

**Evelyn Harvey, Anthony Shakeshaft,  
Kate Hetherington, Claudia Sannibale &  
Richard Mattick**

**Methodological Review:  
Outcome Studies of Diversion  
and Aftercare Programs  
for Adult Drug-Involved Offenders**

**NDARC Technical Report No. 259**



**METHODOLOGICAL REVIEW:  
OUTCOME STUDIES OF DIVERSION  
AND AFTERCARE PROGRAMS  
FOR ADULT DRUG-INVOLVED  
OFFENDERS**

**Prepared for Phase 1 of the  
Magistrates Early Referral Into Treatment (MERIT)  
Aftercare Project**

**Evelyn Harvey, Anthony Shakeshaft,  
Kate Hetherington, Claudia Sannibale &  
Richard Mattick**

**Technical Report Number 259**

**ISBN: 0 7334 2373 6**

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UNIVERSITY OF NEW SOUTH WALES, SYDNEY, 2006**

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## **ACKNOWLEDGEMENTS**

We gratefully acknowledge the financial assistance of the Crime Prevention Division of the NSW Attorney General's Department, which was provided through funding from the Commonwealth/NSW COAG Illicit Drug Diversion Initiative. We also wish to acknowledge Bruce Flaherty and Jane Bolitho of the NSW Attorney General's Department for their valuable suggestions during the preparation of this review. Finally, our thanks go to Eva Congreve of the National Drug and Alcohol Research Centre for her assistance in sourcing materials for the review.

## EXECUTIVE SUMMARY

The primary purpose of this review was to identify and describe systematic outcome studies that have evaluated the efficacy of diversion and aftercare schemes for adult drug-involved offenders, in order to provide an objective context for considering the likely value of implementing and evaluating an aftercare component to existing diversion programs, such as the New South Wales' Magistrates Early Referral Into Treatment (MERIT) scheme.

Major methodological issues in existing studies are:

- There are relatively few systematic evaluations, particularly within the literature on aftercare for drug-related offenders.
- The majority of studies were non-randomised evaluations.
- Few studies reported long-term outcomes following treatment.
- Specific detail was lacking in descriptions of eligibility criteria, sample characteristics, data sources, outcome measures and follow-up time-frames.

Major outcome findings were:

- There is tentative support for the efficacy of diversion and aftercare schemes for reductions in drug use and recidivism among offenders.
- Aspects of good practice include adequate client monitoring, clearly structured programs, inclusion of a variety of services in addition to drug use programs, providing clients with limited options for aftercare from which they can select their preferred model, and tailoring model types to specific clients.

Given the major findings of this review and the relative recency of diversion programs, there is clear scope for persisting with them, devising a best practice aftercare program and conducting a more methodologically rigorous evaluation trial than has been reported to date. Practical recommendations are provided for how this potential might be realised, within the context of the existing MERIT program in NSW.

# INTRODUCTION

## **Diversions strategies**

Diversions strategies aim to redirect drug-involved offenders away from the criminal justice system and into treatment. Such interventions endeavour to improve drug use and crime outcomes both for the offenders who commit drug-related crimes and for the community at large (ADCA, 1996). Diversion programs comprise interventions that are appropriate and proportionate to the gravity and circumstances of the offence, as well as the personal circumstances of the offender (Spooner, Hall & Mattick, 2001). They are intended to: (a) treat substance abusers; (b) provide alternative and cost-efficient means of applying punishment for breaking the law; and (c) prevent re-offence (O'Callaghan, Sondregger & Klag, 2004). Opportunities for diversion into treatment arise throughout the criminal justice process: pre-arrest (before charges are laid); pre-trial (prior to the matter being heard at court); pre-conviction; at sentencing; and pre-release (for example, concurrent with parole) (Spooner, Hall & Mattick, 2001).

Despite the interest in diversionary practices, the emergence of an empirical evaluation literature in this field has been slow (Bull, 2005; Wild et al., 2002). This slow growth has been exacerbated by methodological problems, including: weak study designs with no (or poor) comparison groups; small sample sizes; and the follow-up of successful (but not unsuccessful) participants (Lawrence & Freeman, 2002; Spooner et al., 2001).

To date, the most commonly evaluated form of diversion appears to be drug treatment courts. These courts offer a specialised judicial avenue for drug-involved offenders and are a mechanism for providing long-term, court-supervised treatment (Belenko, 2002). Drug courts have operated in the United States for approximately 15 years but have been introduced into the Australian, Scottish and Irish criminal justice systems only more recently (Bean, 2002; Makkai, 2002; Taplin, 2002). Like all diversion strategies, drug courts can operate on differing models of diversion, ranging from pre-plea processing through to post-conviction arrangements (Spooner et al., 2001; U.S. Department of Health and Human Services, 2005). Drug courts, too, have been subjected to relatively little rigorous evaluation research (Guydish et al., 2001; Harrison & Scarpitti, 2002). Belenko (1998; 1999; 2001) has produced a series of critical reviews on the current evidence for the efficacy of US drug treatment courts. These reviews encompassed juvenile and adult drug courts, published and unpublished evaluations, as well as process and outcome studies. Results suggested that satisfaction with drug court models is high, even though graduation rates from drug court programs tend to average around 50%. Drug use and recidivism are typically reduced, both in-program and post-program, although the size of the effect varies. Drug court costs are generally lower than standard judicial processing.

However, Belenko qualified his summary of the evaluation literature with a number of important methodological criticisms: the lack of randomised trials; the brevity of follow-up periods; and the lack of precision in describing data sources, measurement tools and time frames for data collection. He also identified the bias inherent in focusing on program graduates, rather than all participants, when reporting on program efficacy.

## **Magistrates Early Referral Into Treatment program**

Across Australia, a number of different diversionary and drug court strategies are currently in operation. One particular diversion project, trialled in Lismore in 2000 and rolled out to 16 of the 17 health areas across New South Wales in 2002 and 2003, is the Magistrates Early Referral Into Treatment (MERIT) program. MERIT is a voluntary diversion scheme for adult drug-involved defendants who come before Local Courts. The MERIT scheme operates pre-plea, as part of the bail process. The program is designed to run for 12 weeks, divided into four stages: assessment and program entry (two weeks); initial treatment (four weeks); ongoing treatment and stabilisation (four weeks); and program completion and exit (two weeks). Successful completion is reported to the Local Court where magistrates should regard this as a matter of some weight in defendants' favour at sentencing. Unsuccessful completion of the program ought not to carry weight in sentencing because participation is voluntary (Chief Magistrate of New South Wales, 2002; Judicial Commission of NSW, 2004).

Annual reports have indicated that between 50 – 60% of offenders accepted into MERIT have successfully completed their treatment programs (Attorney General's Department of New South Wales, 2002; 2003). The vast majority of Local Court magistrates have expressed satisfaction with the program (Judicial Commission of New South Wales, 2004). Given positive findings from evaluations completed to date (e.g. Northern Rivers Department of Rural Health, 2003; Reilly et al., 2002), there is current interest in expanding MERIT to include an aftercare component (Legislative Council Standing Committee on Social Issues, 2004).

## **Aftercare strategies**

Due to the high rates of relapse following drug abuse treatment, substance abusers are often encouraged to participate in forms of lower intensity continuing care or supervision, also known as aftercare, upon completion of their primary phase of treatment. Aftercare strategies comprise a diverse range of interventions aimed at sustaining clients' contact with treatment services while developing or strengthening their skills for post-treatment life (Brown et al., 2004; Greenberg et al., 2002). The primary goal of aftercare is to maintain gains made in the initial treatment phase and prevent relapse, chiefly through retaining clients in supervised care. As with the literature on diversionary practices, the extent to which aftercare increases retention or improves outcomes is not yet clear. For example, McKay (2001) published a review of the evaluation literature on aftercare, in which he drew attention to the paucity of empirical data on the clinical efficacy or cost-effectiveness of aftercare strategies. Of the evaluations that *had* been conducted at the time of his review, the majority examined cognitive-behavioural relapse prevention, coping skills training or other addictions counselling. The small number of controlled studies identified by McKay failed to provide consistent support for the efficacy of aftercare interventions. McKay called for further methodologically rigorous evaluations and suggested a range of methodological improvements: categorisation of the types of aftercare; operationalisation and assessment of the different stages of care; separation of treatment effects from motivation effects; and determination of the relative contribution of each level of care (i.e. primary versus continuing components).

