHNIQUES/DE
13. (RELAXATION()TRAINING OR RATIONAL()EMOTIVE OR FAMILY()RELATIONSHIP()THERAP?)/TI,AB
14. FAMILY()RELATIONS/DE
15. (COMMUNITY()REINFORCEMENT OR SELF()MONITORING OR SELF()CONTROL OR SELF()MANAGEMENT OR INTERPERSONAL()SKILLS)/TI,AB
16. (GOAL?(3W)SETTING)/TI,AB
17. (SOCIAL(3W)TRAINING)/TI,AB
18. SOCIAL RESPONSIBILITY/DE
19. (BASIC()SKILLS(3W)TRAINING)/TI,AB
20. (RELAPSE(3W)PREVENT?)/TI,AB
21. (CRAVING(3W)(MINIMI? OR REDUC?))/TI,AB
22. (TRIGGER OR TRIGGERS OR COPING()SKILLS OR ANGER()MANAGEMENT OR GROUP()WORK)/TI,AB
23. (LIFESTYLE(3W)MODIFI?)/TI,AB
24. (HIGH()INTENSITY()TRAINING OR RESETTLEMENT OR THROUGHCARE OR AFTERCARE OR AFTER()CARE) /TI,AB
25. ADAPTATION,-PSYCHOLOGICAL!/DE OR ANGER/DE OR LIFE()STYLE/DE OR AFTER()CARE/DE OR HALFWAY ()HOUSES/DE
26. (BRIEF()SOLUTION OR BRIEF()INTERVENTION? OR MINNESOTA()PROGRAM? OR 12()STEP? OR TWELVE() STEP?)/TI,AB
27. (NEEDLE()EXCHANGE OR NES OR SYRINGE()EXCHANGE OR DUAL()DIAGNOSIS OR NARCOTICS()ANONY-MOUS)/TI,AB
28. NEEDLE-EXCHANGE()PROGRAMS/DE

(*Continued*)

29. (SELF-HELP OR SELFHELP OR SELF()HELP OR OUTREACH OR BAIL()SUPPORT OR ARREST()REFERRAL?)/TI,AB
30. SELF-HELP()GROUPS/DE OR URINALYSIS/DE OR SUBSTANCE()ABUSE()DETECTION/DE
31. (DIVERSION OR DTTO OR DTTOS OR DRUG()TREATMENT OR TESTING()ORDER? ? OR CARAT OR CARATS) /TI,AB
32. (COMBINED()ORDERS OR DRUG-FREE OR DRUG()FREE)/TI,AB
33. (PEER()SUPPORT OR EVALUATION? ? OR URINALYSIS OR DRUG()TESTING OR DRUG()TEST? ?)/TI,AB
34. ((REHAB OR REHABILITATION OR RESIDENTIAL OR DISCRETE)(2W)(SERVICE? ? OR PROGRAM?))/TI,AB
35. (ASRO OR ADDRESSING()SUBSTANCE? OR PASRO OR PRISONS()ADDRESSING OR ACUPUNCTURE OR SHOCK OR BOOT()CAMP OR BOOT()CAMPS)/TI,AB
36. (WORK()ETHIC()CAMP? ? OR DRUG()EDUCATION OR TASC OR TREATMENT()ACCOUNTABILITY)/TI,AB
37. ACUPUNCTURE-THERAPY!/DE OR ACUPUNCTURE/DE OR HEALTH()EDUCATION/DE OR SUBSTANCE() ABUSE()TREATMENT()CENTERS/DE
38. S1:S3
39. S4:S37
40. S38 AND S39
40. (REMAND OR PRISON OR PRISONER OR PRISONERS OR OFFENDER? ? OR CRIMINAL? ? OR PROBATION OR COURT OR COURTS)/TI,AB
41. (SECURE()ESTABLISHMENT? ? OR SECURE()FACILIT?)/TI,AB
42. (REOFFEND? OR REINCARCERAT? OR RECIDIVI? OR EX()OFFENDER? ? OR JAIL OR JAILS)/TI,AB
43. (INCARCERAT? OR CONVICT OR CONVICTS OR CONVICTED OR FELON? ? OR CONVICTION? ? OR REVOCATION OR INMATE? ? OR HIGH()SECURITY)/TI,AB
44. PRISONERS/DE OR LAW()ENFORCEMENT/DE OR JURISPRUDENCE/DE
45. S40:S44
46. S40 AND S45
47. (SUBSTANCE()ABUSE? OR SUBSTANCE()MISUSE? OR SUBSTANCE()USE?)/TI,AB
48. (DRUG()DEPENDANC? OR DRUG()ABUSE? OR DRUG()USE? OR DRUG()MISUSE? OR DRUG()ADDICT?)/TI,AB
49. (NARCOTICS(3W)(ADDICT? OR USE? OR MISUSE? OR ABUSE?))/TI,AB

(*Continued*)

