Drug misuse prevention: targeted interventions

Evidence review 1

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1 Introduction

The National Institute for Health and Care Excellence (NICE) was asked by the Department of Health in England to produce guidance on drug misuse prevention. This guidance will update a previous NICE guideline on interventions to prevent substance misuse (PH4) as set out in the review decision (2014).

The scope defines what this guideline will and will not cover. The guideline will focus on children, young people and adults who are

- most likely to start misusing drugs
- already experimenting with drugs or who misuse drugs occasionally.

As the guideline will focus on those either most likely to start using drugs or those already experimenting with drugs, 10 groups known to be at higher risk of drug misuse were identified. Specific at-risk groups were searched for to ensure that the review reflected the scope and to ensure that the work was manageable in the time available. These at-risk groups are:

1. people who have mental health problems
2. people involved in commercial sex work or who are being sexually exploited
3. people who are lesbian, gay, bisexual or transgender
4. people not in employment, education or training (including children and young people who are excluded from school or are regular truants)
5. children and young people whose parents use drugs
6. looked after children and young people
7. children and young people who are in contact with young offender teams but not in secure environments (prisons and young offender institutions)
8. people who are considered homeless
9. people who attend nightclubs and festivals
10. people who are known to misuse drugs occasionally / recreationally.

The at-risk groups were identified from scoping searches, crime statistics, stakeholder comments and an initial sift of the evidence. The groups were identified from the text in the final scope, as shown in box 1.

Box 1. Identification of at-risk groups

Groups 1 to 4 were identified to include groups of children, young people and adults who are at risk of starting to use drugs. This includes those who:

- have mental health problems (group 1)
- are involved in commercial sex work or are being sexually exploited (group 2)
- are lesbian, gay, bisexual or transgender (group 3)
- are not in employment, education or training (including children and young people who are excluded from school or are regular truants) (group 4).

Groups 5 and 6 (children and young people whose parents use drugs; looked after children and young people) were identified to cover other groups of children and young people who are at risk of starting to use drugs.

Groups 7 and 8 (children and young people who are in contact with young offending teams but not in secure environments; people who are considered homeless) were identified to ensure consistency with the previous NICE guideline (Substance misuse interventions for vulnerable under 25s) and also reflected findings from scoping searches and stakeholder comments.

Group 9 (people who attend nightclubs and festivals) was identified to reflect settings included in the scope ('Social environments where drugs may be available such as nightclubs, pubs, festivals and music venues'), crime statistics and stakeholder comments.

Group 10 (people who are already experimenting or using drugs occasionally) was identified from an initial sift of the evidence that demonstrated that potentially relevant papers may not have been included without it.

It was considered whether black and minority ethnic (BME) groups in the UK should be included as a specific at-risk group because they were included as an at risk group in PH4. Based on stakeholder comments, crime statistics and initial scoping searches, it was decided that BME groups were not as likely to misuse drugs as other groups and therefore should not be included as a specific at-risk group, however, studies of BME groups would be included in the evidence review if the study focused on one of the at-risk groups (e.g. people from BME groups who have mental health problems).

To support the development of the guideline, NICE has undertaken 2 reviews of the best available evidence on drug misuse prevention. This evidence review (evidence review 1)

assesses the effectiveness of interventions aimed at the identified at-risk groups while the second evidence review (evidence review 2) focuses on the acceptability of targeted interventions.

The key activities identified in the scope were:

- Group-based skills training or information provision using lessons, talks and activities (for example, targeted refusal skills training in schools and colleges).
- One-to-one skills training, information provision and advice given as part of planned outreach activities (for example, for young people at festivals).
- One-to-one skills training, advice and information provided using peer education initiatives (for example, with gay men in nightclubs).
- Opportunistic skills training, advice and information provision (for example, provided by youth workers).
- Using targeted print and new media (for example, magazines, websites, social media, text messages) for different groups at risk of drug misuse to influence social norms or enhance skills and provide information and advice.
- Family-based programmes providing structured support for children and young people at risk of drug misuse (including motivational interviewing for parents or carers and parental skills training).
- Group-based behaviour therapy for children and young people who are at risk of drug misuse (focusing on coping mechanisms, problem-solving and goal setting).
- Parental skills training for parents or carers of children who are at risk of drug misuse (focusing on stress management, communication skills, helping children develop problem-solving skills and setting behavioural targets).

2 Methods

This review was conducted according to the methods set out in Developing NICE guidelines: the manual (NICE 2014).

2.1 Review questions

Review question 1: Which targeted interventions are most effective in preventing drug misuse among groups of people most at risk?

- Review question 1a: How does effectiveness vary according to the content and framing of any message?
- Review question 1b: How does effectiveness vary according to the mode of delivery?
- Review question 1c: How does effectiveness vary according to who delivers it?
- Review question 1d: How does effectiveness vary according to where it is delivered?
- Review question 1e: How does effectiveness vary according to the intensity/duration of the intervention?
- Review question 1f: How does effectiveness vary according to the intended recipient?

Evidence relating to the acceptability of targeted interventions is presented in evidence review 2.

2.2 Searching, screening, data extraction and quality assessment

The review protocol in appendix 2B outlines the methods for the review, including the search protocols and methods for data extraction, quality assessment and synthesis.

2.2.1 Searching

A systematic, step-wise search of electronic databases and websites was conducted to identify relevant peer-reviewed and grey literature published from January 1995. Searches took place between June and October 2015. These searches sought to identify material for both evidence review 1 and evidence review 2.

In brief: an initial systematic review search was followed up by citation searching to identify primary evidence. Focused database, website and "named programme" searches were then used to address other potential gaps in the evidence (see appendix 2A). Citation searching of included studies was undertaken to identify further relevant material.

The reviewers also checked the reference lists of the evidence review undertaken during the development of PH4 and a subsequent evidence update.

The reviewers also considered references identified by members of the Public Health Advisory Committee (PHAC) as well as references provided by stakeholders via a call for evidence.

Following the external review of evidence review 1 (see section 2.2.5), additional checks were made to the search strategies and they were found to be robust.

2.2.2 Screening

All references identified through the database and website searches were screened on title and abstract against the inclusion and exclusion criteria set out in the protocol. Key criteria include:

Inclusion criteria	Exclusion criteria
Language, settings and study type	
English language studies published in 1995 or later	
Studies conducted in Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Spain, Sweden, Switzerland, Turkey, UK or the USA Controlled intervention studies (e.g. randomized controlled trials), observational before-and-after studies, or systematic reviews including such study types	Studies undertaken in workplaces or custodial settings
For systematic reviews: • Conduct a systematic search of at least 2 electronic databases • Screen identified references against pre-specified review question or inclusion/exclusion criteria • Conduct quality assessment of included studies • At least 80% of included studies to meet the other inclusion/exclusion criteria for this review	
Populations	
Studies of interventions which are targeted at 1 or more of the 10 groups of interest	Studies relating to pregnant women (covered in other NICE guidance, including NICE guidance on Pregnancy and complex social factors [CG110])

Interventions	
Studies describing interventions that prevent or delay drug use, or that prevent escalation of drug use in terms of frequency, volume and diversification of drugs used	Studies relating to the treatment of drug dependence or misuse or disorder Studies of interventions to promote safer injecting **or** preventing overdose **or** preventing relapse Studies of universal interventions or interventions which involve universal screening Interventions related to law enforcement or restricting the supply of drugs.
Outcomes	
Studies which report relevant outcomes (e.g. drug use, intention to use drugs, knowledge and awareness, and personal and social skills)	

A random sample of 10% of titles and abstracts was screened by 2 reviewers independently, with differences resolved by discussion. Inter-rater agreement at this stage was 91.3%. References identified as potentially relevant through title and abstract screening were then retrieved as full-text papers. In the case of studies where there was any uncertainty from the abstract whether the study was relating to the treatment of drug dependence or misuse or disorder, the full text was ordered. All papers were then screened against the inclusion and exclusion criteria set out in the protocol. The NICE technical team carefully considered interventions where a questionnaire, screening or other assessment tool was used to identify individuals to take part. Papers were considered in more detail, considering the implications of final implementation and whether screening was an essential aspect of the intervention, and potentially included if there was any doubt.

Again, a random sample of 10% of papers was independently assessed by 2 reviewers; inter-rater agreement at this stage was 90.4%. Any differences in screening decisions were resolved by discussion with recourse to a third reviewer when necessary. All papers excluded based on the full-text are listed in appendix 2E along with the reasons for their exclusion.

2.2.3 Data extraction

Data from each study included in the review were extracted into evidence tables by 1 reviewer with all data then checked in detail by a second reviewer. Study authors were not contacted for missing outcome data because of the time available to complete this evidence review. Missing effect sizes were calculated by the NICE technical team for relevant outcomes where there were enough data reported to do so. Evidence tables for each included study can be found in appendix 1A.

2.2.4 Quality assessment

Each included study was quality assessed by 1 reviewer and then checked for accuracy by another reviewer. Any differences in quality grading were resolved by discussion. Studies with a control group were assessed using the well-established Cochrane Effective Practice and Organisation of Care Group (EPOC) risk of bias tool. Uncontrolled before and after studies were appraised using the Effective Public Health Practice Project (EPHPP) quality assessment tool for quantitative studies. Both tools are recommended in Developing NICE guidelines: the manual (NICE 2014); complete versions of these checklists are available in appendix 2C. Each study was assigned an overall quality rating as follows:

++ All or most of the checklist criteria have been fulfilled, and where they have not been fulfilled the conclusions are very unlikely to alter.

+ Some of the checklist criteria have been fulfilled, and where they have not been fulfilled, or are not adequately described, the conclusions are unlikely to alter.

- Few or no checklist criteria have been fulfilled and the conclusions are likely or very likely to alter.

Evidence statements

Evidence statements were drafted in line with Developing NICE guidelines: the manual (NICE 2014). The statements will be used to link any recommendations to the evidence. Decisions for rating the strength of evidence within each evidence statement was a judgement made by the NICE technical team, based on the quality, quantity and consistency of the evidence.

All of the evidence statements from this evidence review, evidence review 2, the cost effectiveness review and the health economic modelling are presented in the paper Evidence statements from all reviews. The paper also includes overarching statements from this evidence review which summarise the evidence across the at-risk groups.