## **AIMS OF THIS METHODOLOGICAL REVIEW**

Prior to committing to an expansion of the MERIT scheme, there is a clear need to consider the evaluation literature on previous and existing aftercare programs in order to identify elements of a best practice model, in terms of both cost-effective outcomes and retention in treatment. Similarly, there is value in re-examining the efficacy of other pre-detention diversion strategies (i.e. those similar to MERIT) in order to provide a context within which the cost-effectiveness of MERIT can be compared. This might include rates of participation and graduation, as well as primary indicators of efficacy, such as reductions in drug use and crime.

In order to broaden the scope of previous reviews that have focused on drug courts (Belenko, 1998; 1999; 2001), and to provide an updated review of the literature on aftercare strategies (McKay, 2001), this methodological review has four main aims. First, to identify systematic outcome studies in the international literature that have evaluated the effectiveness of pre-detention diversion and aftercare programs for adult drug-involved offenders. Second, to describe and critique methodological aspects of these studies, including their study design, sample characteristics, data collection (outcome measures, follow-up points), intervention characteristics and apparent program efficacy. Third, to determine what is good practice (based on the best evidence available) in drug- and alcohol-based diversion programs – including the strength of current evidence supporting aftercare components. Fourth, to determine the characteristics of a feasible aftercare model for the Australian context.

## METHOD

As summarised in Figure 1 (see appendix), relevant studies were identified and classified as follows.

### Search strategy

The following electronic databases were searched separately: PsycINFO, Ovid Medline, Web of Science, Scopus, Sociological Abstracts and AustHEALTH. Given the nascent character of the evaluation literature in this field (Bull, 2005; Belenko, 2001), all searches were limited to papers published between 1995 and 2005. For PsycINFO, the subject headings and key words<sup>1</sup> "Drug Abuse and (Aftercare or *diversion*)" retrieved 137 articles. Medline was searched using the terms "Substance-Related Disorders and (Aftercare or *diversion*)", resulting in 272 articles. For Web of Science, the terms "(*drug abuse* or *substance abuse*) and (*diversion* or *aftercare*)" retrieved 215 articles. This latter search was then repeated for Scopus, Sociological Abstracts and AustHEALTH, retrieving 223, 49 and 154 citations, respectively. The results of all six searches were then combined and duplicates were removed, resulting in a total of 675 articles.

At this stage, all 675 abstracts were reviewed and irrelevant citations were excluded as follows. Papers that focused solely on drug treatment issues (without specific reference to diversion or aftercare strategies) were excluded, removing 212 citations. Further exclusions involved papers focused on issues of policy, government or education and training (n = 97), mental health issues alone (n = 65), pharmaceutical diversion (n = 51), substance abuse issues alone (n = 47), juvenile justice (n = 36), medicine or disease (n = 34), treatment of addicted health-workers (n = 13), other types of crime (n = 12), instrument validation (n = 8) and domestic violence (n = 4). Papers that described the same dataset as a primary article (amounting to duplication) were also removed, excluding a further ten citations. This process reduced the number of relevant citations to 86.

In addition to the electronic searches, the reference lists of the most recent outcome studies were checked manually for relevant papers. This process, together with discussion and correspondence, resulted in an additional thirty-eight articles, bringing the total to 124 articles.

### Classification of studies

These 124 articles were then examined by title and abstract, and classified in a two step process.

#### Step 1 – Classification by article type

The first author (EH) performed the classifications. Ambiguous articles were classified in consultation with the second author (AS). First, papers were divided into three groups: (a) critical reviews (n = 4); (b) commentaries or general reviews of the topic (n = 38) and (c) evaluations of diversion or aftercare programs (n = 82).

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<sup>1</sup>Subject headings are denoted using capital letters. Key words are indicated in italics.

## **Step 2 – Application of exclusion criteria to the outcome studies**

The 82 outcome studies were examined manually by the first two authors (EH and AS). Of these, 18 were excluded because they did not include a comparison group, making interpretation of their findings too imprecise to be of practical value. In addition, 13 evaluations of prison-based programs were excluded in order to focus the review on pre-detention strategies.

## **Summary: results of the literature search**

Of the 82 outcome studies identified, a total of 31 studies were excluded because they lacked comparison groups or were evaluations of prison-based programs. Among the remaining 51 articles, 28 primary outcome studies were identified and examined for the methodological review. Of these, 19 were evaluations of diversion programs and nine examined aftercare programs. The remaining 23 articles, all of which focused on process issues relating to participation and retention in treatment, were summarised separately.

## **Methodological critique of the outcome studies**

The information extracted from each paper related to a number of methodological issues including study design (i.e. randomised versus non-randomised, prospective versus retrospective), sample description, intervention type, data collection procedures, and process and outcome measures. Relevant information was extracted from all articles by the first author (EH). Ambiguous information was recorded and subsequently discussed and summarised in consultation with co-authors.

## RESULTS

### 1. Diversion studies

The 19 diversion outcome studies described in this section are summarised in Table 1 (see appendix).

#### Judicial stage

The 19 evaluations of diversion strategies represented a combination of two separate but functionally similar approaches to the rehabilitation of drug-involved offenders. Ten (53%) were evaluations of traditional ‘diversion’ programs (i.e. externally-operated treatment services designed to receive drug-involved offenders being diverted from regular prosecution). Nine (47%) were evaluations of ‘drug courts’ (i.e. specialised courts designed specifically to provide a multi-disciplinary approach to the treatment and adjudication of drug-involved offenders).

Reflecting the variety of points at which diversion into treatment can occur, the 19 studies evaluated programs operating at different stages within the judicial process. Five (27%) of the studies [1 – 5] evaluated programs operating at more than one stage in the judicial process, typically because they were multi-program evaluations that included clients at both pre-trial and post-trial (but typically pre-sentencing) stages. Four of the studies (21%) evaluated treatment programs specifically implemented at the pre-trial stage [6, 7, 10, 11]. Of these studies, two explicitly described pre-plea programs [6, 7] and two did not specify whether a plea was required before entry into treatment [10, 11]. Five (27%) of the studies evaluated pre-conviction treatment programs [13 – 17]. The remaining five (27%) studies evaluated post-conviction programs [8, 9, 12, 18, 19].

#### Study design

To meet inclusion criteria for the review, each study required a comparison group. However, only three (16%) of the 19 studies used random allocation to assign participants to treatment or control conditions [8, 18, 19]. One study used a combination of both random and non-random allocation [1]; it encompassed multiple programs and randomisation was not feasible at all sites.

The remaining 15 studies were non-randomised. Of these, eight (53%) used a comparison group of offenders who were deemed eligible but were not diverted to treatment [2, 3, 4, 5, 10, 11, 14, 15]. Five studies (33%) used a comparison group of clients who were referred but either refused to participate or were deemed ineligible for the program [7, 9, 12, 13, 16]. Two studies (13%), both of which evaluated drug court programs, compared their drug court sample to an alternative, so-called diversion scheme (e.g. drug education alone), as well as to a non-treatment group facing regular prosecution [6, 17].

Sixteen (85%) of the studies were prospective evaluations. A retrospective design was used in three (16%) of the studies [4, 11, 17].

## **Type of intervention**

Very few articles gave detailed descriptions of the treatment provided to offenders. Five (27%) either did not specify the nature of the intervention or simply described it as a combination of approaches across sites [2, 3, 5, 11, 15]. Eight (42%) studies reported on a mix of different treatment options that typically included inpatient services (e.g. detoxification), residential programs or outpatient services (e.g. counselling or methadone programs) [6, 7, 8, 9, 10, 12, 13, 17]. Four (21%) reported on outpatient treatments alone [1, 4, 18, 19]. Two studies (11%) specifically evaluated residential programs [14, 16].

Half the studies explicitly reported the duration of the program being evaluated. Among these studies, program length varied widely, ranging from 6 – 12 months to 18 – 24 months.