50. (CHEMICAL()DEPENDANC? OR OPIATES OR HEROIN OR CRACK OR COCAINE OR AMPHETAMINES OR ADDICTION OR DEPENDENCE()DISORDER OR DRUG()INVOLVED)/TI,AB
51. SUBSTANCE-RELATED()DISORDERS/DE OR AMPHETAMINE-RELATED()DISORDERS/DE OR COCAINE-RELATED()DISORDERS/DE OR MARIJUANA ()ABUSE/DE
52. OPIOID-RELATED-DISORDERS!/DE OR PHENCYCLIDINE()ABUSE/DE OR SUBSTANCE()ABUSE()INTRAVENOUS/DE
53. STREET()DRUGS/DE OR DESIGNER()DRUGS/DE OR NARCOTICS/DE
54. COCAINE!/DE OR AMPHETAMINES!/DE OR ANALGESICS()OPIOID/DE
55. S47:S54
56. S46 AND S55
57. (DETOXIFICATION OR METHADONE OR ANTAGONIST-PRESCRIBING)/DE FROM 144,34,434,7,99,65,35,6
58. (DIAMORPHINE OR NALTREXONE)/DE FROM 144,34,434,7,99,65,35,6
59. THERAPEUTIC-COMMUNITY)/DE FROM 144,34,434,7,99,65,35,6
60. (MOTIVATIONAL-INTERVIEW OR MOTIVATIONAL-ENHANCEMENT)/DE FROM 144,34,434,7,99,65,35,6
61. (COUNSELLING OR COUNSELING)/DE FROM 144,34,434,7,99,65,35,6
62. (PSYCHOTHERAPY! OR COGNITIVE-BEHAVIORAL OR COGNITIVE-BEHAVIOURAL)/DE FROM 144,34,434,7,99,65,35,6
63. (MORAL-TRAINING)/DE FROM 144,34,434,7,99,65,35,6
64. (COGNITIVE-RESTRUCTURING OR ASSERTIVENESS-TRAINING)/DE FROM 144,34,434,7,99,65,35,6
65. (RELAXATION-TRAINING OR RATIONAL-EMOTIVE OR FAMILY-RELATIONSHIP-THERAPY)/DE FROM 144,34,434,7,99,65,35,6
66. FAMILY-RELATIONS/DE
67. (COMMUNITY-REINFORCEMENT OR SELF-MONITORING OR SELF-CONTROL OR SELF-MANAGEMENT OR INTERPERSONAL-SKILLS)/DE FROM 44,34,434,7,99,65,35,6
68. (GOAL-SETTING)/DE FROM 144,34,434,7,99,65,35,6
69. (SOCIAL-SKILLS-TRAINING)/DE FROM 144,34,434,7,99,65,35,6
70. SOCIAL-RESPONSIBILITY/DE
71. (BASIC-SKILLS-TRAINING)/DE FROM 144,34,434,7,99,65,35,6

(*Continued*)

72. (RELAPSE-PREVENTION)/DE FROM 144,34,434,7,99,65,35,6
73. CRAVING/DE FROM 144,34,434,7,99,65,35,6
74. (TRIGGER OR COPING-SKILLS OR ANGER-MANAGEMENT OR GROUP-WORK)/DE FROM 144,34,434,7,99,65,35,6
75. (LIFESTYLE-MODIFICATION)/DE FROM 144,34,434,7,99,65,35,6
76. (HIGH-INTENSITY-TRAINING OR RESETTLEMENT OR THROUGHCARE OR AFTERCARE OR AFTER-CARE)/DE FROM 144,34,434,7,99,65,35,6
77. (BRIEF-SOLUTION OR BRIEF-INTERVENTIONS OR MINNESOTA-PROGRAM OR 12-STEP-PROGRAM OR TWELVE-STEP-PROGRAM)/DE FROM 144,34,434,7,99,65,35,6
77. (NEEDLE-EXCHANGE OR SYRINGE-EXCHANGE OR DUAL-DIAGNOSIS OR NARCOTICS-ANONYMOUS)/DE FROM 144,34,434,7,99,65,35,6
79. (SELF-HELP OR OUTREACH OR BAIL-SUPPORT OR ARREST-REFERRAL)/DE FROM 144,34,434,7,99,65,35,6
80. (DRUG-TREATMENT OR TESTING-ORDERS OR CARAT)/DE FROM 144,34,434,7,99,65,35,6
81. (COMBINED-ORDERS OR DRUG-FREE)/DE FROM 144,34,434,7,99,65,35,6
82. (PEER-SUPPORT OR EVALUATION OR URINALYSIS OR DRUG-TESTING OR DRUG-TESTS)/DE FROM 144,34,434,7,99,65,35,6
83. (REHABILITATION OR RESIDENTIAL OR DISCRETE-SERVICES)/DE FROM 144,34,434,7,99,65,35,6
84. (ASRO OR PASRO ACUPUNCTURE OR BOOT-CAMP)/DE FROM 144,34,434,7,99,65,35,6
85. (WORK-ETHIC-CAMP OR DRUG-EDUCATION OR TASC OR TREATMENT-ACCOUNTABILITY)/DE FROM 144,34,434,7,99,65,35,6
86. (REMAND OR PRISON OR PRISONER OR PRISONERS OR OFFENDER OR OFFENDERS OR CRIMINAL OR CRIMINALS OR PROBATION OR COURT OR COURTS)/DE FROM 144,34,434,7,99,65,35,6
87. (SECURE-ESTABLISHMENTS OR SECURE-FACILITY)/DE FROM 144,34,434,7,99,65,35,6
88. (REOFFENDERS OR REINCARCERATION OR RECIDIVISM OR EX-OFFENDERS OR JAILS)/DE FROM 144,34,434,7,99,65,35,6
89. (INCARCERATION OR CONVICT OR CONVICTS OR FELON OR FELONS OR CONVICTIONS OR REVOCATION OR INMATE OR INMATES OR HIGH-SECURITY)/DE FROM 144,34,434,7,99,65,35,6
90. (SUBSTANCE-ABUSE OR SUBSTANCE-MISUSE OR SUBSTANCE-USE)/DE FROM 144,34,434,7,99,65,35,6