2.2.5 External expert review

An external review of this evidence review was undertaken by Professor Steve Pilling and colleagues at the National Collaborating Centre for Mental Health, University College, London in March 2016. External expert review is an optional part of the NICE process (see section 10.1 of Developing NICE guidelines: the manual). A number of changes were made to evidence review 1 and evidence review 2 as a result of this process. These included:

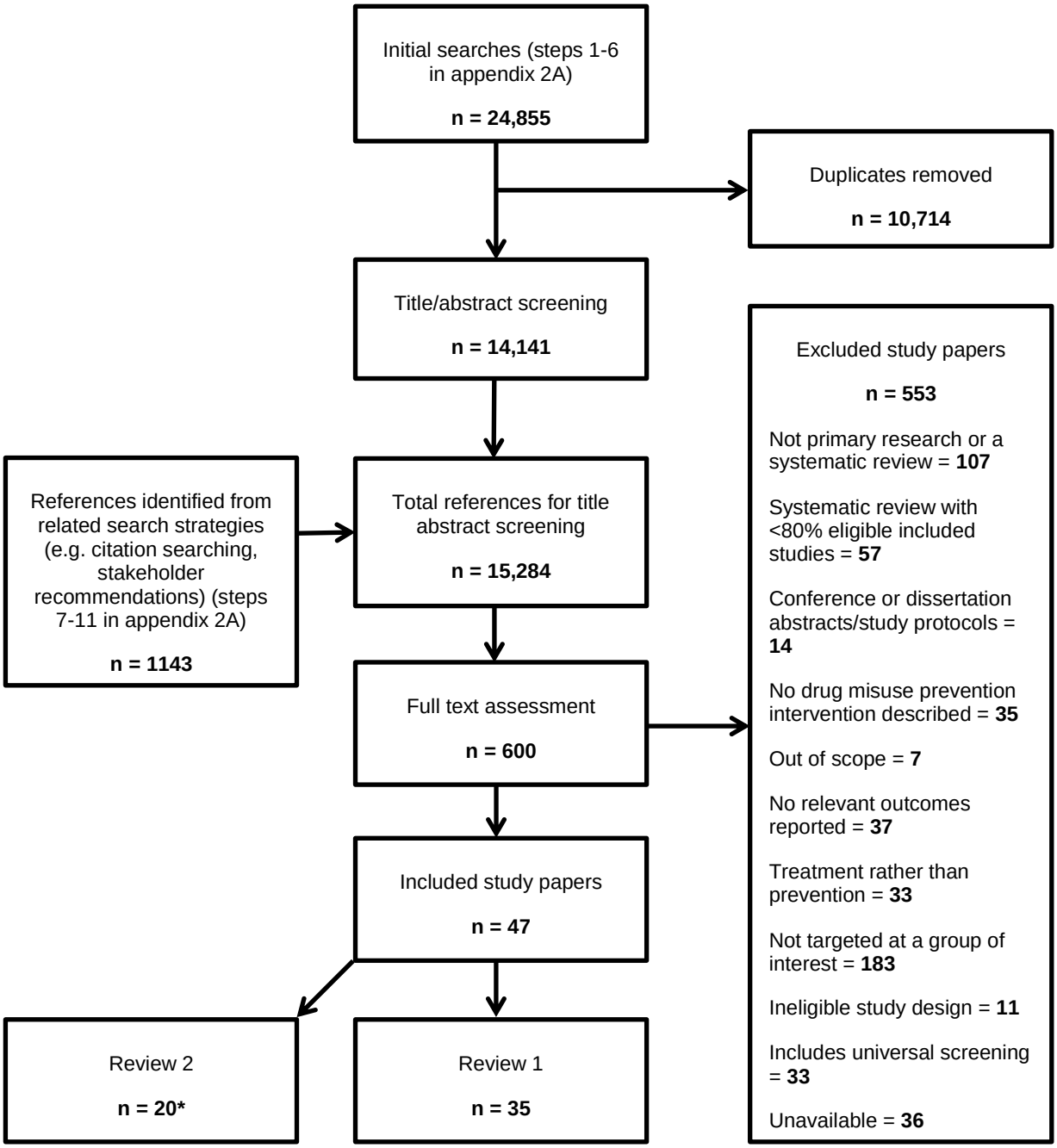
- Including more information on the search rationale, processes and supporting checks (see appendix 2A).
- Including more information on the selection of the at-risk groups (see section 1 Introduction).
- Including more information on synthesis decisions taken with the Public Health Advisory Committee (PHAC) (see section 3.2.1 Synthesis and presentation of results and appendix 3C).
- Appending supporting papers provided to the committee on the review inclusion criteria (see appendix 3A).
- Including the rationale for not undertaking meta-analysis (see appendix 3C) and appending tables provided to PHAC to support synthesis and analysis of results (see appendix 3B).

3 Results

3.1 Flow of literature through the review

Database and website searching identified 24,855 references. A further 1143 references were identified through strategies such as citation searching and PHAC recommendations. Duplicates were removed leaving a total of 15,284 references to be screened on title and abstract. The full texts of 600 items were then requested for more detailed assessment. A total of 35 study papers from 32 studies met the inclusion criteria for this review while 20 studies were included in evidence review 2. Eight of the study papers were included in both evidence reviews. The flow of literature through the reviews is summarised in Figure 1.

Figure 1: Flow of literature through the review



** 12 unique studies were identified for inclusion in evidence review 2 plus 8 study papers that were also included in review 1.*

3.2 Characteristics of the included studies

Thirty five study papers from 32 studies met the inclusion criteria for this evidence review.

Most evidence was found for group 5 (children and young people whose parents use drugs: 5 study papers reporting on 3 studies), group 8 (people who are considered homeless: 5

studies) and group 10 (people who are known to use drugs occasionally/ recreationally: 12 studies).

The review did not identify any eligible studies which evaluated the effectiveness of interventions targeted at either group 2 (commercial sex workers or those being sexually exploited), group 4 (people not in education, employment or training), or group 9 (people who attend nightclubs or festivals). No studies of new psychoactive substances ('legal highs'), solvents, or image- and performance- enhancing drugs were identified for this review.

Most studies used a randomised controlled trial design. Overall, the quality of the studies was generally moderate. Most of the 35 study papers included in this review were moderate in quality (21 study papers graded as +), some studies were low in quality (10 graded as -), and few were rated as high in quality (4 study papers graded as ++).

Only one of the 32 studies included in this review was conducted in the UK, with most evidence coming from the USA. The majority of studies were conducted among samples of children and young people and most focused on cannabis use ('marijuana' in US based studies). To note that the narrative below and associated evidence tables reflect the phrasing that is reported in the study papers. The final evidence statements use the terminology used in the UK.

Some of the studies present data that are relevant for more than one population group, as shown in table 1.

Table 1. Included studies and relevant population groups

Study	Relevant population group/s
Baer et al. (2007)	Group 8 (People who are considered homeless)
Catalano et al. (1999)[a]	Group 5 (Children and young people whose parents use drugs)
Catalano et al. (2002)[a]	Group 5 (Children and young people whose parents use drugs)
Cervantes et al. (2004)	Group 7 (Children and young people who are in contact with young offender teams)
D'Amico et al. (2013)	Group 7 (Children and young people who are in contact with young offender teams)
De Dios et al. (2012)	Group 10 (People who are known to use drugs occasionally/recreationally)
De Gee et al. (2014)	Group 10 (People who are known to use drugs occasionally/recreationally)
Dore et al. (1999)	Group 5 (Children and young people whose parents use drugs)
Edwards et al. (2006)	Group 1 (People who have mental health problems)
Elliott et al. (2014)	Group 10 (People who are known to use drugs occasionally/recreationally)
Fischer et al. (2013)	Group 10 (People who are known to use drugs occasionally/recreationally)
Fors and Jarvis (1995)	Group 8 (People who are considered homeless)
Goti et al. (2010)	Group 1 (People who have mental health problems)
Haggerty et al. (2008)[a]	Group 5 (Children and young people whose parents use drugs)
Huang et al. (2014)[b]	Group 7 (Children and young people who are in contact with young offender teams)
Kim and Leve (2011)	Group 6 (Looked after children and young people)

Study	Relevant population group/s
Lee et al. (2010)	Group 10 (People who are known to use drugs occasionally/recreationally)
Lee et al. (2013)	Group 10 (People who are known to use drugs occasionally/recreationally)
Lynsky et al. (1999)	Group 7 (Children and young people who are in contact with young offender teams)
McCambridge et al. (2008)	Group 10 (People who are known to use drugs occasionally/recreationally)
Milburn et al. (2012)	Group 8 (People who are considered homeless)
Morgenstern et al. (2009)	Group 3 (People who are lesbian, gay, bisexual or transgender)
Norberg et al. (2014)	Group 10 (People who are known to use drugs occasionally/recreationally)
Nyamathi et al. (2012)	Group 8 (People who are considered homeless)
Orte et al. (2008)	Group 5 (Children and young people whose parents use drugs)
Parsons et al. (2014)	Group 3 (People who are lesbian, gay, bisexual or transgender)
Peterson et al. (2006)	Group 8 (People who are considered homeless)
Prado et al. (2012)	Group 7 (Children and young people who are in contact with young offender teams)
Rhoades et al. (2014)	Group 6 (Looked after children and young people) Group 7 (Children and young people who are in contact with young offender teams)
Schwinn et al. (2015)	Group 3 (People who are lesbian, gay, bisexual or transgender)
Shrier et al. (2014)	Group 10 (People who are known to use drugs occasionally/recreationally)
Smith et al. (2010)	Group 6 (Looked after children and young people) Group 7 (Children and young people who are in contact with young offender teams)
Tait et al. (2015)	Group 10 (People who are known to use drugs occasionally/recreationally)
Walker et al. (2011)	Group 10 (People who are known to use drugs occasionally/recreationally)
Walton et al. (2013)	Group 10 (People who are known to use drugs occasionally/recreationally)

[a] Catalano et al. (2002) and Haggerty et al. (2008) are follow up studies of the RCT reported in Catalano et al. (1999).
[b] Huang et al. (2014) is a secondary analysis of the RCT reported in Prado et al. (2012).

Additional information on review inclusion and exclusion criteria is presented in appendix 3A. Studies that were excluded because they did not address one of the ten identified at-risk groups focused on

- 'Delinquent' youth (not explicitly in contact with criminal justice system or not in education)
- Gang members (not explicitly in contact with criminal justice system)
- High school athletes
- Specific ethnic minority groups
- Specific genders, e.g. interventions for teenage girls, mother-daughter interventions.
- Universal school programs.

The committee and NICE technical team agreed that Screening, Brief Intervention, and Referral to Treatment (SBIRT) studies would not be included in the review. This is because

untargeted screening is usually an inherent part of the SBIRT intervention and it would not be appropriate for the committee to make recommendations on interventions that are not targeted at people from at-risk groups.
Studies related to the treatment of drug dependence/misuse/disorder were excluded from the review as they are outside the scope of the guideline. The committee and NICE technical team agreed that studies that clearly described the treatment of drug use rather than prevention or harm reduction should be excluded from the review. For some studies, it was difficult to determine whether the intervention was aiming to treat or prevent drug use. If it was difficult to determine from a study paper whether the intervention was aiming to treat or prevent drug use, the study paper was assessed by at least 2 reviewers and a consensus decision was made as to whether it should be included. If a consensus decision could not be reached, the study was assessed by a third reviewer.

The committee and NICE technical team agreed that people who are dependent on drugs are using them more frequently than occasionally or recreationally. Studies that explicitly reported including people dependent on drugs were therefore not included for group 10 (people who are known to use drugs occasionally or recreationally). The NICE technical team did not interpret drug dependency scores reported in the studies to identify whether dependent drug users were included, however, any studies that explicitly reported the inclusion of dependent users were excluded.

3.2.1 Synthesis and presentation of results

The review methods, approach and lists of included study papers were discussed with the committee at its first meeting (PHAC meeting 1) in November 2015. It was agreed at PHAC meeting 1 and confirmed at PHAC meeting 2 that the results should primarily be presented by at-risk group. This was because the committee believed the at-risk groups to be very different from each other and it anticipated recommending different interventions for the different groups. The committee did recognise that the at-risk groups were not necessarily exclusive and some people may belong to more than one group, however, the committee did not consider it appropriate to combine risk groups due to the differences between groups. Additional analysis by activities listed in the scope was also included. The committee subsequently agreed at PHAC meeting 2 that evidence statements should be split by outcome (drug misuse; intention to use drugs; personal and social skills related to drug misuse; knowledge of drugs and their risks). This approach has resulted in a large number of evidence statements. When the evidence review was first presented to the committee, the committee noted that the nature of the available evidence made it difficult to synthesise.

3.2.1.1 Meta-analysis

The NICE technical team considered in detail whether to undertake meta-analysis of the included studies. The NICE technical team were aware there was a wide range of interventions, comparators and outcomes in the included studies. They discussed with the committee whether it was possible to group some of the studies by intervention or by comparator. The committee felt strongly that studies should not be grouped by intervention or comparator unless they were identical across the studies. In addition, many of the studies reported 'standard care' as a comparator, but did not define what was involved. The NICE technical team and committee agreed that standard care will vary by the at-risk group included in the study and the country in which the study was conducted. Based on the lack of definition of interventions and comparators and anticipated heterogeneity, the committee and the NICE technical team considered meta-analysis to be inappropriate. The committee were also aware that the studies reported very different outcomes for drug misuse, including episodes of use, number of days of use, quantity of drugs used, across different time points.