## **Sample characteristics**

Fifteen (79%) of the studies were conducted in the United States. The other four (21%) were Australian evaluations [7, 8, 9, 12]. The total number of programs evaluated in each study ranged from one to eight, with a median of one program per study. Total sample sizes ranged from 156 to 1,966 with a mean of 601 and a median of 399 participants per evaluation.

Given the scope of this review, all studies selected for critique included adult offenders with substance abuse problems. Each of the 19 studies specifically targeted illicit drug users. Where specified, these drugs were usually cocaine (or crack cocaine), heroin and marijuana. Seven studies (37%) also included alcohol-related offenders [1, 2, 3, 5, 15, 18, 19]. Of these articles, only one [15] presented data on primary substance abuse diagnosis; 8.6% of the sample met criteria for alcohol abuse. Other studies in this group reported figures on usage history rather than indexing participants by primary substance abuse problem [1, 2, 5]. Six articles failed to specify whether or not alcohol users met inclusion criteria [4, 7, 10, 11, 14, 16]. None of the studies were specific to alcohol-related offenders alone.

Seventeen (90%) articles [excepting 3 and 14] reported the proportion of the sample that was male, ranging from 42% to 90%, with a mean of 73%. Sixteen (85%) of the articles [excepting 3, 5 and 14] also reported the average age of participants, which ranged from 25 to 36 across studies, with a mean of 31 years.

Some of the articles reported the ethnicity of participants. Ten (53%) of the papers provided the percentage of White (Caucasian) participants, which ranged from 8% to 57%, with a mean of 40%. Given that most of the studies (79%) were conducted in the USA, other common ethnicities were African American and Hispanic.

The majority of studies (13 or 69%) evaluated programs that accepted only non-violent offenders. Five (27%) of the articles presented data on programs that aimed to treat dually-diagnosed offenders (i.e. substance abusers with at least one other psychological diagnosis) [2, 3, 5, 11, 15]. One article specified that program participants were low-level offenders [15] and one specified that its clients were high-risk offenders [14] – that is, clients with prior offences who were at greater risk of recidivism.

## Data collection

*Collection methods:* All 19 studies (100%) obtained at least part of their data through official records. Such sources included: probation records; re-arrest statistics; incarceration figures; and results of drug testing. Seven of the studies (37%) also collected self-report data in order to comment on outcomes such as drug use, criminal activity and psychological functioning [1, 2, 3, 5, 10, 15, 18]. Of these, five used existing surveys or scales and two provided no clear evidence of utilising established measurement tools [1, 10]. All but one of these articles [3] reported attrition rates (i.e. the percentage of patients successfully followed-up relative to those lost to follow-up); the percentage of participants successfully located across these six studies ranged from 67% to 80%, with a mean of 74%.

Of the 16 prospective studies, seven (37%) conducted follow-up data collection through interviews with the participants. Six (32%) obtained data within 12 months after baseline and one (5%) reported on data collected at 36 months following baseline [10]. This latter paper presented 3-year outcomes of an ongoing evaluation from which 1-year and 2-year data were published separately (these papers were excluded for the sake of parsimony). The remaining nine studies (48%) did not conduct follow-up interviews; they focused mainly on recidivism data obtained through official records. The periods examined ranged from three months to 36 months, although three papers failed to quantify the period used to calculate these rates of re-offending. Of the three retrospective studies, two examined recidivism during a 12-month period following program entry. The other retrospective study examined a 30-month period.

*Process measures:* Given that the aim of this review was to identify and critique outcome studies, rather than process evaluations, it is not surprising that only three (16%) of the articles incorporated process measures other than completion rates [7, 9, 12]. These were interviews with key informants such as magistrates, police and treating clinicians [7] or interviews with the clients themselves [9, 12]. One publication [8] did not report specifically on process outcomes because these were published in separate documents which did not meet criteria for inclusion in the present review.

*Outcome measures:* Sixteen (85%) studies reported solely on primary outcome measures such as recidivism or drug use. All papers included some measure of criminal activity or recidivism in order to evaluate program efficacy. All studies but one, which relied on self-report data [18], examined recidivism through official records such as re-arrest statistics. One evaluation used days of incarceration to measure recidivism during a retrospective follow-up period [11].

Substance use was the next most commonly reported indicator of program efficacy. Nine studies (48%) included drug use among their outcome variables. Of these, only a third used objective indicators of usage, such as urinalysis [4, 10, 19]. The remaining two-thirds relied on self-report data. In addition, five studies (27%) reported on aspects of psychological functioning at follow-up [2, 3, 5, 15, 18].

## Program efficacy

*Retention and graduation:* Relatively few papers reported the number of participants who were either continuing in, or had graduated from, treatment at the time the evaluation was completed. Only seven (37%) of the articles presented such figures [6, 7, 8, 9, 14, 16, 19]. Among those that did, the rate of ongoing involvement or completion ranged from 52% to

68%, with a mean of 59%. Only four of these seven studies reported graduation rates in isolation; three combined program graduates with those clients who were ongoing in treatment at the time of evaluation. One further study [12] reported that 17% of participants had completed, but included clients who had absconded with program continuers in the same statistic (40%), making it impossible to determine how many were ongoing at the time of evaluation.

*Recidivism:* In general, the majority of studies reported results that supported the use of diversionary practices for the reduction of criminal activity among drug-involved offenders. Fourteen (74%) of the articles reported a reduction in recidivism among treatment participants over the follow-up period. One of these papers [19] reported only tentative support, in that program participants committed less technical violations during the follow-up period than those who were untreated. Among these 14 papers, one qualified support for diversion by reporting that the reduction in recidivism was best for high-risk offenders (i.e. those with more prior offences or who had committed more serious crimes) [11]. Another study found more favourable reductions in recidivism among participants mandated to treatment relative to those whose participation in treatment was not coerced. However, both groups out-performed a non-treatment comparison group in terms of re-offending [15]. Finally, five studies (27%) failed to find any significant differences in recidivism between groups [1, 2, 5, 7, 13].

*Drug use:* Fewer studies examined the impact of treatment on drug use than on recidivism. Of the nine studies (48%) that did evaluate drug use outcomes, six provided support for diversionary strategies. As above, one article qualified this support with reference to high-risk offenders showing the greatest improvements in drug use [11], and another with the finding that mandated clients achieved better drug-use outcomes than non-mandated clients [15]. Three studies (16%) reported no significant differences in drug use between groups [2, 5, 19].

*Psychological functioning:* Five studies (27%) reported on aspects of psychological functioning as part of their outcome assessment. Of these, four found no significant differences between groups [2, 3, 5, 18]. Variables that failed to differ between groups included quality of life ratings and level of insight into one's psychological problems. The remaining study provided limited evidence for improvements in psychological status [15].

*Effect sizes:* Only one (5%) study reported an effect size. It was an evaluation of a single-county drug court program [13]. Based on Cohen's guidelines for the interpretation of effect sizes (e.g. Cohen, 1992), the positive effects of this program should be considered small at best.

*Programs most comparable to MERIT:* Results from the seven studies that evaluated programs most similar to MERIT, were largely supportive of diversionary practices:

- six found in favour of treatment for reductions in recidivism [6, 8, 9, 10, 11, 12] and one detected no significant difference in recidivism between groups [7];
- findings from the only study to examine drug use outcomes indicated that diversion clients reported less drug use at follow-up than did those who faced regular prosecution [10]; and
- results of the one study that conducted a cost-effectiveness evaluation indicated that participation in a drug court program reduced service costs relative to standard adjudication [8].

## **2. Aftercare studies**

The 9 outcome studies described in this section are summarised in Table 2 (see appendix).

### **Judicial stage**

Only one of the outcome studies meeting criteria for this review evaluated an aftercare program for drug-involved offenders [20]. The other eight studies examined aftercare programs designed for substance users in the general community. In the one evaluation that was specific to drug-involved offenders, clients comprised a mix of probationers and parolees exiting six months of mandated outpatient treatment and entering a stand-alone aftercare program (i.e. services that were independent of the primary arm of treatment). Other evaluations of aftercare strategies for drug-involved offenders were identified, but all were prison-based or post-release programs (see, for example: Hiller et al., 1999; Inciardi et al., 1997, 2004; Knight et al., 1997; McCollister et al., 2003a, 2003b, 2004; Prendergast et al., 2004; Wexler et al., 1999). These evaluations were not included in the current review given their likely lack of relevance to the pre-plea MERIT scheme.