(*Continued*)

91. (DRUG-DEPENDANCE OR DRUG-DEPENDENCY OR DRUG-ABUSE OR DRUG-MISUSE OR DRUG-ADDICT OR DRUG-ADDICTION)/DE FROM 144,34,434,7,99,65,35,6
92. (CHEMICAL-DEPENDANCY OR OPIATE-DEPENDENCY OR HEROIN-DEPENDENCY OR CRACK-DEPENDENCY OR COCAINE-DEPENDENCY OR AMPHETAMINES OR ADDICTION OR DEPENDENCE-DISORDER OR DRUG-INVOLVED)/DE FROM 144,34,434,7,99,65,35,6
93. S40 OR S57:S85
94. S45 OR S86:S89
95. S55 OR S90:S92
96. S93 AND S94 AND S95
97. S96/1980-2004

Appendix 6. The CENTRAL Register of Controlled trials search strategy

CENTRAL search
1. prison*
2. offender*
3. (criminal* or probation or court*)
4. (secure next establishment*)
5. reoffend*
6. reincarcerat*
7. recidiv*
8. exoffend*
9. (jail or jails or incarcerat*)
10. (secure next facilit*) 10(secure next facilit*)
11. (convict* or revocation or inmate* or (high next security))
12. PRISONERS

(*Continued*)

13. LAW ENFORCEMENT
14. JURISPRUDENCE
15. CRIME
16. #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15
17. SUBSTANCE-RELATED DISORDERS
18. ((substance or drug*) next (abuse* or misuse* or dependen*or use* or addict*))
19. (narcotics or chemical or opiate) next (dependen* or addict* or abuse* or misuse*))
20. ((heroin) next (addict* or dependen* or misuse* or abuse*))
21. ((crack) next (addict* or dependen* or misuse* or abuse* or use*))
22. ((cocaine next addict*) or (cocaine next dependenc*) or (cocaine next misuse*) or (cocaine next abuse*) or (cocaine next use*))
23. ((amphetamine*) next (addict* or dependen* or misuse* or abuse* or use*))
24. (addicts or (dependence next disorder) or (drug next involved))
25. (street next drugs)
26. STREET DRUGS
27. DESIGNER DRUGS
28. NARCOTICS
29. COCAINE
30. AMPHETAMINES
31. ANALGESICS ADDICTIVE
32. ANALGESICS OPIOID
33. PSYCHOTROPIC DRUGS
34. opioid* or opiat*
35. #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34
35. (#16 and #35)

Appendix 7. SIGLE search strategy

SIGLE
1. ((reoffend* or reincarcerat* or recidivi* or ex-offend* or jail or jails or incarcerat* or secure facilit* or convict* or revocation or inmate*) in ti,ab)
2. ((remand or prison* or offender* or criminal* or probation or court or courts or secure establishment*) in ti,ab
3. ((drug dependenc* or drug addict* or narcotics abuse* or narcotics use* or narcotics misuse* or narcotics addict*) in ti,ab
4. ((drug abuse* or drug misuse* or drug use*) in ti,ab
5. ((substance abuse* or substance misuse* or substance use*) in ti,ab
6. ((detox* or methadone maintenance or methadone prescri* or antagonist prescri* or dimorphine or naltrexone) in ti,ab
7. ((dependence disorder or drug involved) in ti,ab
8. ((amphetamine* abuse* or amphetamine* misuse* or amphetamine* use* or amphetamine* addict*) in ti,ab
9. ((cocaine abuse* or cocaine misuse* or cocaine use* or cocaine addict*) in ti,ab
10. ((crack abuse* or crack misuse* or crack use* or crack addict*) in ti,ab
11. ((heroin abuse* or heroin misuse* or heroin use* or heroin addict*) in ti,ab
12. ((chemical dependenc* or opiate abuse* or opiate misuse* or opiate use* or opiate addict*) in ti,ab
13. #1 or #2
14. #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12
15. #13 and #14

Appendix 8. Sociological Abstracts search strategy

Sociological Abstracts
1. remand in de
2. detention in de
3. prisoners in de
4. prisons in de

(*Continued*)

5. offenders in de
6. parole in de
7. probation in de
8. correctional system in de
9. courts in de
10. imprisonment in de
11. criminal justice in de
12. criminal proceedings in de
13. recidivism in de
14. jail in de
15. institutionalization (persons) in de
16. conviction/convictions in de
17. (remand or prison* or offender* or criminal* or probation or court or courts or secure establishment*) in ti,ab
18. (reoffend* or reincarcerat* or recidivi* or ex-offend* or jail or jails or incarcerat* or secure facilit* or convict* or revocation or inmate*) in ti,ab
19. #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19
20. substance abuse in de
21. explode “Drug-Abuse” in DE
22. “Drug-Injection” in DE
23. explode “Narcotic-Drugs” in DE
24. “Cocaine-” in DE
25. “Addiction-” in DE
26. explode “Psychedelic-Drugs” in DE
27. (substance abuse* or substance misuse* or substance use*) in ti,ab
28. (drug abuse* or drug misuse* or drug use*) in ti,ab