The NICE technical team and committee agreed that, overall, the studies were poorly reported, which made it difficult to determine what interventions, comparators and outcomes were involved in the studies.

Taking the above into account as well as the committee's request for evidence to be presented by at-risk group, the NICE technical team presented committee with a narrative synthesis of the evidence in this evidence review document. The team also presented overviews of the effectiveness evidence using presentations and tables at PHAC meetings 3, 4 and 5, as shown in appendix 3B. These presentations used a textual summary that roughly summarised the information in a way that is consistent with the forest plots suggested in the external review. The committee and NICE technical team found it helpful to see the results of the meta-analysis undertaken by the external review team. However, the conclusions that committee have drawn from the evidence are unlikely to change if a meta-analysis was undertaken.

Taking into account the proposed meta-analysis from the external review, the NICE technical team discussed the issue with other colleagues in NICE with expertise in meta-analysis. Colleagues at NICE agreed that the reasons for not undertaking a meta-analysis were justifiable, although they suggested a meta-analysis may help a committee's interpretation of the evidence.

Taking into account all of the information included in this section, the NICE technical team consider the approach taken to present the evidence in this report to be appropriate for this specific topic, based on the complexities of the range of population groups and the varied interventions, comparators and outcomes. The NICE technical team accept that there are other ways of presenting the evidence and summarising the results that could have been used, but believe that, if used, other methods would be unlikely to change the committee's conclusions or recommendations.

3.3 Review question 1: Which targeted interventions are most effective and cost effective in preventing drug misuse among groups of people most at risk

The study findings for this review question are presented below by at-risk population. The interventions in the studies that include parents were undertaken using the children's biological parents unless stated otherwise. Drug misuse outcomes were self-reported by study participants unless stated otherwise. This review refers to each intervention and drug using the terminology used by the study authors. Further details of the methods and results reported in each study are presented in the evidence tables in appendix 1.

In the evidence statements at the end of each section, outcomes are reported in line with the order outlined in the scope, namely: drug misuse outcomes, intention to use drugs, personal and social skills related to drug misuse prevention, and knowledge of drugs and their risks.

3.3.1 People who have mental health problems

Two randomised controlled trials (RCTs) (Edwards et al. 2006 [++]; Goti et al. 2010 [-]) compared the effectiveness of interventions for preventing or reducing drug misuse in people with mental health problems. The studies included in the review for this group are summarised in table 2.

Table 2. Summary of included studies for people who have mental health problems.

Study paper	Participants and country	Intervention	Comparator	Relevant outcomes	Quality
Edwards et al. (2006) RCT	47 people with first episode psychosis (Australia)	Cognitive behavioural intervention:1 to 1 skills training (Cannabis and	Psychoeducation (n=24)	Percentage of participants using cannabis. Percentage of days cannabis	++

		Psychosis Therapy) (n=23)		used in the past 4 weeks. Severity of cannabis use.	
Goti et al. (2010) RCT	143 young people referred to a child psychiatry and psychology department (Spain)	Brief intervention: motivational interviewing for young people; information, counselling and skills training for parents (n=78)	Standard care (diagnostic evaluation and initial therapeutic intervention) (n=65)	Number of problems derived from drugs or intention to use drugs. Knowledge of psychoactive substances. Perception of risk.	-

Skills training

Edwards et al. (2006) [++] compared 1 to 1 skills training (cognitive behavioural intervention [CBI]) with psychoeducation in 47 people with first episode psychosis who have used cannabis in the 4 weeks prior to starting the study. The participants had an average age of 21 (range 15 to 29) and had continued to use cannabis following initial treatment for first episode psychosis. Both groups received weekly sessions over 3 months. The intervention took a harm minimisation approach and included a detailed assessment, education about cannabis, and building motivation to change. Depending on which stage of change participants were in, in addition to skills training, the intervention also included motivational interviewing, building motivation to change, goal setting, and discussions about relapse prevention. The psychoeducation group received PowerPoint presentations on the nature of psychosis, medication and other treatments, and relapse prevention and stigma. Cannabis was not explicitly discussed in the psychoeducation group sessions. Both groups received case management, regular psychiatric review and medication, access to mobile assessment and treatment, family work, group programs and a prolonged recovery clinic. There were no statistically significant differences between the CBI skills training and psychoeducation groups at the end of the intervention or at 6 months in the percentage of participants using cannabis in the previous 4 weeks ($p>0.05$; end of intervention d=0, 6 months d=0.010), percentage of days that cannabis was used in the past 4 weeks ($p>0.05$; end of intervention d=0.317, 6 months d=0.342), or severity of cannabis use ($p>0.05$; end of intervention d=0.071, 6 months d=0.069). There were also no statistically significant differences in these outcomes for subgroups of weekly users or participants with schizophrenia or schizophreniform disorders (d=0.41 at end of treatment, reported as ‘negligible’ at 6 months).

Across both the CBI skills training and psychoeducation groups, the percentage of days that cannabis was used was statistically significantly lower at the end of the intervention (32.6 at baseline vs. 24.5 at end of intervention, p<0.001, effect size not calculable), however, it was not statistically significantly lower at 6 months (25.8 at 6 months, p=0.91, effect size not calculable). No major limitations of the study were identified.

Motivational interviewing and skills training

Goti et al. (2010) [-] compared a brief intervention consisting of motivational interviewing for young people combined with information, counselling and skills training for parents or 'mentors' (BI) with standard care in 143 young people aged 12 to 17 with reported substance use who were referred to a child and adolescent psychiatry and psychology department for assessment and treatment of a disorder not primarily related to substance use. The intervention took a non-confrontational approach based on empathy and acceptance. No further details of the skills training were provided. Young people in the intervention group received a 1 hour feedback session which included an analysis of an episode of substance abuse, pros and cons of use, personal goals, preoccupations, decision making, questions and answers, planning changes and self-monitoring. The parents or 'mentors' of participants in the intervention group received educational materials and a brief counselling session (including parenting skills). There were no statistically significant differences in the number of problems caused by drugs or intention to use drugs before and after the intervention in either the BI or standard care groups (all p>0.05, effect sizes not calculable). Perception of risk was statistically significantly greater at 1 month compared to baseline in the BI group (p=0.04, effect size not calculable), but not in the standard care group (p>0.05, effect size not calculable). The change in knowledge of psychoactive substances from baseline to 1 month was statistically significantly greater in the MI group than in the standard care group (p=0.01, effect size not calculable).There were no statistically significant differences in the changes from baseline to 1 month between the groups for problems with drugs (p>0.05, d=0.236), intention to use drugs (p>0.05, d=-0.068), or perception of risks (p>0.05, d=0.245). It is unclear how participants were allocated to groups and whether there were any differences in the characteristics of participants at baseline. The study authors state that an intention to treat analysis was used, however, they do not include participants lost to follow up in their analysis and it is not clear how missing data were addressed.

Drug misuse outcomes

Evidence Statement 1: Effectiveness of a cognitive behavioural intervention (skills training) for preventing or reducing drug misuse in people with mental health

problems

There was moderate evidence from 1 RCT[1] [++] that there was no statistically significant difference in the percentage of people using cannabis in the previous 4 weeks (p>0.05; end of intervention d=0, 6 months d=0.010), the percentage of days cannabis was used in the previous 4 weeks (p>0.05; end of intervention d=0.317, 6 months d=0.342), or the severity of cannabis use (p>0.05; end of intervention d=0.071, 6 months d=0.069) after a cognitive behavioural intervention compared to after psychoeducation, either immediately after the intervention or 6 months later for people aged 15 to 29 continuing to use cannabis following initial treatment for first episode psychosis. Both groups (cognitive behavioural intervention and psychoeducation) showed a statistically significant reduction in cannabis use compared to before each intervention (p<0.001, effect sizes not calculable). The cognitive behavioural intervention used a harm minimisation approach and included a detailed assessment, education about cannabis, and building motivation to change.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in Australia, however, the intervention would be feasible in a UK-based setting.

[1] Edwards et al. (2006) [++]

Evidence Statement 2: Effectiveness of a brief intervention based on motivational interviewing for young people combined with information, counselling and skills training for their parents for preventing or reducing drug misuse in people with mental health problems

There was weak evidence from 1 RCT[1] [-] that there was no statistically significant difference at 1 month in the number of problems from drugs after a brief intervention based on motivational interviewing for young people combined with information, counselling and skills training for parents compared with standard care in young people aged 12 to 17 who have reported substance misuse and who have been referred to a child psychiatry and psychology department for a disorder not directly related to substance misuse (p>0.05, d=0.236). Further details of the skills training provided were not reported.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in Spain, however, the intervention would be feasible in a UK-based setting.

[1] Goti et al. (2010) [-]

Intention to use drugs

Evidence Statement 3: Effectiveness of a brief intervention based on motivational interviewing for young people combined with information, counselling and skills training for parents for reducing intention to misuse drugs in people with mental health problems

There was weak evidence from 1 RCT[1] [-] that there was no statistically significant difference at 1 month for intention to use drugs after a brief intervention based on motivational interviewing for young people combined with information, counselling and skills training for parents compared with standard care in young people aged 12 to 17 who have reported substance misuse and who have been referred to a child psychiatry and psychology department for a disorder not directly related to substance misuse ($p>0.05$, $d=-0.068$). Further details of the skills training provided were not reported.

Applicability: The evidence is only partially applicable to reducing intention to misuse drugs in the UK because the study was undertaken in Spain, however, the intervention would be feasible in a UK-based setting.

[1] Goti et al. (2010) [-]

Personal and social skills related to drug misuse prevention

No relevant evidence was identified.

Knowledge of drugs and their risks

Evidence Statement 4: Effectiveness of a brief intervention based on motivational interviewing for young people combined with information, counselling and skills training for parents for increasing knowledge of drugs and their risks in people with mental health problems

There was weak evidence from 1 RCT[1] [-] that knowledge of drugs was statistically significantly greater at 1 month after a brief intervention based on motivational interviewing for young people combined with information, counselling and skills training for parents compared with standard care in young people aged 12 to 17 who have reported substance misuse and who have been referred to a child psychiatry and psychology department for a disorder not directly related to substance misuse ($p=0.01$, $d=0.516$). However, there was no

statistically significant difference in the perception of risks between the 2 interventions (p>0.05, d=0.245). Details of the skills training provided were not reported.

Applicability: The evidence is only partially applicable to increasing knowledge of drugs and their risks in the UK because the study was undertaken in Spain, however, the intervention would be feasible in a UK-based setting.

[1] Goti et al. (2010) [-]

3.3.2 People involved in commercial sex work or who are being sexually exploited

No studies were identified.

Evidence Statement 5: Effectiveness of drug misuse prevention interventions for people involved in commercial sex work or who are being sexually exploited
No relevant evidence was identified.

3.3.3 People who are lesbian, gay, bisexual or transgender

Three RCTs (Morgenstern et al. 2009 [+]; Parsons et al. 2014 [+]; Schwinn et al. 2015 [+]) compared the effectiveness of interventions for preventing or reducing drug misuse in people who are lesbian, gay, bisexual or transgender. The studies included in the review for this group are summarised in table 3.

Table 3. Summary of included studies for people who are lesbian, gay, bisexual or transgender.