### **Study design**

The majority of studies compared two contrasting interventions. Of the seven (77%) evaluations that took this approach, three compared different types of individualised services [21, 26, 27] and four compared group versus individualised services [22, 24, 25, 28]. Only two studies (22%) evaluated the efficacy of aftercare relative to non-treatment conditions [20, 23].

Five of the studies (55%) used random allocation of participants to conditions [21, 24, 25, 27, 28]. Three (33%) were non-randomised [22, 23, 26]. One study used a combination of both random and non-random allocation across treatment sites [20]. In this program, individuals residing within a catchment area that provided aftercare services were not randomised; this was done in order to link participants, where possible, to nearby services (consistent with the emphasis on building supports within clients' own communities).

All studies included in this review used a prospective design to evaluate the effects of treatment.

### **Type of intervention**

Of the two outcome studies comparing aftercare to a non-treatment condition, one examined a mixture of aftercare services for clients exiting intensive outpatient treatment, and included: counselling; case management; skills building for employment; HIV prevention; crisis intervention; and peer support [20]. The other such study evaluated a telephone-based counselling program following inpatient treatment [23].

Two of the outcome studies comparing treatment type examined group versus individual delivery of relapse prevention as an aftercare strategy [22, 28]. Another two compared group-based counselling to individualised relapse prevention [24, 25]. One study compared 12-step participation to relapse prevention [21]. One examined community psychiatric nurse visits to standard outpatient aftercare (which comprised review appointments every 6 weeks with a

nurse) [26]. The remaining study compared structured aftercare (nine outpatient counselling sessions based on CBT) to an unstructured aftercare service (crisis counselling on request) [27].

Program duration varied across the seven studies that described such details, ranging from two months to 12 months, with a median duration of six months. One study did not report any information relating to program duration [22]. The remaining study evaluated interventions of differing lengths and did not provide any further details [25].

### **Sample characteristics**

Four (44%) of the studies were conducted in the United States [20, 24, 25, 28]. Two (22%) were Canadian evaluations [21, 22]; one (11%) was Australian [27]; one (11%) was Taiwanese [23]; and one was Northern Irish [26]. The total number of programs evaluated in each study ranged from one to three, with a median of one program (and one evaluation site) per study. Total sample sizes ranged from 32 to 359, with a mean of 143 participants per evaluation.

As described above, only one study examined drug-involved offenders, of whom all were illicit drug users [20]. Of the remaining studies, three (33%) included clients with a mixture of drug and alcohol problems [21, 22, 27], three (33%) were limited solely to cocaine users [24, 25, 28] and two (22%) focused only on clients with alcohol abuse problems [23, 26].

The proportion of each sample that was male ranged from 50% to 100%, with a mean of 80%. The average age of participants ranged from 35 to 41 across studies, with a mean of 38 years. Six studies (66%) reported on the ethnicity of participants [excepting 22, 23 and 27]. The percentage of White (Caucasian) clients was reported in five of the studies, ranging from 12% to 100%, with a mean of 53%. The remaining paper reported only the percentage of African American clients, which was 96% [20].

### **Data collection**

*Collection methods:* All studies obtained the majority of their outcome data through self-report measures. Each study appeared to use existing or established measurement tools. Three studies (33%) supplemented this form of data with objective outcome measures such as results of urinalysis drug testing [24, 25, 28].

Each of the nine studies conducted follow-up data collection through participant interviews. Two (22%) obtained their follow-up data between 3 – 6 months post-baseline [21, 23]. Four (44%) of the studies obtained data between 6 – 12 months [20, 22, 27, 28] and another two (22%) interviewed participants between 12 – 24 months [24, 25]. The remaining study conducted follow-ups at 12- and 60-months post-baseline [26]. Given the differences in length of follow-up, it is unsurprising that attrition rates varied considerably; successful follow-up ranged from 35% (at a 12-month follow-up) to 100% (at a 3-month follow-up), with a mean of 79% of participants successfully interviewed at final follow-up.

*Process measures:* Other than program completion statistics, only three (33%) of the studies included process measures in their evaluations. These were: homework completion rates and client self-confidence levels [22]; receipt of services [25]; and attendance rates [25, 27].

*Outcome measures:* The primary outcome variable examined in all studies was drug use. Apart from the three studies that used urinalysis results [24, 25, 28], drug use outcomes were based solely on self-report. However, two of the papers supplemented this data with separate reports by designated informants (i.e. partners or family members of participants) [21, 27]. The second most frequently reported outcome was psychological functioning, measures of which were taken in four (44%) of the studies [22, 23, 24, 28]. Given that all but one of these studies focused on substance users in the general community (rather than drug-involved offenders), it is perhaps unsurprising that only two studies examined criminal activity as an outcome variable. One of these, inevitably, was the study that examined a program specifically designed for drug-involved offenders [20]; the authors obtained self-reports of criminal activity from participants and reported the percentage of their sample incarcerated at follow-up. The other study that reported criminal activity relied on self-report data alone [26].

### **Program efficacy**

*Retention and graduation:* As with the diversion papers, relatively few of the aftercare studies reported the number of participants who were either continuing in, or had graduated from, treatment at the time the evaluation was conducted. Only three (33%) of the studies presented such data [20, 22, 23]. Two of these reported completion rates in isolation [22, 23]; their figures were 71% and 90%, respectively. The third study combined those who had graduated with those who were ongoing in treatment, producing an estimated graduation rate of 90% [20].

*Drug use:* Both studies that compared aftercare to a non-treatment condition found in favour of aftercare for reductions in drug use at follow-up [20, 23]. Among the remaining studies, which contrasted various aftercare interventions, results included:

- both twelve-step facilitation (a manualised intervention developed and used in Project MATCH) and relapse prevention achieved comparable results, although clients with multiple substance-use profiles and higher levels of psychological distress at baseline may benefit more from the former [21];
- telephone-based counselling was an effective aftercare strategy for individuals with uncomplicated presentations; face-to-face standard aftercare was more appropriate than telephone counselling for those with more complicated presentations [25];
- structured aftercare (in nine sessions) was better than unstructured aftercare (crisis counselling on request) [27];
- poly-drug users demonstrated the shortest time to relapse [27];
- both group-based and individualised relapse prevention reduced drug use, with no significant difference between them [22, 28];
- both standard counselling and individualised relapse prevention reduced drug use, with no significant difference between them [24].

*Psychological functioning:* In the four studies examining psychological functioning at follow-up, positive findings included: higher levels of perceived social support among clients receiving group-based relapse prevention compared to those receiving an individualized form of this treatment [22]; and a lower addiction-severity rating by clients who received telephone aftercare counselling relative to those who received no aftercare at all [23]. One paper found improvements in addiction severity, craving and coping for both group-based and individualised relapse prevention, but detected no significant differences between them [28]. Importantly, this evaluation did not include a non-treatment comparison group against whose

psychological functioning the treatment recipients could be compared at follow-up. The remaining study compared standard counselling to individualised relapse prevention and did not detect any main effects of treatment on psychological functioning across conditions [24].

*Effect sizes:* None of the aftercare outcome studies included in the review reported effect sizes for their outcome data.

### 3. Participation and retention in treatment

#### Studies on diversion

Thirteen (52%) of the 23 studies focusing on issues relating to participation and retention examined diversion schemes. Once again, the majority of evaluations were US-based. This group of articles encompassed two broad issues: (a) the effect of program or system variables on treatment participation and outcome; and (b) the effect of individual characteristics on treatment participation and outcome.

*Program or system variables:* Relevant findings included:

- higher levels of program coercion, both objective and perceived, have been associated with increased program retention and graduation [33, 39];
- offenders diverted to treatment as part of more coercive, structured programs (e.g. the US-based Drug Treatment Alternatives to Prison scheme, which now operates as a post-plea, deferred sentencing diversion scheme) have been retained in treatment longer and have displayed greater reductions in criminal recidivism than offenders diverted to treatment by more conventional criminal justice sources (e.g. probation and parole) [39; 40];
- programs that include provision of information to clients, formal monitoring and judicial sanctioning procedures have led to better retention rates and outcomes [40].