(*Continued*)

29. (drug dependenc* or drug addict* or narcotics abuse* or narcotics use* or narcotics misuse* or narcotics addict*) in ti,ab
30. (chemical dependenc* or opiate abuse* or opiate misuse* or opiate use* or opiate addict*) in ti,ab
31. (heroin abuse* or heroin misuse* or heroin use* or heroin addict*) in ti,ab
32. (crack abuse* or crack misuse* or crack use* or crack addict*) in ti,ab
33. (cocaine abuse* or cocaine misuse* or cocaine use* or cocaine addict*) in ti,ab
34. (amphetamine* abuse* or amphetamine* misuse* or amphetamine* use* or amphetamine* addict*) in ti,ab
35. (dependence disorder or drug involved) in ti,ab
36. #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 or #35
37. #19 and #36
38. "Detoxification-" in DE
39. "Methadone-Maintenance" in DE
40. "Counseling-" in DE
41. "Psychotherapy-" in DE
42. "Assertiveness-" in DE
43. (detoxification in de) or (methadone maintenance in de) or (treatment programs in de)
44. (counseling in de) or (psychotherapy in de) or (assertiveness in de) or (group therapy in de) or (goals in de) or (self control in de)
45. (interpersonal communication in de) or (social interaction in de) or (social competence in de) or (coping in de)
46. (social behavior in de) or (group work in de) or (lifestyle in de)
47. (after care in de) or (support networks in de) or (self help in de) or (self help groups in de) or (outreach programmes in de)
48. (outreach programs in de) or (referral in de) or (delinquency prevention in de) or (diversion/diversions in de)
49. (peer groups in de) or (peer influence in de) or (drug use screening in de) or (rehabilitation in de) or (work experience in de)
50. (detox* or methadone maintenance or methadone prescri* or antagonist prescri* or dimorphine or naltrexone) in ti,ab
51. (therapeutic communit* or motivational interview* or motivational enhance* or counseling or counselling or psychotherapy or cognitive behavi*) in ti,ab

(*Continued*)

52. (moral training or cognitive restructuring or assertiveness training or relaxation training) in ti,ab
53. (rational-emotive or rational emotive or family relationship therap* or community reinforcement or self monitoring or goal setting or self control training) in ti,ab
54. (self management or interpersonal skills or social skills or basic skills or relapse prevent* or prevent* relapse or craving reduc* or reduc* craving) in ti,ab
55. (trigger* or coping skills or anger management or group work or lifestyle modif* or high intensity training or resettlement or throughcare) in ti,ab
56. (aftercare or after care or brief solution or brief intervention* or 12 step* or twelve step* or minnesota program* or needle exchange or nes) in ti,ab
57. (syringe exchange or dual diagnosis or narcotics anonymous or self help or selfhelp or outreach or bail support) in ti,ab
58. (arrest referral* or diversion or dtto or dttos or drug treatment or carat or carats or counseling assessment or combined orders) in ti,ab
59. (drug-free or drug free or peer support or evaluation* or urinalysis or drug testing or drug use screen* or rehabilitation or discrete service* or discrete program*) in ti,ab
60. (residential program* or residential scheme* or residential service*) in ti,ab
61. (asro or addressing substance or pasro or prisons addressing or acupuncture or shock or boot camp*) in ti,ab
62. (work ethic or drug education or tasc or treatment accountability) in ti,ab
63. #38 or #39 #or #40 or #41 or #42 or #43 or #44 or #45 or #46 or #47 or #48 or #49 or #50 or #51 or #52 or #53 or #54 or # 55 or #56 or #57 or #58 or #59 or #60 or #61 or #62
64. #37 and #63

Appendix 9. ASSIA search strategy

ASSIA search
1. remand
2. prison or prisoner or prisoners
3. offender*
4. criminal*

(*Continued*)

5. probation
6. court or courts
7. tribunal or tribunals
8. secure establishment*
9. secure facilit*
10. reoffend*
11. reincarcerat*
12. recidivi*
13. ex-offender*
14. jail or jails
15. incarcerat*
16. convict or convicts
17. convicted
18. felon or felons
19. conviction*
20. reconviction*
21. high security
22. law enforcement
23. Substance abuse* or substance misuse* or substance use*
24. drug dependanc* or drug abuse* or drug use*
25. drug misuse* or drug addict*
26. narcotics addict* narcotics use* narcotics misuse* narcotics abuse*
27. chemical dependanc*
28. opiates
29. heroin

(*Continued*)

30. crack
31. cocaine
32. amphetamines
33. cocaine
34. addiction
35. dependence disorder*
36. drug involved
37. Substance-related disorders
38. amphetamine-related disorders
39. cocaine-related disorders
40. marijuana abuse
41. opioid-related disorders
42. street drugs
43. designer drugs
44. 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22
45. 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43
46. 44 and 45