Study papers	Participants and country	Intervention	Comparator	Relevant outcomes	Quality
Morgenstern et al. (2009) RCT	150 men who had had sexual contact with a non-primary male partner in past 90 days (USA)	Motivational interviewing (n=70)	Educational videos (n=80)	Club drug use.	+
Parsons et al. (2014) RCT	143 men who had at least 1 incident of unprotected anal intercourse with a male partner who was HIV positive, of unknown HIV	Motivational interviewing (n=73)	Educational videos and structured discussion (n=70)	Any drug use. Cocaine use. Ecstasy use. Methamphetamine use. GHB use.	+

	status, or a casual partner (USA)			Ketamine use.	
Schwinn et al. (2015) RCT	236 young people who identified as gay, lesbian, bisexual, transgender or questioning (USA)	Online intervention based on social competency skills-building (n=119)	Control (no further details provided) (n=117)	Drug refusal skills. Peer drug use. Marijuana use. 'Other' drug use.	+

Motivational interviewing

Morgenstern et al. (2009) [+] compared motivational interviewing (MI) with educational videos in 150 men (average age 38) who had had sexual contact with a non-primary male partner in the past 90 days and who had used club drugs on at least 5 occasions in the past 90 days. The MI group received 4 sessions of one hour each, over 4 to 8 weeks. The sessions addressed club drug use and high risk sexual activity. The educational videos group watched 4 videos of one hour each, over 4 to 8 weeks. The videos presented the dangers of club drug use and the connection with risky sexual behaviour. The study found that people in the educational videos group used statistically significantly more club drugs than those in the MI group at 3 months (data not reported, $p<0.01$, effect size not calculable), 6 months (data not reported, $p<0.01$, effect size not calculable), and 9 months (data not reported, $p<0.02$, effect size not calculable). The study authors report that their sampling strategies were not designed to recruit a sample of participants that was representative of the overall population of men who had had sexual contact with a non-primary male partner and who used club drugs. It is unclear whether assessors were aware of which group participants had been allocated to.

Parsons et al. (2014) [+] compared motivational interviewing (MI) with educational videos combined with structured discussions in 143 men who had at least 1 incident of unprotected anal intercourse with a male partner who was HIV positive, of unknown HIV status, or a casual partner, and who had at least 5 days of drug use in the previous 90 days. Participants aged 18 to 29 were included, although the average age of participants was not reported. Both the intervention and control participants received 4 sessions of one hour each, over 12 weeks. The MI group sessions addressed motivation and personal responsibility surrounding club drug use and risky sexual behaviour. The control group sessions consisted of an educational video of factual information about drugs and risky sexual behaviour, followed by structured discussions. There was a statistically significant reduction in the odds of using any

drug in the previous 30 days at 12 months in both the MI (OR 0.33, 95% CI 0.17 to 0.63, p≤0.0001) and control (OR 0.51, 95% CI 0.27 to 0.98, p=0.042) groups. The reduction in odds was statistically significantly greater in the MI group than the control group (OR 0.82, 95% CI 0.75 to 0.89, p<0.001).

Skills building

Schwinn et al. (2015) [+] compared online skills building with a control intervention in 236 young people aged 15 or 16 who identified as gay, lesbian, bisexual, transgender or questioning. The online intervention consisted of 3 sessions that lasted around 14 minutes each. Sessions included learning how to identify and manage stress, make decisions, and refusal skills. The study authors did not provide details of what the participants in the control group received, if anything. Three months after the start of the study, the online intervention group had a statistically significantly lower use of drugs other than marijuana in the past 30 days compared to the control group (1.03 in online group vs. 1.09 in control group, p<0.05, d=0.34) and statistically significantly lower drug use amongst peers (1.37 in online group vs. 1.52 in control group, p<0.05, d=0.31). There was no statistically significant difference in marijuana use in the previous 30 days (1.63 in online group vs. 1.74 in control group, p>0.06, d=0.006). The study found the online group had statistically significantly higher scores than the control group for drug refusal skills (2.72 in online group vs. 2.42 in control group, p<0.05, d=0.32), problem solving skills (2.94 in online group vs. 2.77 in control group, p<0.05, d=0.32) and coping skills (2.77 in online group vs. 2.58 in control group, p<0.05, d=0.32). The method of randomisation was not described in the study paper, it is unclear whether group allocation was known to the assessors, and incomplete outcome data were not addressed in the analysis.

Drug misuse outcomes

Evidence Statement 6: Effectiveness of motivational interviewing for preventing or reducing drug misuse in people who are lesbian, gay, bisexual or transgender

There was moderate evidence from 2 RCTs[1,2] [+[1,2]] that the use of 'club drugs' in men who have sex with men was statistically significantly lower after motivational interviewing compared with after educational videos at 3 months (p<0.01, effect size not calculable)[1], 6 months (p<0.01, effect size not calculable)[1], 9 months (p<0.02, effect size not calculable)[1] and 12 months (OR 0.82, 95% CI 0.75 to 0.89, p≤0.001)[2].

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because both of the studies were undertaken in the USA, however, the

interventions would be feasible in a UK-based setting.

[1] Morgenstern et al. (2009) [+]

[2] Parsons et al. (2014) [+]

Evidence Statement 7: Effectiveness of online skills building for preventing or reducing drug misuse in people who are lesbian, gay, bisexual or transgender

There was weak evidence from 1 RCT[1] [+] that online skills building had a mixed effect on the misuse of drugs in young people aged 15 or 16 who identified as gay, lesbian, bisexual or transgender. The use of drugs other than cannabis was statistically significantly lower 3 months after an online skills building intervention compared to after a control intervention (no further details provided by study authors) ($p<0.05$, $d=0.34$), however, there was no statistically significant difference in cannabis use at 3 months ($p>0.05$, $d=0.006$). The skills training in this study included learning how to identify and manage stress, how to make decisions, and refusal skills.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Schwinn et al. (2015) [+]

Intention to misuse drugs

No relevant evidence was identified.

Personal and social skills related to drug misuse prevention

Evidence Statement 8: Effectiveness of online skills building for improving personal and social skills related to drug misuse prevention in people who are lesbian, gay, bisexual or transgender

There was moderate evidence from 1 RCT[1] [+] that drug refusal skills, problem solving skills and coping skills were statistically significantly better 3 months after an online skills building intervention compared to a control intervention (no further details provided by study authors) (all $p<0.05$, all $d=0.32$) in young people aged 15 or 16 who identified as gay, lesbian, bisexual, or transgender. The skills training in this study included learning how to identify and manage stress, how to make decisions, and refusal skills.

Applicability: The evidence is only partially applicable to improving personal and social skills related to drug misuse prevention in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Schwinn et al. (2015) [+]

Knowledge of drugs and their risks

No relevant evidence was identified.

3.3.4 People not in employment, education or training (including children and young people who are excluded from school or are regular truants)

No studies were identified.

Evidence Statement 9: Effectiveness of drug misuse prevention interventions in people not in employment, education or training

No relevant evidence was identified.

3.3.5 Children and young people whose parents use drugs

Five study papers reporting on 3 studies (Catalano et al. 1999 [-]; Catalano et al. 2002 [-]; Dore et al. 1999 [-]; Haggerty et al. 2008 [-]; Orte et al. 2008 [+]) compared the effectiveness of interventions for preventing or reducing drug misuse in children and young people whose parents use drugs. The studies included in the review for this group are summarised in table 4.

Table 4. Summary of included studies for children and young people whose parents use drugs.

Study papers	Participants and country	Intervention	Comparator	Relevant outcomes	Quality
Catalano et al. (1999) RCT	178* children aged 3 to 14 whose parents had been in methadone treatment for at least 90 days (USA)	Family-based intervention: group skills training for parents and case management (Focus on Families) (n=97*)	Standard methadone treatment (n=81*)	Marijuana use.	-

Catalano et al. (2002) Follow up of Catalano et al. (1999)	97 children as above (USA)	Family-based intervention: group skills training for parents and case management (Focus on Families) (n not reported)	Standard methadone treatment (n not reported)	Marijuana use	-
Haggerty et al. (2008) Follow up of Catalano et al. (1999)	177* children as above	Family-based intervention with group skills training for parents and case management (Focus on Families) (n=95*)	Standard methadone treatment (n=82*)	Marijuana abuse and dependence. Opiates abuse and dependence. Cocaine or amphetamines abuse and dependence.	-
Dore et al. (1999) Quasi-controlled before and after study	206 children aged approximately 5 to 11 whose teachers thought they were particularly affected by drug abuse in homes and neighbourhoods (USA)	Developmental intervention: group skills training for children (Friends in Need) (n=206)	No intervention (n not clear)	Self-worth.	-
Orte et al. (2008) Controlled before and after study	38 children aged 6 to 14 who had 1 parent with a diagnosis of addiction but not severe drug dependency (Spain)	Family-based intervention with group skills training for parents and children (Family Competence Programme) (n=22)	Control (no further details provided) (n=16)	Adaptive skills. Aggression. Impulsive behaviour. Lying. Withdrawal. Self-esteem. Helplessness. Concentration. Social skills. Communication skills. Problem solving	+

				skills. Understanding other's feelings.	

** as reported in each study.*

Family-based interventions

Catalano et al. (1999) [-] compared a family-based intervention involving group-based skills training for parents combined with case management (Focus on Families [FOF]) with standard methadone treatment. Outcomes were assessed in 178 children whose parents had been in methadone treatment for at least 90 days. The children were aged between 3 and 14 (average age 10.4). Parents attended 32 skills training with case management sessions of 90 minutes each, over 16 weeks. Children attended 12 sessions so that parents could practice new skills. Training sessions included relapse prevention and coping, anger management, child development, communication skills, family meetings, expectations of children, using appropriate rewards and disciplinary consequences. Parents were instructed to teach their children refusal and problem-solving strategies. Case management was provided to families for 9 months, beginning before the training sessions and continuing for 4 months afterwards. Case managers helped families identify goals, helped parents engage in school or employment, helped parents build supportive and drug-free social networks, and reinforced the skills learnt in the training sessions. Standard methadone treatment consisted of methadone dispensing and individual and group counselling. There were no statistically significant differences in marijuana use in children between the FOF and standard methadone treatment group at 6 months (2% in FOF vs. 9% in standard care, p value >0.05, effect size not calculable) or 12 months (7% in FOF vs. 9% in standard care, p value >0.05, effect size not calculable). No analysis by age group was reported. It is not clear how missing outcome data were accounted for and it is unclear whether assessors collecting data from participants were aware of the group that participants had been allocated to.

Catalano et al. (2002) [-] is a follow-up study of the children included in the randomised controlled trial by Catalano et al. (1999). The study authors report that data from 98 children across the 2 groups were included. The study found no statistically significant difference in marijuana use between the participants receiving Focus on Families and standard care at 24 months (p>0.05, effect size not calculable). There are inconsistencies between this paper and the Catalano et al. (1999) paper in the reporting of the sample size included in the trial.

Haggerty et al. (2008) [-] is a long-term follow-up study of the children included in the randomised controlled trial by Catalano et al. (1999). The study authors report that 95

children were included in the Focus on Families (FOF) group and 82 children in the standard care group, however, this is inconsistent with the numbers reported in Catalano et al. (1999) (97 in FOF and 81 in control group). The average age of the participants was 22 at follow-up. When comparing the FOF and standard care groups, the hazard ratio for onset of substance abuse was not statistically significant for any substances (HR 0.85 [95% CI not reported], p value not significant), marijuana (HR 0.72 [95% CI not reported], p>0.05), opiates (HR 0.83 [95% CI not reported], p>0.05), or cocaine/amphetamines (HR 0.99 [95% CI not reported], p>0.05) at 12 to 15 years after the original RCT.