It is not always the case, however, that higher levels of coercion result in better outcomes. Certain client characteristics may interact with program variables such as the degree of coercion applied. For example:

- drug offenders meeting criteria for antisocial personality disorder, or those with a prior history of substance abuse treatment, have achieved better treatment outcomes when they attended more frequent judicial reviews, whereas individuals without antisocial personality disorder have achieved better outcomes when assigned to less frequent reviews [30].

*Client characteristics:* Results indicate that a range of individual characteristics may be associated with improved treatment retention and graduation, including:

- being white, married, educated, employed, more socially connected, and engaging in less frequent drug use and unprotected sex [29, 32];
- being older [36, 37];
- being mandated to treatment; mandated clients may have lower motivation for treatment but have demonstrated better physical and mental health outcomes than non-mandated clients [34]. (Despite lower motivation for treatment, there is evidence that mandated offenders *do* have a desire to begin recovery [31].)

## Studies on aftercare

Eleven (48%) of the 23 studies that focused on issues relating to participation and retention examined aftercare programs. These studies examined two main issues: (a) factors associated with participation and retention in aftercare; and (b) strategies for enhancing participation and retention in aftercare.

### *Factors associated with participation and retention*

Findings included:

- individuals who are young, African American, unmarried, and who experience more severe alcohol-related and psychiatric complications are less likely to attend aftercare sessions [42];
- remission of substance dependence during primary treatment is associated with increased participation and retention in aftercare [48];
- travel barriers and geographic accessibility affect the likelihood of participation in aftercare; the further a person has to travel to access treatment the less likely they are to participate [42].

### *Strategies to enhance participation and retention*

Results have suggested that:

- the use of escorts and transport vouchers significantly improves initial participation in aftercare [41];
- practical strategies, such as the concurrent provision of half-way housing, have been shown to increase retention and graduation [43];
- the provision of aftercare orientation, the use of participation contracts, feedback and prompts, as well as social reinforcement of attendance at aftercare group therapy have been shown to increase attendance [44, 45, 47]. In one study, the combined use of all of these therapeutic strategies increased the aftercare participation rate from 32% to 100%, and improved attendance during the first two months of aftercare from an average 1.28 sessions to 5.50 sessions [47]. Abstinence rates among participants whose aftercare involved such strategies nearly doubled those of participants in standard care conditions (76% versus 40%) [46];
- participation and retention in aftercare can be enhanced by offering clients a range of treatment alternatives and allowing them to select the intervention that best suits their specific needs [48, 49].

## **Discussion**

There are certain limitations on the results of this review. It is possible that not all relevant outcome studies were identified during the literature search. In order to reduce the likelihood of this occurring, efforts were undertaken to supplement the results of the electronic search with a manual review of reference lists from recent publications on the topic, as well as through discussion and correspondence with other researchers in the field. As with any literature review, the likelihood of publication bias must be acknowledged as a possible limiting factor when attempting to interpret the results. It is recognised that publication preference is given to studies demonstrating an effect (Dickersin et al., 1987; Easterbrook et al., 1991). This masks the true number and results of outcome studies that have been conducted, leading to a possible over-estimation of program efficacy.

The diversion of drug-involved offenders away from regular prosecution and into treatment services is no longer a new concept. Such intervention strategies have been strongly advocated for over a decade in Australia (ADCA, 1996) and for several decades in the United States (Belenko, 2002; Harrison & Scarpitti, 2002). Despite this interest, the application of methodologically rigorous evaluation techniques to diversion and aftercare programs is relatively new, such that the relevant literature is currently characterised by commentaries and descriptive articles, with relatively few evaluation studies (Belenko, 2001; Bull, 2005; McKay, 2001; Wild et al., 2002). This situation has two primary consequences. Firstly, strong conclusions should not yet be drawn regarding the efficacy of diversion and aftercare programs (Spooner et al., 2001; Turner et al., 2002). This point is further emphasised by the heterogeneity of existing programs, both in terms of the point in the judicial process at which they are applied (varying from pre-plea to post-conviction) and the range of treatment services that are offered (ranging from outpatient counselling to long-term, intensive residential rehabilitation). Secondly, there is clear scope for persisting with both diversion and aftercare programs and, arguably most importantly at this stage in the development of the field, conducting more methodologically rigorous evaluation trials than have been published to date.

In order to design new, and revise existing, programs to more closely reflect the weight of evidence to date, as well as inform more rigorous evaluation strategies, this review has, consistent with previous findings (Belenko, 1998, 1999, 2001; McKay, 2001), identified a number of opportunities. These are summarised as follows.

### **Good practice in evaluations of diversion and aftercare programs**

At the simplest level, there appears to be a need for more detail and greater transparency when describing eligibility criteria, sample characteristics, data sources, outcome measures and time-frames for follow-up data collection.

Encouragingly, most previous studies have used prospective evaluation designs (rather than retrospective). However, most were not randomised trials. There are practical and ethical difficulties associated with randomised evaluation designs in naturalistic settings, although these issues could be overcome by employing recently refined techniques based on interrupted time-series designs. These have not yet appeared in this literature but will almost certainly do so given they are increasingly accepted and are ideal where an objective, repeated outcome measure is available, such as crime recidivism rates. An added advantage of modified time-

series designs is that they allow those randomised to the diversion and/or aftercare condition to be compared to those randomised to the usual practice condition, rather than, as is often currently the case, to those either deemed ineligible for treatment or who refused to participate.

A major advantage in this field is the availability of an objective, repeated outcome measure. Not surprisingly, most studies have taken advantage of this availability, obtaining data directly through judicial records (e.g. re-arrest statistics). Promisingly, most studies report reductions in recidivism among offenders at follow-up, although it is not clear why this finding is not consistent across all evaluations: it may reflect variation in evaluation methodologies, clients or program types. Assessing other outcomes of program efficacy, such as ongoing reduction in drug use and increased psychological functioning, are more problematic given their reliance on self-report, and outcomes to date are again variable. However, reliable and valid measures of self-report are readily available, as are objective means of validating self-report, such as urine or hair analysis. Such measures are also likely to be practical to use where diversion and/or aftercare programs involve existing drug and alcohol facilities. The additional cost of validation needs to be considered in developing specific outcomes, although such costs are not usually prohibitive.

Another advantage for program evaluations in this field is the likelihood of obtaining reasonable rates of retention in diversion programs: a reasonably consistent finding, including with MERIT, is that approximately 60% of clients typically graduate from diversion programs. The most obvious reason for reasonable retention is coercion to participate, relating to actual or perceived sentencing consequences of failing to complete a diversion program. Indeed, the retention literature critiqued in this review suggests higher levels of program coercion (e.g. greater frequency of judicial hearings and sanctioning) are associated with increased program completion rates. However, a number of client characteristics that relate, presumably, to social stability (e.g. being older, employed, married, Caucasian and engaging in less frequent drug use) are also positively associated with graduation from treatment. Although reasonable retention in aftercare programs is likely to be more difficult to achieve, given the additional effort required to maintain attendance and the likelihood of a reduced threat of coercion, strategies such as group sessions and telephone follow-up may be both viable and cost-effective.

The lack of empirical evaluations specific to aftercare for drug-involved offenders represents an excellent opportunity to design and evaluate an aftercare program. Only one evaluation of such a program met inclusion criteria for this review [20]. Results from this study provided support for short-term reductions in drug use and crime, but positive effects of participation were attenuated by twelve months following program entry. Among the broader literature on aftercare, which is represented by the other continuing-care studies included for review, results provide provisional support for reductions in drug use and improvements in limited aspects of psychological functioning (such as addiction severity and perceived social support). Similar to the diversion literature, studies on aftercare programs suggest that certain client characteristics are associated with improved retention in treatment, such as: being older; married; Caucasian; demonstrating less severe substance abuse or psychiatric symptoms; and living within an easily accessible geographic radius of treatment services. In addition, certain strategies may be useful for enhancing the transition of clients from primary treatment to aftercare, as well as for boosting retention rates, including: proactive recruitment tactics (e.g. provision of escorts and travel vouchers); placement in half-way housing; use of participation contracts; regular feedback and prompts; reinforcement of attendance through support and encouragement; and

the provision of alternative forms of treatment from which clients can select depending on their specific needs.