Appendix 10. HMIC search strategy

HMIC
1. remand in de
2. detention in de
3. prisoners in de
4. prisons in de

(*Continued*)

5. offenders in de
6. parole in de
7. probation in de
8. correctional system in de
9. courts in de
10. imprisonment in de
11. criminal justice in de
12. criminal proceedings in de
13. recidivism in de
14. jail in de
15. institutionalization (persons) in de
16. conviction/convictions in de
17. (remand or prison* or offender* or criminal* or probation or court or courts or secure establishment*) in ti,ab
18. (reoffend* or reincarcerat* or recidivi* or ex-offend* or jail or jails or incarcerat* or secure facilit* or convict* or revocation or inmate*) in ti,ab
19. #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18
20. substance abuse in de
21. explode “Drug-Abuse” in DE
22. “Drug-Injection” in DE
23. explode “Narcotic-Drugs” in DE
24. “Cocaine-” in DE
25. “Addiction-” in DE
26. explode “Psychedelic-Drugs” in DE
27. (substance abuse* or substance misuse* or substance use*) in ti,ab
28. (drug abuse* or drug misuse* or drug use*) in ti,ab

(*Continued*)

29. (drug dependenc* or drug addict* or narcotics abuse* or narcotics use* or narcotics misuse* or narcotics addict*) in ti,ab
30. (chemical dependenc* or opiate abuse* or opiate misuse* or opiate use* or opiate addict*) in ti,ab
31. (heroin abuse* or heroin misuse* or heroin use* or heroin addict*) in ti,ab
32. (crack abuse* or crack misuse* or crack use* or crack addict*) in ti,ab
33. (cocaine abuse* or cocaine misuse* or cocaine use* or cocaine addict*) in ti,ab
34. (amphetamine* abuse* or amphetamine* misuse* or amphetamine* use* or amphetamine* addict*) in ti,ab
35. (dependence disorder or drug involved) in ti,ab
36. #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 or #35
37. #19 and #36

Appendix 11. National Research Register search strategy

NRR search
1. REMAND
2. PRISON*
3. OFFENDER*
4. ((CRIMINAL* or PROBATION) or COURT) or COURTS)
5. (SECURE next ESTABLISHMENT*)
6. REOFFEND*
7. REINCARCERAT*
8. RECIDIV*
9. EXOFFEND*
10. ((JAIL or JAILS) or INCARCERAT*)
11. (SECURE next FACILIT*)
12. (((CONVICT* or REVOCATION) or INMATE*) OR (HIGH next SECURITY))

(*Continued*)

13. PRISONERS:ME
14. LAW-ENFORCEMENT:ME
15. JURISPRUDENCE:ME
16. CRIME:ME
17. #1 or #2 or #3 or #4 or #5 or #6 or #7 or #8 or #9 or #10
18. #11 or #12 or #13 or #14 or #15 or #16
19. #17 or #18
20. ((SUBSTANCE next ABUSE*) or (SUBSTANCE next MISUSE*)) OR (DRUG NEXT DEPENDENC*)) OR (DRUG NEXT ABUSE*)) OR (DRUG NEXT MISUSE*)) OR (DRUG NEXT USE*)) OR (DRUG NEXT ADDICTION))
21. ((NARCOTICS or (CHEMICAL next DEPENDENC*)) OR (OPIATE NEXT ADDICT*)) OR (OPIATE NEXT DEPENDENC*)) OR (OPIATE NEXT ABUSE*)) OR (OPIATE NEXT MISUSE*))
22. ((HEROIN next ADDICT*) or (HEROIN next DEPENDENC*)) OR (HEROIN NEXT MISUSE*)) OR (HEROIN NEXT ABUSE*))
23. ((CRACK next ADDICT*) or (CRACK next DEPENDENC*)) OR (CRACK NEXT MISUSE*)) OR (CRACK NEXT ABUSE*)) OR (CRACK NEXT USE*))
24. ((COCAINE next ADDICT*) or (COCAINE next DEPENDENC*)) OR (COCAINE NEXT MISUSE*)) OR (COCAINE NEXT ABUSE*)) OR (COCAINE NEXT USE*))
25. ((AMPHETAMINE* next ADDICT*) or (AMPHETAMINE* next DEPENDENC*)) OR (AMPHETAMINE* NEXT MISUSE*)) OR (AMPHETAMINE* NEXT ABUSE*)) OR (AMPHETAMINE* NEXT USE*))
26. ((ADDICTS or (DEPENDENCE next DISORDER)) OR (DRUG NEXT INVOLVED))
27. (SUBSTANCE-RELATED and DISORDERS:ME)
28. SUBSTANCE-RELATED-DISORDERS:ME
29. AMPHETAMINE-ABUSE:ME
30. COCAINE-ABUSE:ME
31. MARIJUANA-ABUSE:ME
32. OPIOID-RELATED-DISORDERS:ME
33. PHENCYCLIDINE-ABUSE:ME
34. SUBSTANCE-ABUSE-INTRAVENOUS:ME

(*Continued*)

35. SUBSTANCE-WITHDRAWAL-SYNDROME:ME
36. (STREET next DRUGS)
38. STREET-DRUGS:ME
39. DESIGNER-DRUGS:ME
40. NARCOTICS:ME
41. (COCAINE:ME or AMPHETAMINES:ME)
42. ANALGESICS-ADDICTIVE:ME
43. ANALGESICS-OPIOID:ME
44. PSYCHOTROPIC-DRUGS:ME
45. #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29 or #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39 or #40 or #41 or #42 or #43 or #44
46. 19 and 45