Orte et al. (2008) [+] is a controlled before and after study looking at the effectiveness of a family-based intervention involving group-based skills training for parents and children (the Family Competence Program [FCP]) compared with a control intervention in 38 children who had 1 parent with a diagnosis of addiction, but not severe drug dependency. It is not clear from the paper if children were included if both parents had a diagnosis of addiction. Children aged 6 to 14 (average age 10.6) were included. The FCP consisted of 14 sessions of 2 hours each. Parents and children received separate sessions for the first hour and then came together in the second hour to practice skills learnt. Sessions included discussions, interactive exercises, modelling and role play. Homework was given between sessions. Parental sessions included expectations, development, stress management, objectives and goals, relationships, family meetings, solving problems, setting limits, and maintaining good behaviour. The children's sessions included objectives and goals, differential attention, learning from parents, solving problems, and giving instructions. Compared to the group that received no intervention, the children in the FCP group were rated by teachers to have statistically significantly better adaptive skills (p=0.014, effect size not reported), self-esteem (p=0.002, effect size not reported), concentration (p<0.001, effect size not reported), ability to limit distractions (p=0.014, effect size not reported), social skills (p=0.002, effect size not reported), ability to make new friends (p=0.022, effect size not reported), problem solving skills (p=0.004, effect size not reported), ability to criticise in a friendly manner (p=0.001, effect size not reported), ability to talk to adults (p=0.014, effect size not reported), ability to say what one means (p=0.017, effect size not reported) and ability to understand others' feelings (p<0.001, effect size not reported). The children in the FCP group also showed statistically significantly reduced aggression (p=0.023, effect size not reported), arguments with parents (p=0.009, effect size not reported), impulsive behaviour (p=0.001, effect size not reported), lying (p<0.001, effect size not reported), withdrawal (p=0.007, effect size not reported), and helplessness (p=0.040, effect size not reported) compared with children in the control group. When comparing the results before and after the Friends in Need intervention, children showed a statistically significant difference in aggression (p<0.001, d=0.722),

arguments with parents (p=0.004, d=0.7288), impulsive behaviour (p=0.002, d=0.655), lying (p=0.001, d=0.884), withdrawal (p=0.039, d=0.663), self-esteem (p=0.022, d=0.501), helplessness (p=0.05, d=0.456), concentration (p<0.001, d=1.001), ability to limit distractions (p=0.006, d=0.811), social skills (p=0.006, d=0.844), ability to make new friends (p<0.001, d=0.878), ability to solve problems (p<0.001, d=0.733), ability to criticise in a friendly manner (p<0.001, d=0.833), ability to talk to adults (p=0.001, d=0.550), ability to say what one means (p=0.041, d=0.622), and ability to understand other's feelings (p<0.001, d=1.193). It is unclear whether there was a statistically significant difference in adaptive skills as rated by teachers before and after the intervention as the study authors report a p value of 0.50 (d=0.501) but also describe the difference as 'significant'. The study authors reported no significant differences in before and after results for the control group (p values and effect sizes not reported and not calculable). Participants were not truly randomised as they were allocated to groups according to where they lived. It is not clear whether assessors were aware which group participants were allocated to.

Developmental intervention - skills training, non-family based approaches

Dore et al. (1999) [-] is a quasi-experimental before and after study that compares a developmental intervention involving group-based skills training (Friends in Need) with no intervention in 206 children whose teachers believed they were particularly affected by drug abuse in their homes and neighbourhoods. The participants were in grades 3, 4 and 5 (aged approximately 8 to 11) or from elementary school classes (aged approximately 5 to 10) for children with serious emotional disturbances or mental retardation. The average age of the children was not reported. The Friends in Need group received 8 sessions of 90 minutes each over 8 weeks. Each session included recitation of the 'Four Cs' ('you didn't cause it, you can't control it, you can't cure it, you can be okay'), a game to help children see themselves as worthy individuals with positive attributes, sharing experiences to give and receive support from peers, and individual goodbyes from group leaders to reinforce positive behaviour. Each session also included 2 brief activities to address psychosocial issues of concern, for example, reading and discussing a story about a boy whose big sister is using drugs. The control group received no intervention until 6 months after the intervention group, when they received the Friends in Need intervention. The study authors report that children in the Friends in Need group had enhanced feelings of self-worth, however, it is not clear if this is compared to pre-treatment, the control group, or both, and the difference was not statistically significant. It is unclear whether the groups had similar characteristics before the intervention, how many participants were in the control group, and how participants were randomised to the groups.

Drug misuse outcomes

Evidence Statement 10: Effectiveness of family based intervention (skills training for parents and case management) for preventing or reducing drug misuse in children and young people whose parents use drugs

There was weak evidence from 1 RCT[1] [-] and 2 follow-up studies from the same RCT[2,3] [-[2],-[3]] that drug misuse was not statistically significantly different after a family-based intervention involving skills training for parents and case management (Focus on Families) compared to standard care in children aged between 3 and 14 whose parents had received methadone treatment. The RCT and the first follow up paper reported no statistically significant difference in cannabis use at 6 months ($p>0.05$, effect size not calculable)[1], 12 months ($p>0.05$, effect size not calculable)[1], or 24 months ($p>0.05$, effect size not calculable)[2]. The second follow up paper reported no statistically significant difference between Focus on Families and standard care for the risks of developing cannabis abuse (HR 0.72, 95% CI not reported, p value not significant)[3], opiate abuse (HR 0.83, 95% CI not reported, p value not significant)[3] or cocaine or amphetamine abuse (HR 0.99, 95% CI not reported, p value not significant)[3] 12 to 15 years after the original RCT. The skills training focused on improving parents' communication skills.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the RCT was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Catalano et al. (1999) [-]

[2] Catalano et al. (2002) [-]

[3] Haggerty et al. (2008) [-]

Intention to use drugs

No relevant evidence was identified.

Personal and social skills related to drug misuse prevention

Evidence Statement 11: Effectiveness of family based approaches (skills training for parents and children) for improving personal and social skills related to drug misuse prevention in children and young people whose parents use drugs

There was moderate evidence from 1 controlled before and after study[1] [+] that there was a statistically significant improvement in several personal and social skills related to drug misuse prevention, including impulsive behaviour (p=0.001, effect size not reported), the ability to make new friends (p=0.02, effect size not reported), and problem solving skills (p=0.004, effect size not reported), after a family based intervention involving skills training for parents and children (Family Competence Program) in children aged 6 to 14 who had 1 parent with a diagnosis of addiction (follow up period not reported). Skills training for children focused on listening skills, improving relationships, and coping with criticism. Skills training for parents focused on improving relationships and problem solving.

Applicability: The evidence is only partially applicable to improving personal and social skills related to drug misuse prevention in the UK because the study was undertaken in Spain, however, the intervention would be feasible in a UK-based setting.

[1] Orte et al. (2008) [+]

Evidence Statement 12: Effectiveness of skills training for children for improving personal and social skills related to drug misuse prevention in children and young people whose parents use drugs

There was weak evidence from 1 before and after study[1] [-] that skills training for children (Friends in Need) had no effect on feelings of self-worth in children aged approximately 5 to 11 whose teachers believed they were particularly affected by drug abuse in their homes and neighbourhoods (follow up time not reported; data, p value and effect size not reported). Further details of the skills training provided were not reported.

Applicability: The evidence is only partially applicable to improving personal and social skills related to drug misuse prevention in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The evidence is only partially applicable to improving personal and social skills related to drug misuse prevention in children and young people whose parents use drugs because the study included children whose teachers believed were particularly affected by drug abuse in their homes and neighbourhood.

[1] Dore et al. (1999) [-]

Knowledge of drugs and their risks

No relevant evidence was identified.

3.3.6 Looked after children and young people

Three RCTs (Kim and Leve 2011 [+]; Rhoades et al. 2014 [-]; Smith et al. 2010 [+]) compared the effectiveness of interventions for preventing or reducing drug misuse in looked after children and young people. The studies included in the review for this group are summarised in table 5.

Table 5. Summary of included studies for looked after children and young people.

Study papers	Participants and country	Intervention	Comparator	Relevant outcomes	Quality
Kim and Leve (2011) RCT	100 young females aged 10 to 12 in foster care (USA)	Family-based intervention: group skills training for foster parents combined with group skills training and information for children (Middle School Success) (n=48)	Regular foster care (n=52)	Marijuana use. Prosocial behaviour.	+
Rhoades et al. (2014) RCT	166 young females aged 13 to 17 placed in out-of-home care (USA)	Family-based intervention with case management: skills training for foster parents and biological parents (unclear if group or 1 to 1) combined with behaviour management system and individual therapy (some also received motivational interviewing) for children and case management (Multidimensional Treatment Foster Care) (n=81)	Standard care (n=85)	Drug use.	-
Smith et al. (2010) RCT	79 young males aged 12 to 17 referred to foster care by juvenile justice system (USA)	Family-based intervention with case management: behaviour management system for children combined with skills training (unclear if group based or 1 to 1) for foster parents and weekly family therapy (not clear if foster or biological	Group care (n=42)	Marijuana use. Use of drugs other than tobacco, alcohol or marijuana.	+

		family) (Multidimensional Treatment Foster Care) (n=37)			

Skills training alone

Kim and Leve (2011) [+] compared group-based skills training for foster parents combined with group-based skills training and information for children (Middle School Success [MSS]) with regular foster care in 100 females aged 10 to 12. The intervention aims to increase prosocial skills and self-efficacy, and improve parenting skills. The intervention consists of 6 group sessions for foster parents and 6 group sessions for the children that met twice a week for 3 weeks. The foster parent sessions focused on developing a behavioural reinforcement system to encourage adaptive behaviours across home, school and community settings and gave weekly home practice assignments. The children's sessions focused on strengthening prosocial skills; practicing sharing/cooperating with peers; increasing accuracy of perceptions about peer norms for abstinence from substance use, sexual activity and violence; practicing strategies for meeting new people; dealing with feelings of exclusion; and talking to friends and teachers about life in foster care. Follow-up intervention services were provided to caregivers and children in the intervention group for 2 hours once a week throughout the first year of middle school. Children and foster parents in the regular foster care group received the usual services provided through the child welfare system. Marijuana use at 36 months was statistically significantly negatively correlated with being in the intervention group (1.29 in MSS vs. 2.33 in regular foster care, correlation -0.28, $p<0.01$, $d=0.57$), that is to say, being in the intervention group was associated with significantly less marijuana use. Prosocial behaviour at 6 and 12 months was statistically significantly positively correlated with being in the intervention group (0.80 in MS vs. 0.74 in regular foster care, correlation +0.22, $p<0.05$, $d=0.46$), that is to say, being in the intervention group was associated with significant more prosocial behaviour. It is unclear whether assessors were aware of which group the participants were assigned to and participants were allocated to groups using a coin toss. Substance use at baseline was not measured.

Behaviour management

Rhoades et al. (2014) [-] compared skills training for foster parents and biological parents combined with a behaviour management system for children, individual therapy for children, and case management with standard care in 166 females in out-of-home care with at least 1 criminal referral in the previous 12 months. Some children also received motivational interviewing, and it was unclear whether the skills training was delivered in a group or on a 1

to 1 basis. Females aged 13 to 17 at the start of the study were included, but the average age of participants during the trial was not reported. The authors also report follow up interviews with 152 participants from the original randomised controlled trial, which took place an average of 7 years after the start of the original trial. The intervention included case management, daily telephone contact between case managers and foster parents, weekly group supervision and support meetings for foster parents, 24 hour on-call staff support for foster parents, point-and-level behavioural management program and individual therapy for young people, family therapy for the biological families focusing on parent management strategies, monitoring of school attendance, and psychiatric consultation if needed. Some participants (number not reported) received components specifically targeting substance abuse, such as motivational interviewing and incentives for clean urine tests. The standard care comparator group received community-based programs representing typical services for young participants referred to out-of-home care. There was a statistically significant negative association between the intervention and drug use approximately 9 years after start of study ($p<0.05$, effect size not calculable) but not at 7, 7.5, 8 or 8.5 years after the start of the study ($p>0.05$, effect sizes not calculable). It was not reported whether the difference between the groups was statistically significant or not (p value not reported, $d=0.45$). There was a statistically significant decrease in drug use from approximately 7 years after start of study to approximately 9 years after the start of the study in the intervention group ($p<0.05$, effect size not calculable) but not in the standard care group ($p=0.18$, effect size not calculable). It was not reported whether the difference between the groups was statistically significant or not (p value not reported, $d=0.39$). The method of randomisation was not clearly reported. Allocation was not adequately concealed and knowledge of the allocated intervention was not prevented during the study. Baseline characteristics were not reported for the randomised controlled trial.