### **Good practice in diversion and aftercare programs**

The past decade has seen growth in the number of best-practice guidelines for diversionary schemes. For the most part, these guidelines have preceded the emergence of an empirical evaluation literature and have been based largely on process evaluations and expert recommendations (Bull, 2005). A number of such best-practice documents are available (see, for example: ADCA, 1996; Bureau of Justice Administration, 1992; Expert Working Group, 1999; National Association of Drug Court Professionals, 1997; Russell & Davidson, 2002). They cover important aspects of program design and implementation, including: underlying philosophy; eligibility criteria; program access; client rights; monitoring; training; documentation; legislation; follow-up services; and funding. These guidelines have been summarised and compared elsewhere (Bull, 2003; 2005). Consequently, the purpose here is not to reiterate such guidelines, but to comment on elements of good practice as derived from the results of the empirical evaluations identified for this review.

The points below summarise the key findings of these studies in relation to the delivery of drug treatment services, and, more specifically, to aftercare strategies in particular. These suggestions are most closely related to the best-practice elements of program access, monitoring and follow-up services. Keeping in mind the lack of rigorous evaluations in the literature, these strategies should be regarded as points that stand out among this group of studies, rather than a definitive set of recommendations. It is not essential, therefore, to follow these guidelines when designing an aftercare component for the MERIT scheme.

#### *Practical suggestions that may improve participation and retention in treatment:*

- Given that higher rates of participation and retention are associated with better program outcomes, increased client monitoring (e.g. greater frequency of judicial hearings, routine drug-testing) and court-delivered sanctions for non-compliance may improve retention.
- Well-structured programs (in which firm guidelines are provided and expectations are made explicit to clients) may result in better outcomes.
- Younger clients are less likely to be retained in treatment than older clients, so increased monitoring of younger clients may be warranted.
- Increased client stability (e.g. secure housing, employment, better social support) is associated with better outcomes, suggesting that these client variables need to be addressed concurrently with treatment.
- Appropriate care for comorbid psychiatric disorders is likely to be beneficial.
- Clients should be stabilised and, ideally, in remission from substance abuse before they are transferred to aftercare.
- Where possible, program duration should be flexible enough to permit completion of primary treatment goals before transition to aftercare.
- The use of strategies to increase initial participation in aftercare may improve attendance (e.g. provision of staff escorts or travel vouchers on completion of primary treatment).
- Participation in aftercare can be improved by limiting the distance clients need to travel in order to access the treatment services.

- Orientation sessions, participation contracts, feedback and prompts, and positive reinforcement for attendance at aftercare (e.g. encouragement and support) may all help to increase participation.
- Retention in aftercare is best when clients are able to select the type of intervention that suits them best (e.g. phone call follow-ups or structured CBT-based counselling).

*Suggestions for the form of aftercare treatment to be delivered to clients:*

- Twelve-step programs may be better suited to clients with higher levels of psychological distress and multiple substance-abuse profiles at baseline (rather than other forms of follow-up treatment such as relapse prevention).
- Telephone-based counselling may be better suited to clients at low risk of relapse and recidivism than clients at high risk of such outcomes.
- In rural or isolated areas, community-based (e.g. home visit) follow-up services may be better than standard outpatient sessions for improving client outcomes.
- Structured aftercare sessions are likely to produce better outcomes than unstructured sessions (e.g. crisis counselling on request).
- Group-based and individualised services may be equally effective, but clients should be provided with the ability to choose between the two models.

One of the key findings of this review is that rigorous evaluations of aftercare strategies for drug-involved offenders (particularly at the pre-detention stage) are lacking in the literature. This presents a unique opportunity to conduct a systematic evaluation concurrently with the implementation of a new aftercare arm for MERIT. The next section, therefore, presents recommendations that might assist in planning such an evaluation.

## **Specific Recommendations for Further Evaluation of Merit: Implementing an Aftercare Component**

In designing and implementing a rigorous evaluation there are a number of methodological aspects to be carefully addressed, of which study design is the most crucial. Having devised an appropriate and feasible design, other important aspects of a rigorous evaluation protocol include: the evaluation team; aims; sample size; measures; the aftercare program; evaluation procedure; time scale; and budget.

### **Study design**

The degree of confidence in an evaluation outcome is directly related to the study design used to evaluate an intervention: the more rigorous the design the greater the degree of confidence in the outcome. The National Health and Medical Research Council of Australia lists six levels of evidence (NHMRC, 1999), as summarised in Table 3 (see appendix). Typically, higher levels of evidence result from randomised controlled trials (Level II) and well-designed studies that employ some form of comparison group (Level III). As such, evaluations would ideally be randomised controlled trials or, at a minimum, involve a comparison group.

Traditionally, randomised controlled trials (RCTs) are regarded as the gold standard study design for evaluating interventions. However, RCTs impose a considerable burden in terms of required sample sizes, the follow-up period required to observe an effect, and budget implications. Moreover, they are not always appropriate, particularly where it may be unethical to withhold treatment from those randomly assigned to a control condition or where a defined group, rather than an individual, is the unit of randomisation (if individuals within a defined group are in close contact, it is difficult to ensure that those who are randomised to receive the intervention do not pass on elements of their intervention to those randomised to the control group, thereby blurring the distinction between the intervention and control groups and diluting the intervention effect. One way to avoid this problem is to make the group the unit of randomisation, such that all individuals within one group receive the intervention and all individuals in another group act as controls.

Evaluating an aftercare component to MERIT is a good example of where an RCT is likely to be inappropriate. In this instance, an efficient cluster RCT design would organise the courts in NSW currently operating a MERIT program into matched pairs (to take account of potentially confounding variables, such as rural or metropolitan location and the length of time MERIT has been operating in each location), then randomly allocate one of each matched pair to receive the aftercare component and the other to act as its matched control. Given there are currently 54 courts in NSW operating a MERIT program, including all of them would provide the greatest likelihood of obtaining a positive result: the provision of aftercare would need to result in a statistically significantly superior outcome in approximately 22 of the 27 comparisons. However, the financial and resource costs involved in carefully implementing and measuring the effect of an aftercare program in 27 locations would be prohibitive. One possibility to reduce costs would be to randomly select a smaller number of locations; for example, 5 matched pairs (N=10 locations). However, this increases the requirements for a positive outcome: for the result to be regarded as statistically significant the aftercare intervention would have to be favoured in all five comparisons. Therefore, utilising an RCT

design to evaluate an aftercare component to MERIT in NSW would require a careful analysis of the likelihood of obtaining a statistically significant result, given the extent of the resources that are likely to be available for the evaluation.

The difficulties associated with RCTs have been recognised in the scientific literature and, as a result, the Cochrane Effective Practice and Organisation of Care Group (EPOC) has identified three methodologically rigorous alternatives to RCTs: non-randomised controlled trials; controlled before and after studies; and interrupted time-series designs. Of these, interrupted time series designs are the least problematic, in terms of their inherent limitations, and can be improved by implementing multiple time series analyses, a technique labelled multiple baseline design (Hawkins et al., under review).

A multiple baseline design for evaluating an aftercare component to MERIT would require a minimum of approximately four aftercare programs to be implemented across different points in time, as shown in Figure 2 (see appendix). The aftercare program would be added to the existing MERIT programs in the four different locations at different times during a defined 12 month period, thereby reducing the likelihood that any intervention effect is due to some other co-occurring event. In the absence of substantial fluctuations in the data at other time points, this design provides robust evidence that a statistically significant change in the outcome has occurred and that this change is due to the additional aftercare component. The major advantage of this design is that it provides an adequate level of methodological rigour, requiring as few as two aftercare groups (depending on budget and resource availability).

### **Other evaluation aspects**

Although not comprehensive, the following components represent an overview of additional methodological aspects that ought to be taken into consideration in developing a rigorous evaluation protocol.