Appendix 12. PAIS search strategy

PAIS
1. ((reoffend* or reincarcerat* or recidivi* or ex-offend* or jail or jails or incarcerat* or secure facilit* or convict* or revocation or inmate*) in ti,ab)
2. ((remand or prison* or offender* or criminal* or probation or court or courts or secure establishment*) in ti,ab)
3. ((drug dependenc* or drug addict* or narcotics abuse* or narcotics use* or narcotics misuse* or narcotics addict*) in ti,ab)
4. ((drug abuse* or drug misuse* or drug use*) in ti,ab) or ((substance abuse* or substance misuse* or substance use*) in ti,ab)
5. ((detox* or methadone maintenance or methadone prescri* or antagonist prescri* or dimorphine or naltrexone) in ti,ab)
6. ((dependence disorder or drug involved) in ti,ab)
7. ((amphetamine* abuse* or amphetamine* misuse* or amphetamine* use* or amphetamine* addict*) in ti,ab)
8. ((cocaine abuse* or cocaine misuse* or cocaine use* or cocaine addict*) in ti,ab)
9. ((crack abuse* or crack misuse* or crack use* or crack addict*) in ti,ab)

(*Continued*)

10. ((heroin abuse* or heroin misuse* or heroin use* or heroin addict*) in ti,ab)
11. ((chemical dependenc* or opiate abuse* or opiate misuse* or opiate use* or opiate addict*) in ti,ab)
12. ((moral training or cognitive restructuring or assertiveness training or relaxation training) in ti,ab)
13. ((therapeutic communit* or motivational interview* or motivational enhance* or counseling or counselling or psychotherapy or cognitive behavi*) in ti,ab)
14. ((work ethic or drug education or tasc or treatment accountability) in ti,ab)
15. ((asro or addressing substance or pasro or prisons addressing or acupuncture or shock or boot camp*) in ti,ab)
16. ((arrest referral* or diversion or dtto or dttos or drug treatment or carat or carats or counseling assessment or combined orders) in ti,ab)
17. ((residential program* or residential scheme* or residential service*) in ti,ab)
18. ((syringe exchange or dual diagnosis or narcotics anonymous or self help or selfhelp or outreach or bail support) in ti,ab)
19. ((drug-free or drug free or peer support or evaluation* or urinalysis or drug testing or drug use screen* or rehabilitation or discrete service* or discrete program*) in ti,ab)
20. ((aftercare or after care or brief solution or brief intervention* or 12 step* or twelve step* or minnesota program* or needle exchange or nes) in ti,ab)
21. ((trigger* or coping skills or anger management or group work or lifestyle modif* or high intensity training or resettlement or throughcare) in ti,ab)
22. ((self management or interpersonal skills or social skills or basic skills or relapse prevent* or prevent* relapse or craving reduc* or reduc* craving) in ti,ab)
24. ((rational-emotive or rational emotive or family relationship therap* or community reinforcement or self monitoring or goal setting or self control training) in ti,ab)
25. #1 or #2
26. #3 or #4 or #5 or #6 or #7 or #8 or 9 or #10 or #11
27. #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24
28. 25 and #26 and #27

Appendix 13. Criminal Justice Abstracts search strategy

CJA search
1. (substance abuse* or substance misuse* or substance use or substance users) in ti,ab,de
2. substance related in ti,ab,de
3. drug related in ti,ab,de
4. (drug dependenc* or drug abuse* or drug misuse* or drug use or drug users or drug addiction) in ti,ab,de
5. (narcotics use or narcotics users or narcotics abuse* or narcotics misuse* or chemical dependenc*) in ti,ab,de
6. (opiates or heroin or crack or cocaine or amphetamines or addict or addicts or addicted or dependence disorder* or drug involved) in ti,ab,de
7. (designer drugs or street drugs or polydrug misuse* or polydrug abuse*) in ti,ab,de
8. #1 or #2 or #3 or #4 or #5 or #6 or #7
9. ((antagonist near prescri*) or diamorphine or naltrexone) in ti,ab,de
10(therapeutic communit* or (motivational near interview*)) in ti,ab,de
11. (motivational near enhancement) in ti,ab,de
12. (counselling or counseling) in ti,ab,de
13. (psychotherap* or cognitive behav* or behav* therap* or (moral near training)) in ti,ab,de
14. (cognitive restructuring or (assertiveness near train*) or relaxation training) in ti,ab,de
15. (rational emotive or family relationship therap*) in ti,ab,de
16. (community reinforcement or self monitoring or goal setting or goalsetting) in ti,ab,de
17. (self control near training) in ti,ab,de
18. (self management) in ti,ab,de
19. (interpersonal skills near training) in ti,ab,de
20. ((social skills or basic skills) near training) in ti,ab,de
21. ((relapse near prevent*) or (craving near reduc*)) in ti,ab,de
22. (trigger* or coping skills or anger management or group work or (lifestyle near modif*)) in ti,ab,de

(*Continued*)