Smith et al. (2010) [+] compared a behaviour management system for children combined with skills training for foster parents and weekly family therapy to group care in 79 males aged 12 to 17 (average age 14.9) referred by the juvenile justice system. It was unclear whether the skills training was delivered in a group or on a 1 to 1 basis or whether the family therapy was with the foster family, biological family, or both. In the intervention group, foster parents used daily behavioural management systems tailored to each young person. The participants earned points for positive behaviours which could be exchanged for privileges. Participants lost points for undesirable or maladaptive behaviours and privileges could be removed if rules were violated or participants had a urine test that showed drug use. Participants also received consistent limit setting and positive adult mentoring. Families received weekly family therapy and on-call support focused on improving parenting skills of

foster parents. Participants receiving group care were either in a program that used positive peer cultures to increase conformity to social norms (66% of programs) or a program that used a reality, eclectic and behaviour management, or cognitive theory based therapy (33% of programs). Twelve months after treatment started there was no statistically significant difference between the groups for marijuana use (1.57 in intervention vs. 1.90 in group care, p>0.05, d=-0.28). However, at 18 months participants in the intervention group showed a statistically significantly lower use of marijuana than participants in the group care group (1.50 in intervention vs. 2.34 in group care, p<0.01, d=-0.65). There was a statistically significant difference between the participants in the intervention group and the participants in the group care group for use of drugs other than alcohol, tobacco and marijuana at 12 months (1.24 in intervention vs. 1.59 in group care, p<0.05, d=-0.39) and 18 months (1.19 in intervention vs. 1.61 in group care, p<0.05, d=-0.46). The method of randomisation was not described and it is unclear if participants were aware which group they had been allocated to. The characteristics of participants in the 2 groups, other than substance use, were not compared at baseline.

Drug misuse outcomes

Evidence Statement 13: Effectiveness of skills training for foster parents combined with skills training and information for children for preventing or reducing drug misuse in looked after children and young people

There was moderate evidence from 1 RCT[1] [+] that skills training for foster parents combined with skills training and information for children was statistically significantly associated with reduced cannabis use at 36 months (p<0.01, d=0.57) in young females aged 10 to 12. The difference in cannabis use after skills training and after standard care was not compared. The skills training for foster parents included developing a behavioural reinforcement system and the skills training for children included improving social skills and learning how to deal with feelings of exclusion.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The evidence is only partially applicable to preventing or reducing drug use in all children because the study only included female participants.

[1] Kim and Leve (2011) [+]

Evidence Statement 14: Effectiveness of behaviour management systems with skills training for foster parents for preventing or reducing drug misuse in looked after

children and young people

There was weak evidence from 2 RCTs[1,2] [+[1],-[2]] that the evidence for the effectiveness of behaviour management systems combined with skills training for foster parents (Multidimensional Treatment Foster Care) in looked after children and young people was mixed. At 12 months, the use of drugs other than cannabis in males aged 12 to 17 was statistically significantly lower after the intervention compared to standard care ($p<0.05$, $d=-0.39$)[1], however, there was no statistically significant difference in use of cannabis ($p>0.05$, $d=-0.28$)[1]. At 18 months, there was statistically significantly lower use of cannabis ($p<0.01$, $d=-0.65$)[1] and drugs other than cannabis ($p<0.05$, $d=-0.46$)[1] in males aged 12 to 17 after the intervention compared to standard care. From 7 years to 9 years after the intervention, 1 study reported a statistically significant reduction in drug use ($p<0.05$, effect size not calculable)[2] in young females aged 13 to 17. At 9 years, 1 study reported a statistically significant association between the intervention and reduced drug use ($p<0.001$, effect size not calculable)[2] but not between standard care and drug use ($p>0.05$, effect size not calculable; $d=0.39$, p value not reported for difference in change between groups)[2]. The skills training for foster parents included developing a daily behaviour management system tailored to each child.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The evidence is only partially applicable to preventing or reducing drug misuse in all children because 1 study included only male participants[1] and 1 study included only female participants[2].

[1] Smith et al. (2010) [+]

[2] Rhoades et al. (2014) [-]

Intention to misuse drugs

No relevant evidence was identified.

Personal and social skills related to drug misuse prevention

Evidence Statement 15: Effectiveness of skills training for foster parents combined with skills training and information for children for improving personal and social skills related to drug misuse prevention in looked after children and young people

There was moderate evidence from 1 RCT[1] [+] that skills training for foster parents combined

with skills training and information for children was associated with statistically significant improvements in prosocial behaviour (not defined) at 6 to 12 months ($p<0.05$, $d=0.46$) in young females aged 10 to 12. The skills training for foster parents included developing a behavioural reinforcement system and the skills training for children included improving social skills and learning how to deal with feelings of exclusion.

Applicability: The evidence is only partially applicable to improving personal and social skills related to drug misuse prevention in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The evidence is only partially applicable to improving personal and social skills related to drug misuse prevention in all children because the study only included female participants.

[1] Kim and Leve (2011) [+]

Knowledge of drugs and their risks

No relevant evidence was identified.

3.3.7 Children and young people who are in contact with young offender teams but not in secure environments

Seven study papers from 6 studies (Cervantes et al. 2004 [+]; D'Amico et al. 2013 [+]; Prado et al. 2012 [+]; Huang et al. 2014 [+]; Lynsky et al. 1999 [-]; Rhoades et al. 2014 [-]; Smith et al. 2010 [+]) compared the effectiveness of interventions for preventing or reducing drug misuse in children and young people who are in contact with young offender teams but not in secure environments. This review question does not include studies of children and young people in prisons or young offender institutions. All of the studies were conducted in the USA. The studies included in the review for this group are summarised in table 6. To note, the scope identified only children and young people as a target group, and not adults in contact with offender teams. This was most likely a consequence of being developed from the scope for PH4. However, the NICE technical team did not identify any studies of drug misuse prevention interventions in adults in contact with offender teams but not in secure environments during the sift.

Table 6. Summary of included studies for children and young people who are in contact with young offender teams but not in secure environments.

Study papers	Participants and country	Intervention	Comparator	Relevant outcomes	Quality
Cervantes et al. (2004)	352 young people who	Family-based intervention: group	None	Use of drugs other than	+

Before and after study	were first time juvenile offenders (USA)	skills training and information for parents and children (Programa Shortstop) (n=352)		tobacco or alcohol. Academic social skills. Family social skills. Community social skills.	
Huang et al. (2014)	Secondary analysis of Prado et al. (2012).			Illicit drug use.	+
D'Amico et al. (2013) RCT	193 young people with a first time alcohol or marijuana offence (USA)	Group motivational interviewing (Free Talk) (n=113)	Abstinence-based Alcoholics Anonymous intervention (n=80)	Marijuana use in past 30 days. Marijuana consequences.	+
Lynsky et al. (1999) Uncontrolled before and after study	209 young people convicted of a civil or criminal offence related to alcohol or controlled substances (USA)	Skills training and information (Youth Alternative Sentencing Program) (n=209)	None	Intention to use marijuana. Perception of risk.	-
Prado et al. (2012) RCT	242 young people arrested or committed a 'level 3 behaviour problem'.* (USA)	Family-based intervention: group skills training for parents (Familias Unidas) (n=120)	Community Practice (n=122)	Illicit drug use.	+
Rhoades et al. (2014) RCT	166 young people with at least 1 criminal referral in past 12 months (USA)	Family-based intervention with case management: skills training for foster parents and biological parents (unclear if group or 1 to 1) combined with behaviour management system and individual therapy (some also received motivational interviewing) for children and case management (Multidimensional Treatment Foster Care) (n=81)	Standard care (n=85)	Drug use.	-

Smith et al. (2010) RCT	79 young people referred by juvenile justice system (USA)	Family-based intervention with case management: behaviour management system for children combined with skills training (unclear if group based or 1 to 1) for foster parents and weekly family therapy (not clear if foster or biological family) (Multidimensional Treatment Foster Care) (n=37)	Group care (n=42)	Marijuana use. Use of drugs other than tobacco, alcohol or marijuana.	+

**Level 3 behaviour problems are assault or threat against a non-staff member, breaking and entering or burglary, serious fighting, hazing, possession or use of alcohol and/or controlled substances, possession of simulated weapons, and trespassing or vandalism.*

Family-based interventions

Cervantes et al. (2004) [+] is a before and after study of the effectiveness of a family-based intervention involving group-based skills training and information for parents and children (Programa Shortstop) in 352 young people who were Hispanic first time juvenile offenders (average age 14.6). The intervention consisted of 4 sessions for young people and their parents over 8 weeks. Participants watched videos and heard presentations from legal professionals and people detained in jails. Sessions included a simulated jail experience and homework was given between sessions. Topics included the juvenile justice system, legal responsibilities of parents, life choices and consequences, family communication, conflict resolution strategies, education on the pharmacological effects of drugs, and self-esteem building. Both the parents and the children and young people were taught communication skills. Fifteen participants also took part in a mentoring program, although the authors report that this 'did not function as expected'. There was no statistically significant difference in the use of drugs other than tobacco or alcohol before and after the program (13.1% vs. 12.8%, $p>0.05$, effect size not calculable). Participants' academic social skills as rated by their parents were statistically significantly greater after Programa Shortstop than before it (2.34 vs. 2.47, $p<0.001$, effect size not calculable). Family and community social skills as rated by parents were also statistically significantly greater after Programa Shortstop (2.31 vs. 2.36, $p<0.05$ and 2.58 vs. 2.63, $p<0.05$ respectively; effect sizes not calculable). Outcome data for some participants in the case management and mentoring scheme were not reported. The missing data were not adequately addressed by the study authors and results were not reported separately for participants receiving these parts of the intervention.

Prado et al. (2012) [+] compared a family-based intervention involving group-based skills training for parents (Familias Unidas) and standard care in 242 young people aged 12 to 17 (average age 14.7) who were Hispanic or Latino and had been arrested or had committed a 'level 3 behaviour problem' (assault or threat against a non-staff member, breaking and entering or burglary, serious fighting, hazing, possession or use of alcohol and/or controlled substances, possession of simulated weapons, and trespassing or vandalism). Familias Unidas aimed to make parents experts of their children's needs and development. It consists of 8 group sessions for parents of 2 hours each and 4 family visits for parents and children of 1 hour each over 12 weeks. Sessions focused on building parental investment in children, enhancing communication skills, improving family support, increasing parental investment in school, increasing monitoring of peers, and enhancing communication skills. Standard care services included referrals to community-based organisations offering individual and family therapy. Twelve months after the intervention, illicit drug use in the past 90 days was statistically significantly lower in the Familias Unidas group (22.5%) than in the standard care group (31.3%, p=0.04, d=0.79). There was no statistically significant difference between the groups for the number of participants who had a marijuana dependence (b=-0.33, p=0.25, d=0.93). The method of randomisation was not reported and it is not clear whether knowledge of allocation was prevented during the study.

Huang et al. (2014) [+] is a secondary analysis of Prado et al. (2012). The study authors used a Complier Average Casual Effect (CACE) analytic approach to evaluate the data. The CACE analysis of illicit drug use in the past 90 days at 12 months showed a statistically significant difference between Familias Unidas and standard care for participants whose caregivers attended at least 1 of the first 3 sessions (p=0.05, effect size not calculable) and for participants whose caregivers attended at least 50% of all sessions (p=0.04, effect size not calculable).