*Evaluation team:* Individuals in the team should cover a range of necessary skills, with demonstrated expertise in statistics, health economics, practical knowledge of the MERIT program, and research skills and leadership, complemented by enthusiastic implementation staff.

*Aims of the evaluation:* The aims should be very specific (is aftercare to be compared to no aftercare, or one type of aftercare compared to another?) and able to be operationalised into clear research questions.

*Sample size:* The number of participants required to commence and complete the defined aftercare program in each location should be clearly specified and justified, in terms of both statistical and clinical significance.

*Measures:* The dimensions to be assessed should be clearly defined in terms of outcomes (such as crime, drug use, re-incarceration, psychological functioning and financial costs) and processes (such as satisfaction with aftercare, perceptions of need, attendance rates and the extent of participant compliance with the aftercare program). Once these are established, relevant instruments with which to measure these dimensions should be specified. Ideally,

these instruments would have demonstrated reliability and validity or, where no such evidence exists, sub-studies to establish these ought to be devised.

*The aftercare program:* Every component of the aftercare program should be justified and clearly described. In particular, the inclusion of each component should be justified with reference to existing cost-effectiveness evidence or, where this is unavailable or inadequate, a clear conceptual rationale.

*Evaluation procedure:* In order to minimise the possibility that any observed difference in outcome effectiveness in different locations is the result of differentially implementing the aftercare program at different sites, the procedure by which potential participants are identified, approached to participate and followed-up, and the way in which the aftercare program is implemented, should be standardised across all locations as far as possible. This would most likely require the development of a clear implementation manual and the implementation of random compliance checks by research staff.

*Time scale:* An appropriate time scale should be specified, balancing the time likely to be required for development, implementation and adequate follow-up, with the expectations of the funding agency and the need to promote wider adoption of aftercare as quickly as possible, should it cost-effectively complement the existing MERIT program.

*Budget:* A multiple baseline design has the distinct advantage of facilitating a methodologically rigorous evaluation at a much lower cost than a RCT. Nevertheless, each component of the evaluation should be clearly costed and justified, recognising the difficulty of accurately predicting all costs.

## Conclusions

Evidence for the efficacy of diversion and aftercare strategies for drug-involved offenders is currently limited by the variety of methodological shortcomings apparent in the evaluation literature. Consequently, current support for the utility of such schemes for facilitating reductions in drug use and criminal recidivism is tentative. This suggests that ongoing, as well as future, evaluations of diversion schemes such as MERIT would ideally be of greater methodological rigour in order to more precisely determine their cost-effectiveness. Similarly, aftercare programs have been inadequately evaluated to date. Given the paucity of evaluations in this area, the possibility of introducing an aftercare component to the MERIT scheme provides an ideal opportunity to conduct a methodologically rigorous evaluation that would both inform ongoing practice in the NSW judicial system and be of strong interest in the international scientific literature. The recommendations presented in this report provide practical guidelines that could inform the planning of such an evaluation.

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## Appendix

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**Table 1. Summary of diversion evaluations included in the methodological review**

First author and year published	Stage	Drug Court or diversion program	Target offenders	RCT design	Prospective design	Sample characteristics reported (i.e. age, gender)	Analyses described	Effect sizes reported	Intervention described (even if low in detail)	Follow up taken from end of intervention	Cost Effectiveness Evaluation	Outcomes			Support for diversion
												Drug use	Criminal activity	Psych. functioning	
1. Anglin 1999	Multi-stage	Diversion	<i>Not specified</i>	<i>Partly</i>	✓	✓	✓		✓			✓	✓		Yes
2. Broner 2004	Multi-stage	Diversion	MH, SA		✓	✓	✓					✓	✓	✓	Neutral
3. Cowell 2004	Multi-stage	Diversion	MH, SA		✓		✓				✓	✓	✓		Limited
4. Peters 2000	Multi-stage	Drug Court	NV, SA			✓			✓			✓	✓		Yes
5. Shafer 2004	Multi-stage	Diversion	NV, SA, MH		✓	<i>Partly</i>						✓	✓	✓	Neutral
6. Fielding 2002	Pre-trial, pre-plea	Drug Court	NV, SA		✓	✓			✓	✓			✓		Yes
7. Heale 2001	Pre-trial, pre-plea	Diversion	NV, SA		✓	✓			✓				✓		Limited
8. Lind 2002	Post-conviction	Drug Court	NV, SA	✓	✓	✓	✓		✓		✓		✓		Yes
9. Payne 2005	Post-conviction	Drug Court	NV, SA		✓	✓			✓				✓		Yes
10. Harrell 2002	Pre-trial	Diversion	NV, SA		✓	✓	✓		✓			✓	✓		Yes
11. Hoff 1999	Pre-trial	Diversion	MC, MH, SA			✓	✓						✓		Yes
12. Makkai 2003	Post-conviction	Drug Court	NV, SA		✓	✓			✓	✓			✓		Yes
13. Bavon 2001	Pre-conviction	Drug Court	SA		✓	✓		✓	✓	✓			✓		Neutral
14. Belenko 2004	Pre-conviction	Diversion	NV, SA, HR		✓		✓		✓	✓			✓		Yes
15. Broner 2005	Pre-conviction	Diversion	MC, MH, SA		✓	✓	✓					✓	✓	✓	Yes
16. Dynia 2000	Pre-conviction	Diversion	NV, SA		✓	✓	✓		✓	✓			✓		Yes
17. Spohn 2001	Pre-conviction	Drug Court	NV, SA			✓	✓		✓				✓		Yes
18. Gottfredson 2005	Pre-sentence	Drug Court	NV, SA	✓	✓	✓	✓		✓			✓	✓	✓	Yes
19. Deschenes 1995	Post-sentence	Drug Court	NV, SA	✓	✓	✓			✓			✓	✓		Neutral

**KEY:** **NV** = non-violent offender  
**SA** = substance abuser  
**MH** = mental health issue  
**MC** = minor criminal offence  
**HR** = high-risk of recidivism (i.e. prior offences)