23. (high intensity training or resettlement or throughcare or aftercare or after care) in ti,ab,de
24. (brief solution* or brief intervention*) in ti,ab,de
25. (minnesota in ti,ab) in ti,ab,de
26. (12 step* or twelve step*) in ti,ab,de
27. (needle exchange or nes or syringe exchange) in ti,ab,de
28. (dual diagnosis or narcotics anonymous or self help or selfhelp or outreach) in ti,ab,de
29. (bail support or bail program* or arrest referral* or diversion or dtto* or drug treatment) in ti,ab,de
30. (carat or counselling assessment or counseling assessment) in ti,ab,de
31. (combined order* or drug free wing* or drug free environment* or peer support) in ti,ab,de
32. (user evaluations or urinalys* or urinanalys* or drug test* or rehab* or discrete service*) in ti,ab,de
33. (discrete program* or residential program* or residential scheme*) in ti,ab,de
34. (asro or addressing substance*) in ti,ab,de
35. (pasro or prisons addressing) in ti,ab,de
36. (acupuncture or shock or boot camp or boot camps or work ethic camp*) in ti,ab,de
37. (drug education or tasc or treatment accountability) in ti,ab,de
38. (detoxification or detox or methadone maintenance or (methadone near prescri*)) in ti,ab,de
39. #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 or #23 or #24 or #25 or #26 or #27 or #28 or #29
40. #30 or #31 or #32 or #33 or #34 or #35 or #36 or #37 or #38 or #39
41. #39 or #40
42. #8 and #41
9. #42 and (PY > "1979")

Appendix 14. Criteria for 'Risk of bias' assessment

Item	Judgement	Description
1. Random sequence generation (selection bias)	Low risk	The investigators describe a random component in the sequence generation process such as: random number table; computer random number generator; coin tossing; shuffling cards or envelopes; throwing dice; drawing of lots; minimisation
	High risk	The investigators describe a non-random component in the sequence generation process such as: odd or even date of birth; date (or day) of admission; hospital or clinic record number; alternation; judgement of the clinician; results of a laboratory test or a series of tests; availability of the intervention
	Unclear risk	Insufficient information about the sequence generation process to permit judgement of low or high risk
2. Allocation concealment (selection bias)	Low risk	Investigators enrolling participants could not foresee assignment because one of the following, or an equivalent method, was used to conceal allocation: central allocation (including telephone, web-based, and pharmacy-controlled randomisation); sequentially numbered drug containers of identical appearance; sequentially numbered, opaque, sealed envelopes
	High risk	Investigators enrolling participants could possibly foresee assignments because one of the following methods was used: open random allocation schedule (e.g. a list of random numbers); assignment envelopes without appropriate safeguards (e.g. if envelopes were unsealed or non opaque or not sequentially numbered); alternation or rotation; date of birth; case record number; any other explicitly unconcealed procedure
	Unclear risk	Insufficient information to permit judgement of low or high risk. This is usually the case if the method of concealment is not described or not described in sufficient detail to allow a definite judgement
3. Blinding of participants and providers (performance bias): objective outcomes	Low risk	No blinding or incomplete blinding, but the review authors judge that the outcome is not likely to be influenced by lack of blinding; blinding of participants and key study personnel ensured, and unlikely that the blinding could have been broken
4. Blinding of participants and providers (performance bias): subjective outcomes	Low risk	Blinding of participants and providers and unlikely that the blinding could have been broken
	High risk	No blinding or incomplete blinding, and the outcome is likely to be influenced by lack of blinding; blinding of key study participants and personnel attempted, but likely that the blinding could have been broken, and the outcome is likely to

(*Continued*)

		be influenced by lack of blinding
	Unclear risk	Insufficient information to permit judgement of low or high risk
5. Blinding of outcome assessor (detection bias): objective outcomes	Low risk	No blinding of outcome assessment, but the review authors judge that the outcome measurement is not likely to be influenced by lack of blinding; blinding of outcome assessment ensured, and unlikely that the blinding could have been broken
6.Blinding of outcome assessor (detection bias): subjective outcomes	Low risk	No blinding of outcome assessment, but the review authors judge that the outcome measurement is not likely to be influenced by lack of blinding; blinding of outcome assessment ensured, and unlikely that the blinding could have been broken
	High risk	No blinding of outcome assessment, and the outcome measurement is likely to be influenced by lack of blinding; blinding of outcome assessment, but likely that the blinding could have been broken, and the outcome measurement is likely to be influenced by lack of blinding
	Unclear risk	Insufficient information to permit judgement of low or high risk
7. Incomplete outcome data (attrition bias) for all outcomes except retention in treatment or drop out	Low risk	No missing outcome data; Reasons for missing outcome data unlikely to be related to true outcome (for survival data, censoring unlikely to be introducing bias); Missing outcome data balanced in numbers across intervention groups, with similar reasons for missing data across groups; For dichotomous outcome data, the proportion of missing outcomes compared with observed event risk not enough to have a clinically relevant impact on the intervention effect estimate; For continuous outcome data, plausible effect size (difference in means or standardised difference in means) among missing outcomes not enough to have a clinically relevant impact on observed effect size; Missing data have been imputed using appropriate methods; All randomised participants are reported/analysed in the group they were allocated to by randomisation irrespective of non-compliance and co-interventions (intention-to-treat)
	High risk	Reason for missing outcome data likely to be related to true outcome, with either imbalance in numbers or reasons for missing data across intervention groups; For dichotomous outcome data, the proportion of missing outcomes compared with observed event risk enough to induce clinically relevant bias in intervention effect estimate; For continuous outcome data, plausible effect size (difference in means or standardised difference in means) among missing outcomes enough to induce clinically relevant bias in observed effect size; 'As-treated' analysis done with substantial departure of the intervention received from that assigned at randomisation;