Rhoades et al. (2014) [-] compared skills training for foster parents and biological parents combined with a behaviour management system for children, individual therapy for children, and case management with standard care in 166 females in out-of-home care with at least 1 criminal referral in the previous 12 months. Some children also received motivational interviewing, and it was unclear whether the skills training was delivered in a group or on a 1 to 1 basis. Females aged 13 to 17 at the start of the study were included, but the average age of participants during the trial was not reported. The authors also report follow up interviews with 152 participants from the original randomised controlled trial, which took place an average of 7 years after the start of the original trial. The intervention included case management, daily telephone contact between case managers and foster parents, weekly group supervision and support meetings for foster parents, 24 hour on-call staff support for

foster parents, point-and-level behavioural management program and individual therapy for young people, family therapy for the biological families focusing on parent management strategies, monitoring of school attendance, and psychiatric consultation if needed. Some participants (number not reported) received components specifically targeting substance abuse, such as motivational interviewing and incentives for clean urine tests. The standard care comparator group received community-based programs representing typical services for young participants referred to out-of-home care. There was a statistically significant negative association between the intervention and drug use approximately 9 years after start of study ($p<0.05$, effect size not calculable) but not at 7, 7.5, 8 or 8.5 years after the start of the study ($p>0.05$, effect sizes not calculable). It was not reported whether the difference between the groups was statistically significant or not (p value not reported, $d=0.45$). There was a statistically significant decrease in drug use from approximately 7 years after start of study to approximately 9 years after the start of the study in the intervention group ($p<0.05$, effect size not calculable) but not in the standard care group ($p=0.18$, effect size not calculable, $d=0.39$ between groups). It was not reported whether the difference between the groups was statistically significant or not (p value not reported, $d=0.39$). The method of randomisation was not clearly reported. Allocation was not adequately concealed and knowledge of the allocated intervention was not prevented during the study. Baseline characteristics were not reported for the randomised controlled trial.

Smith et al. (2010) [+] compared a behaviour management system for children combined with skills training for foster parents and weekly family therapy to group care in 79 males aged 12 to 17 (average age 14.9) referred by the juvenile justice system. It was unclear whether the skills training was delivered in a group or on a 1 to 1 basis or whether the family therapy was with the foster family, biological family, or both. In the intervention group, foster parents used daily behavioural management systems tailored to each young person. The participants earned points for positive behaviours which could be exchanged for privileges. Participants lost points for undesirable or maladaptive behaviours and privileges could be removed if rules were violated or participants had a urine test that showed drug use. Participants also received consistent limit setting and positive adult mentoring. Families received weekly family therapy and on-call support focused on improving parenting skills of foster parents. Participants receiving group care were either in a program that used positive peer cultures to increase conformity to social norms (66% of programs) or a program that used a reality, eclectic and behaviour management, or cognitive theory based therapy (33% of programs). Twelve months after treatment started there was no statistically significant difference between the groups for marijuana use (1.57 in intervention vs. 1.90 in group care, $p>0.05$, $d=-0.28$). However, at 18 months participants in the intervention group showed a

statistically significantly lower use of marijuana than participants in the group care group (1.50 in intervention vs. 2.34 in group care, p<0.01, d=-0.65). There was a statistically significant difference between the participants in the intervention group and the participants in the group care group for use of drugs other than alcohol, tobacco and marijuana at 12 months (1.24 in intervention vs. 1.59 in group care, p<0.05, d=-0.39) and 18 months (1.19 in intervention vs. 1.61 in group care, p<0.05, d=-0.46). The method of randomisation was not described and it is unclear if participants were aware which group they had been allocated to. The characteristics of participants in the 2 groups, other than substance use, were not compared at baseline.

Non-family based skills training and information

Lynsky et al. (1999) [-] looked at the effectiveness of group information and skill training sessions (Youth Alternative Sentencing Program, YASP) in 209 young people aged 12 to 19 who were in the county juvenile court system and convicted of a civil or criminal offence related to alcohol or controlled substances. The YASP program consisted of visiting a morgue and a trauma centre, and attending group workshops. The workshops used an Alcoholics Anonymous or Narcotics Anonymous approach and provided training in decision making skills, coping skills and goal setting. There was a decrease in the number of participants who felt that marijuana did ‘no harm’ or ‘some harm’ after the intervention, compared with before (no harm: 21.3% vs. 20.0%; some harm: 34.4% vs. 31.1%; p values not reported, effect sizes not calculable). There was an increase in the number of participants who reported that marijuana did ‘little’ harm’ or ‘a lot of harm’ after the intervention compared with before (little harm: 28.1% vs. 28.9%; a lot of harm: 16.3% vs. 20.0%; p value not reported, effect size not calculable). Amongst participants who had not used marijuana, there was a decrease in the number of participants that said they never would use marijuana after the intervention compared with before (4.8% vs. 3.6%, p value not reported, effect size not calculable) or that they may use in the future (1.8% vs. 0.7%, p value not reported, effect size not calculable). Of participants who had used marijuana before, there was an increase in the number of participants who said they would not use it again after the intervention, compared with before (26.8% vs. 34.5%, p value and effect size not reported) and a decrease in the number of participants who would probably use it again (62.2% vs. 59.7%, p value not reported, effect size not calculable). The statistical significance of these differences was not reported. The study authors state that different participants may have been included in the pre- and post- test assessments. The number of participants lost to follow up is not clear and the study authors state that their data collection tools were not fit for purpose.

Motivational interviewing vs abstinence based approach

D'Amico et al. (2013) [+] compared group-based motivational interviewing (Free Talk) and an abstinence-based Alcoholics Anonymous (AA) approach in 193 young people aged 14 to 18 (average age 16.6) with a first time alcohol or marijuana offence, such as possession or driving under the influence. The intervention consisted of 6 sessions of 55 minutes each, with a motivational interviewing approach. Brief feedback was given and open ended questions were used with reflective statements. Specific topics covered in the sessions included pros, cons and myths of drug use; personal beliefs of drug use; the path from no use to experimental use to addiction and how to exit the path; how drug use may affect other behaviour, such as unsafe sex and driving; communication and drug use; and the effects on the brain. The control consisted of 6 sessions of 55 minutes each. Specific topics covered in the sessions included group check-ins, personal triggers, consequences of drug use (such as getting into fights, neglecting responsibilities, missing a day of work or school), educational videos, discussion of personal experiences with drugs, and myths about drug use. Marijuana use in the previous 30 days was not statistically significantly different between the intervention and control groups at 3 months (2.75 in Free Talk vs. 2.38 in AA, p=0.519, d=0.12). Marijuana consequences were also not statistically significantly different between the intervention and control groups at 3 months (0.62 in Free Talk vs. 0.64 in AA, p=0.772, d=-0.03). The method of randomisation was not reported and it is not clear if allocation was concealed from participants or assessors. More participants in the Free Talk group reported lifetime alcohol use, alcohol consequences, being drunk or high in public, and past 30 day prescription drug use than the AA group at baseline, but it is not clear if these differences were statistically significant.

Drug misuse outcomes

Evidence Statement 16: Effectiveness of skills training for parents and children for preventing or reducing drug misuse in children and young people who are in contact with young offender teams but not in secure environments

There was moderate quality evidence from 1 before and after study[1] [+] that there was no statistically significant difference in drug use before and immediately after a family-based intervention involving skills training for parents and children (Programa Shortstop) (p>0.05, effect size not calculable) in Hispanic juvenile first time offenders. The average age of the participants was 14.6. The skills training included videos on behaviour choices and options and improving communication skills for children and young people, and improving

communication skills for parents.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Cervantes et al. (2004) [+]

Evidence Statement 17: Effectiveness of skills training for parents for preventing or reducing drug misuse in children and young people who are in contact with young offender teams but not in secure environments

There was moderate quality evidence from 1 RCT[1] [+] and a secondary analysis of the same RCT[2] [+] that drug use was statistically significantly lower 12 months after a family-based intervention involving skills training for parents (Familias Unidas) compared with standard care (p=0.04 and d=0.792[1], p=0.05 and effect size not calculable[2]) in young people aged 12 to 17 who identified themselves as Hispanic or Latino and who had been arrested or had committed a 'level 3' behaviour problem. The skills training for parents focused on enhancing communication skills. Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the RCT was undertaken in the USA, however, the interventions would be feasible in a UK-based setting.

[1] Prado et al. (2012) [+]

[2] Huang et al. (2012) [+]

Evidence Statement 18: Effectiveness of behaviour management systems with skills training for foster parents for preventing or reducing drug misuse in children and young people who are in contact with young offender teams but not in secure environments

There was weak evidence from 2 RCTs[1,2] [+[1],-[2]] that the effectiveness of behaviour management systems combined with skills training for foster parents (Multidimensional Treatment Foster Care) compared to standard care on drug misuse was mixed in children and young people who were in contact with young offender teams but not in secure environments. At 12 months, the use of drugs other than cannabis in males aged 12 to 17 was statistically significantly lower after the intervention compared to standard care (p<0.05, d=-0.39)[1], however, there was no statistically significant difference in use of cannabis after the intervention compared to after standard care (p>0.05, d=-0.28)[1]. At 18 months, there was

statistically significantly lower use of cannabis (p<0.01, d=-0.65)[1] and drugs other than cannabis (p<0.05, d=-0.46)[1] in males aged 12 to 17. From 7 years to 9 years after the intervention, 1 study reported a statistically significant reduction in drug use (p<0.05, effect size not reported)[2] in young females aged 13 to 17. At 9 years, 1 study reported a statistically significant association between the intervention and reduced drug use (p<0.001, effect size not reported)[2] but not between standard care and drug use (effect size not reported, d=0.39 for difference in change between groups, p value not reported for difference in change between groups)[2]. The skills training for foster parents included developing a daily behaviour management system tailored to each child. There was no true control in either study.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The evidence is only partially applicable to preventing or reducing drug use in all children because 1 study included only male participants[1] and 1 study included only female participants[2].

[1] Smith et al. (2010) [+]

[2] Rhoades et al. (2014) [-]

Evidence Statement 19: Effectiveness of group-based motivational interviewing for preventing or reducing drug misuse in children and young people who are in contact with young offender teams but not in secure environments

There was moderate evidence from 1 RCT[1] [+] that there were no statistically significant differences in cannabis use at 3 months (p=0.519, d=0.12) or cannabis problems at 3 months (such as getting into fights, neglecting responsibilities, missing a day of work or school; p=0.772, d=-0.03) after group-based motivational interviewing (Free Talk) compared with Alcoholics Anonymous in young people aged 14 to 18 with a first time alcohol or cannabis offence. There was no true control in the study.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] D'Amico et al. (2013) [+]

Intention to misuse drugs

Evidence Statement 20: Effectiveness of skills training and information for young

people for reducing intention to misuse drugs in children and young people who are in contact with young offenders teams but not in secure environments

There was weak evidence from 1 uncontrolled before and after study[1] [-] that skills training and information for young people aged 12 to 19 may have affected intention to use cannabis and perception of risks in young people with a conviction of a civil or criminal offence related to alcohol or controlled substances immediately after the intervention, however, the statistical significance and size of these effects was not reported. The skills training focused on decision making skills and coping skills.

Applicability: The evidence is only partially applicable to reducing intention to misuse drugs in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Lynsky et al. (1999) [-]

Personal and social skills related to drug misuse prevention

Evidence Statement 21: Effectiveness of skills training for parents and children for improving personal and social skills related to drug misuse prevention in children and young people who are in contact with young offender teams but not in secure environments

There was moderate evidence from 1 before and after study[1] [+] that there was a statistically significant improvement in 'academic social skills' ($p<0.001$, effect size not calculable), 'family social skills' ($p<0.05$, effect size not calculable), and 'community social skills' ($p<0.05$, effect size not calculable) when comparing skills before and immediately after a family-based intervention involving skills training for parents and children (Programa Shortstop) in Hispanic juvenile first time offenders. The average age of the participants was 14.6. The skills training included videos on behaviour choices and options for children and young people, and improving communication skills for parents.