**Table 2. Summary of aftercare studies included in the methodological review**

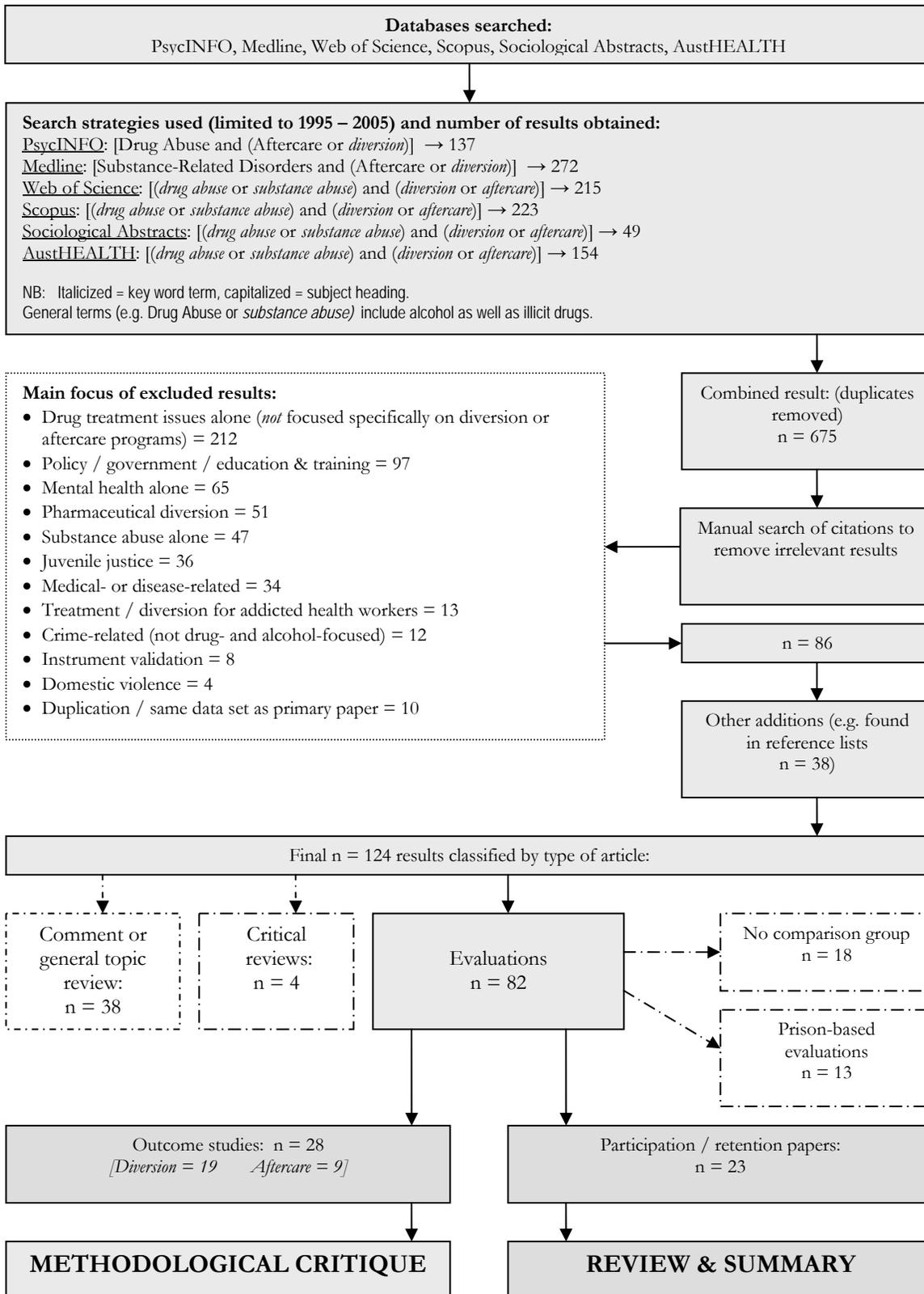
First author and year published	Client profile	RCT design	Prospective design	Research eligibility criteria specified	Sample characteristics reported (i.e. age, gender)	Analyses described	Effect sizes reported	Intervention described	Follow up taken from end of intervention	Cost Effectiveness Evaluation	Outcome Measures				Support for aftercare
											Drugs	Crime	Incar'n	Psych	
20. Brown, BS 2001	CJ, ID		✓		✓	✓		✓			✓	✓	✓	✓	Yes
21. Brown, TG 2002	ID, A	✓	✓	✓	✓	✓		✓			✓				Yes
22. Graham 1996	ID, A		✓		✓	✓		✓			✓				Neutral
23. Horng 2004	A		✓		✓	✓		✓			✓				Yes
24. McKay 1999	ID	✓	✓		✓	✓		✓			✓			✓	Neutral
25. McKay 2005	ID, A	✓	✓	✓	✓	✓		✓			✓				Limited
26. Patterson 1997	A		✓	✓	✓			✓			✓	✓			Yes
27. Sannibale 2003	ID, A	✓	✓	✓	✓	✓		✓			✓				Limited
28. Schmitz 1997	ID	✓	✓	✓	✓	✓		✓	✓		✓			✓	Neutral

**KEY:** CJ = Criminal Justice clients  
 ID = Illicit Drug users  
 A = Alcohol users

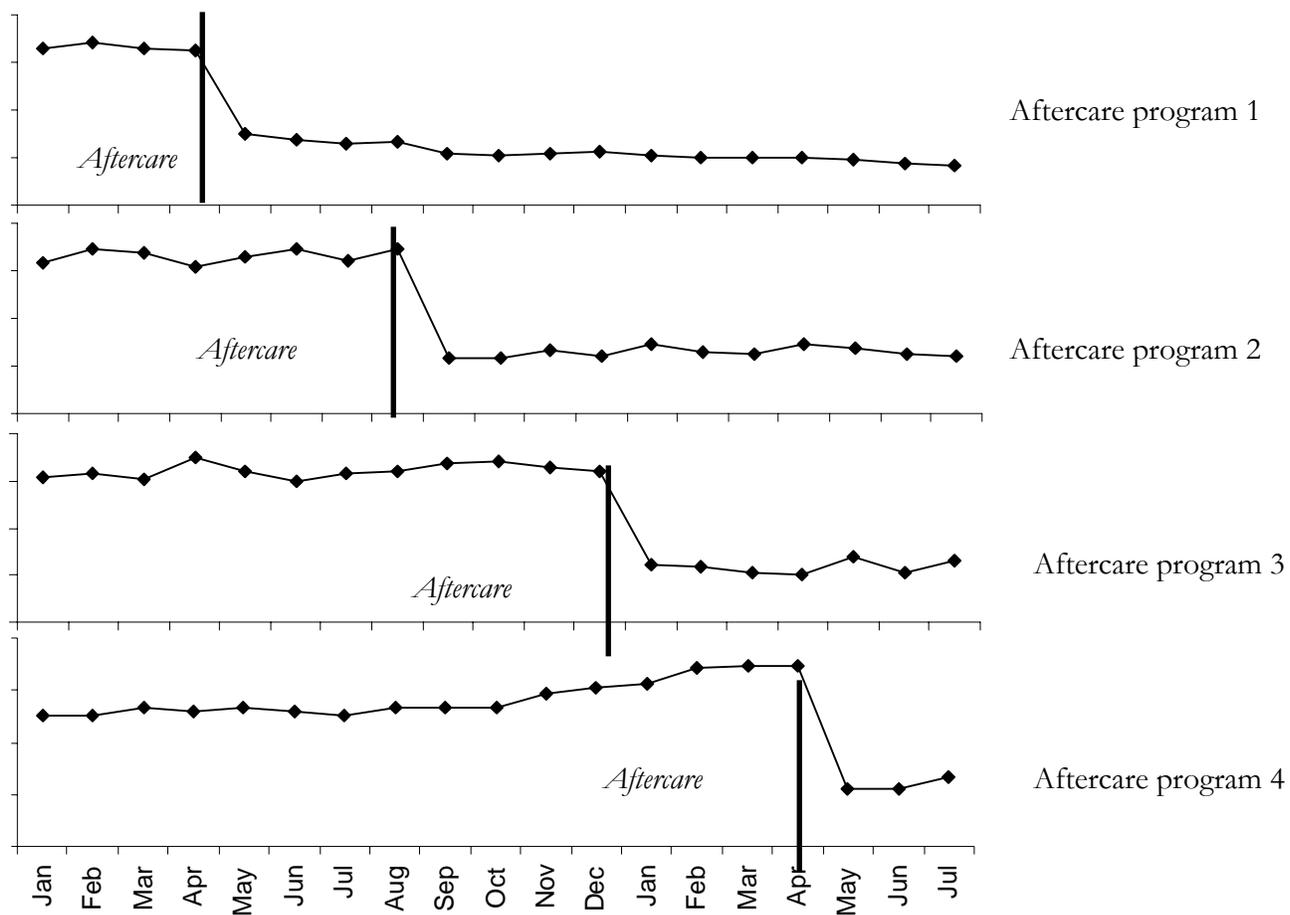
**Table 3. NHMRC (1999) levels of evidence associated with various study designs**

<b>Level</b>	<b>Explanation</b>
I	Evidence obtained from a systematic review of all relevant randomised controlled trials
II	Evidence obtained from at least one properly designed randomised controlled trial
III	Evidence obtained from any of the following: <ul style="list-style-type: none"><li>• well designed pseudo randomised controlled trials (alternate allocation or some other method)</li><li>• comparative studies with concurrent controls and allocation not randomised (cohort studies), case-control studies, or interrupted time series with a control group</li><li>• comparative studies with historical control, two or more single arm studies, or interrupted time series without a parallel control group</li></ul>
IV	Evidence obtained from case series, either post-test or pre-test and post-test
V	Opinions of respected authorities, based on clinical experience, descriptive studies or reports of expert committees
No evidence	After thorough searching no evidence was found regarding recommendations in general practice for the target disease or condition

**Figure 1. Flowchart summarising the search strategy and results obtained.**



**Figure 2.** An example of a multiple baseline design, showing a hypothetical reduction in the outcome of interest, at four different time points, following the addition of an aftercare component to the existing MERIT program in four locations in NSW <sup>1</sup>



<sup>1</sup>Adapted from Hawkins et al., under review