(*Continued*)

	Unclear risk	Insufficient information to permit judgement of low or high risk (e.g. number randomised not stated, no reasons for missing data provided; number of drop out not reported for each group)
8. Selective reporting (reporting bias)	Low risk	The study protocol is available and all of the study's prespecified (primary and secondary) outcomes that are of interest in the review have been reported in the prespecified way; The study protocol is not available but it is clear that the published reports include all expected outcomes, including those that were prespecified (convincing text of this nature may be uncommon)
	High risk	Not all of the study's prespecified primary outcomes have been reported; One or more primary outcomes is reported using measurements, analysis methods or subsets of the data (e.g. subscales) that were not prespecified; One or more reported primary outcomes were not prespecified (unless clear justification for their reporting is provided, such as an unexpected adverse effect); One or more outcomes of interest in the review are reported incompletely so that they cannot be entered in a meta-analysis; The study report fails to include results for a key outcome that would be expected to have been reported for such a study
	Unclear risk	Insufficient information to permit judgement of low or high risk
9. Other bias	Low risk	Evidence to suggest other problems identified with the study which might threaten the validity of the random allocation, attrition or data integrity and results of the trial
	High risk	Evidence to suggest that the trial might be underpowered/problems with the random allocation process leading to potential self selection bias/ issues of analysis not conducted using intention-to-treat analysis or evidence of missing data. Concerns of attrition and measurement error including reliance on self reported measures
	Unclear risk	Insufficient information to permit judgement of low or high risk

WHAT'S NEW

Last assessed as up-to-date: 31 May 2014.

Date	Event	Description
18 May 2015	New citation required and conclusions have changed	Conclusions quite different for some outcomes
11 July 2014	New search has been performed	This update represents an additional three trials; bringing the total number of trials in this review to nine. The search strategies are complete up until May 2014

HISTORY

Review first published: Issue 1, 2014

Date	Event	Description
24 January 2014	Amended	Plain language summary title correction
28 May 2013	New search has been performed	This review has been updated using searches to 21st March 2013. The review represents one in a family of four reviews. The other three reviews cover pharmacological and non- pharmacological interventions for drug using offenders and interventions for drug-using offenders with co-occurring mental illness. This review on drug-using female offenders concerns a total of 11 new randomised controlled trials, representing 1236 participants
2 March 2012	New search has been performed	The updated edit of this review produced a new document with additional findings with searches up to 11th November 2011. Five new authors have been added to this version of the review. These include Steven Duffy, Rachael McCool, Matthew Neilson, Catherine Hewitt and Marrissa Martyn-St James
1 July 2011	Amended	Converted to new review format
8 June 2011	New search has been performed	Review has been substantially updated
19 May 2006	New citation required and conclusions have changed	Substantive amendment

CONTRIBUTIONS OF AUTHORS

Searches were constructed and conducted by DF. Three independent review authors inspected the search hits by reading the titles and abstracts (AEP, MN, RW). Each potentially relevant study located in the search was obtained as a full article and was independently assessed for inclusion by two review authors. In the case of discordance, a third independent review author arbitrated. Where it was not possible to evaluate the study because of language problems or missing information, the studies were classified as 'translation/ information required to determine decision' until a translation or further details were provided. Four review authors conducted data extraction for the papers (MM-ST, JMG, RW, and MN), and review author CG conducted data extraction and a narrative summary of the cost-effectiveness studies. The results were compiled and organised by MM-ST, MN, CH, RW, and AEP; all seven authors contributed towards the final draft text.

DECLARATIONS OF INTEREST

Amanda E Perry have no interests to declare relating to this work

Matthew Neilson have no interests to declare relating to this work

Marrissa Martyn-St James have no interests to declare relating to this work

Julie M Glanville have no interests to declare relating to this work

Dave Fox have no interests to declare relating to this work

Rebecca Woodhouse have no interests to declare relating to this work

Catherine Hewitt have no interests to declare relating to this work

SOURCES OF SUPPORT

Internal sources

- Reviewer from Cochrane Drugs and Alcohol Group, Other.

A reviewer from the Drugs and Alcohol Group provided the researchers with the results of a search strategy for three databases

External sources

- The UK Department of Health funded the original review, UK.

DIFFERENCES BETWEEN PROTOCOL AND REVIEW

The original review Perry 2006 has been split up into different reviews and so there is no dedicated protocol for this particular review

INDEX TERMS

Medical Subject Headings (MeSH)

Buprenorphine [therapeutic use]; Case Management; Cognitive Therapy; Criminals; Law Enforcement; Narcotic Antagonists [therapeutic use]; Randomized Controlled Trials as Topic; Sex Factors; Substance-Related Disorders [*therapy]; Therapeutic Community

MeSH check words

Female; Humans