Applicability: The evidence is only partially applicable to improving drug-related social skills in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Cervantes et al. (2004) [+]

Knowledge of drugs and their risks

No relevant evidence was identified.

3.3.8 People who are considered homeless

Five US based studies (Baer et al. 2007 [+]; Fors and Jarvis 1995 [-]; Milburn et al. 2012 [+]; Nyamathi et al. 2012 [-]; Peterson et al. 2006 [+]) compared the effectiveness of interventions for preventing or reducing drug misuse in people who are considered homeless. The studies included in the review for this group are summarised in table 7.

Table 7. Summary of included studies for people who are considered homeless.

Study papers	Participants and country	Intervention	Comparator	Relevant outcomes	Quality
Baer et al. (2007) RCT	127 young people with unstable housing (USA)	Brief motivational intervention (n=75)	Treatment as usual (n=52)	Abstinence (excluding tobacco). Marijuana use. Use of drugs other than marijuana, alcohol and tobacco.	+
Fors and Jarvis (1995) nRCT	221 young people living in shelters (USA)	Group skills training and information with peer educators (Drug Prevention in Youth) (n=173)	Group skills training and information with adult educators (Drug Prevention in Youth) (n=34) No intervention (n=14)	Knowledge about drugs.	-
Milburn et al. (2012) RCT	151 young people who had been away from home for at least 2 nights in the past 6 months (USA)	Group skills training for parents and children (Support to Reunite, Involve and Value Each Other) (n=68)	Standard care (n=83)	Marijuana use. Hard drug use.	+
Nyamathi et al. (2012) RCT	154 young people who were homeless (USA)	Group skills training (Hepatitis Health Promotion) (n=47*)	Art program (Art Messaging) (n=53*)	Crack use. Cocaine use. Marijuana use. Heroin use. Sedative use. Methamphetamine use. Hallucinogens use.	-
Peterson et al. (2006)	285 young people with unstable	Brief motivational intervention	2 assessment only groups (n=99 and n=94)	Marijuana use.	+

RCT	housing (USA)	(n=92)		Use of drugs other than marijuana, alcohol and tobacco. Drug use consequences.	

**This is the number of participants for whom baseline characteristics were reported. It is not clear how many participants were randomised to each group.*

Motivational interviewing

Baer et al. (2007) [+] compared a brief motivational intervention (brief MI) with treatment as usual in 127 young people aged 13 to 19 (average age 17.9) with unstable housing who had had at least 1 binge drinking episode or 4 episodes of illicit drug use in the 30 days prior to starting the study. The study authors defined 'stability' as living in one place for the prior 30 days with the anticipation of being housed there in the following 30 days. The brief MI group received up to 4 sessions within 4 weeks. The sessions included information about patterns and risk related to substance use, which was provided as personalised feedback. Participants could choose topics that they wished to discuss, including drug use frequency, perceived norms for substance abuse, consequences related to substance abuse, symptoms of substance dependence, personal goals, motivation for change, and social influences. Counsellors aimed to be non-confrontational and provided advice about risk reduction only with permission. No further details were given for what the treatment as usual group received. There was no statistically significant difference between the groups over 3 months for abstinence from drugs other than tobacco in the previous 30 days ($p>0.05$, $d=-0.342$), marijuana use in the previous 30 days ($p>0.05$, $d=0.131$), or use of other drugs in the previous 30 days (cocaine/crack, amphetamines, hallucinogens, club drugs, heroin, other opiates, tranquilisers or downers, inhalants, and over-the-counter medications) ($p>0.05$, $d=0.052$). It is not clear if the allocation sequence was randomly generated or how it was concealed. Assessors knew which group participants had been allocated to.

Peterson et al. (2006) [+] compared a brief motivational intervention (brief MI) with assessment only in 285 young people aged 13 to 19 (average age 17.4) with unstable housing. The study authors did not provide a definition of 'unstable housing'. Brief MI consisted of a single feedback session of around 30 minutes on patterns and risks of use, frequency and perceived norms, symptoms of dependence, personal goals, and motivation for change. Participants could choose the order in which topics were discussed. Counsellors used a respectful and non-confrontational style using motivational interviewing techniques. Advice was only given with participants' permission. There were two assessment only comparator groups, neither of which received an intervention. The assessment only (AO) and

assessment at follow-up only (AFO) comparator groups were assessed 1 month and 3 months after the trial started. The AO group were also assessed before the trial started, whereas the AFO group were not. There were no statistically significant differences in marijuana use (p=0.90, η^2=0.001); the number of days illicit drugs other than marijuana were used (p value not reported, η^2=0.07); and drug use consequences (p value and effect size not reported) over 3 months between the intervention and comparator groups. There was a statistically significantly greater reduction from baseline to 1 month in the number of times illicit drugs other than marijuana were used in the brief MI group compared to the AO group (p<0.03, effect size not reported), however, this was not statistically significant at 3 months (p<0.3, effect size not reported). When the MI group was split by how much participants engaged with the intervention, differences between the groups for marijuana use remained non-statistically significant (p=0.24, , η^2=0.02). However, the high engagement participants in the intervention group had a statistically significant greater reduction in the number of days drugs illicit drugs other than marijuana were used at 1 month and the total number of times illicit drugs other than marijuana were used at 1 month compared to the AO group (both p<0.01, effect sizes not calculable) and compared to the low engagement participants in the intervention group (both p<0.01, effect sizes not calculable). The study authors report that no significant differences between the groups remained at 3 months (p values not reported, effect sizes not calculable). The assessors at follow-up were not blind to the group allocations and incomplete outcome data were not addressed.

Skills training with peer educators

Fors and Jarvis (1995) [-] compared group-based skills training and information (Drug Prevention in Youth [DPY]) using peer educators with the DPY program using adult educators and with no DPY program in 221 young people aged 10 to 19 (average age not reported) living in shelters. The DPY program consisted of 4 sessions of 1 hour long. Each session had a 3 to 6 minute long videotape that depicted scenes in a young person's life, followed by discussions, role playing and group exercises. Sessions included a review of types and effects of drugs, why young people and adults use drugs, the effects of drug use beyond the user, identifying and practising ways to intervene in a friend or family member's drug use, and learning about various types of intervention and treatment resources. The intervention group received DPY with a peer as a group leader. The control groups consisted of DPY with an adult as a group leader and group that did not receive a DPY intervention. There was a statistically significant change in mean score in knowledge about drugs and their effects for the peer led DPY group (+0.09, p<0.001, effect size not calculable) but not the adult led DPY group (+0.05, p=0.13, effect size not calculable) or the no DPY group (+0.06, p=0.33, effect size not calculable). The characteristics of participants were not

compared between the groups at baseline. Incomplete outcome data were not adequately addressed and it is not clear if missing data would have affected results. Study authors only present data for outcomes that had a statistically significant effect. Some data were 'lost' due to changes in support staff at the office, but it is not clear how many participants this relates to.

Skills training and information without peer educators

Milburn et al. (2012) [+] compared the effectiveness of group-based skills training for parents and children with standard care to prevent or reduce drug misuse in 151 children aged 12 to 17 who had been away from home for at least 2 nights in the past 6 months. The skills training was based on cognitive-behavioural theories (Support to Reunite, Involve and Value Each Other [STRIVE]). It consisted of 5 sessions delivered to children and parents together by a trained facilitator. Sessions were done weekly for 5 weeks and each session lasted 1.5 to 2 hours. Sessions included planning for and identifying potential emergencies, identifying outside social supports, and improving problem solving and conflict resolution skills. The comparator was standard care from various agencies. The study found a statistically significant difference in the change in marijuana use in the past 3 months at 12 months ($p<0.001$, $d=-0.40$). Marijuana use increased in STRIVE participants (mean 9 times vs. 12 times) and decreased in the control group (mean 13 times vs. 6 times). There were statistically significantly greater reductions in hard drug use in the STRIVE group compared to the control group (mean 2.8 times to 0.3 times in STRIVE vs. mean 2.7 times to 1.2 times in control, $p<0.001$, $d=0.13$). Some outcome data were presented graphically and could not be interpreted accurately, so are not presented here. Some participants completed the first follow-up assessments before they had received the final intervention session.

Nyamathi et al. (2012) [-] looked at the effectiveness of group-based skills training compared to an art messaging program in 154 young people (average age 21) who were homeless. The intervention was a nurse-led hepatitis health promotion program (Hepatitis Health Promotion [HHP] program) consisting of 3 group discussions sessions of 45 minutes each. Participants were encouraged to share their experiences and ask questions. Sessions covered training in self-management and communication skills; reducing drug use; and developing relationships, activities and social networks. The comparator was an artist-led program (Art Messaging program) consisting of 3 or 4 group sessions that were 2 to 3 hours long each. Participants were encouraged to share their life stories through photography, drawing, and making documentaries, and to create messages to influence other young people. The study reported no significant differences in drug use between the HHP and art group (p values not reported, effect size not calculable). In the HHP group there was no

statistically significant difference at baseline and 6 months in the use of marijuana (87.8% vs. 73.2%, p<0.10 [reported in the study paper as statistically significant], effect size not calculable), crack (7.3% vs. 7.3%, effect size not calculable), heroin (12.2% vs. 9.8%, effect size not calculable) or sedatives (7.3% vs. 0%, effect size not calculable). There was a statistically significant reduction at 6 months in the use of cocaine (17.1% vs. 2.4%, p<0.05, effect size not calculable), methamphetamine (41.5% vs. 24.4%, p<0.05, effect size not calculable) and hallucinogens (26.8% vs. 7.3%, p<0.05, effect size not calculable). The art group saw a statistically significant reduction at 6 months in the use of marijuana (95.5% vs. 88.3%, p<0.01, effect size not calculable) but not in the use of crack, cocaine, methamphetamines, hallucinogens, heroin or sedatives (effect sizes not calculable). It is unclear how participants were randomised to the 2 groups or whether the baseline characteristics were similar at baseline.

Drug misuse outcomes

Evidence Statement 22: Effectiveness of brief motivational interventions for preventing or reducing drug misuse in people who are considered homeless

There was moderate evidence from 2 RCTs[1, 2] [+[1,2]] that there was no significant difference in drug use at 3 months after a brief motivational intervention compared to standard care (p>0.05; d=0.131 for cannabis use, d=0.052 for other drug use)[1], or after a brief motivational intervention compared to assessment only (cannabis use η^2=0.001, days of use of drugs other than cannabis η^2=0.07, p values not reported)[2] in young people aged 13 to 19 with unstable housing ('stability' defined in 1 study as living in 1 place for the prior 30 days with the anticipation of being housed there in the following 30 days[1], not defined in the other study[2]). There was also no statistically significant difference after a brief motivational intervention compared to after assessment only in problems resulting from drugs at 3 months (p value not reported, effect size not calculable)[2]. Drugs other than cannabis were used statistically significantly less 1 month after a brief motivational intervention compared to after assessment only (p<0.03, effect size not reported), however, there was no statistically significant difference in use at 3 months (p<0.3, effect size not calculable)[2].

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in the USA, however, the interventions would be feasible in a UK-based setting. The evidence is only partially applicable to preventing or reducing drug use in the wider population of people who are considered homeless as the studies only included young people.

[1] Baer et al. (2007) [+]

[2] Peterson et al. (2006) [+]

Evidence statement 23: Effectiveness of skills training for preventing or reducing drug misuse in people who are considered homeless

There was weak evidence from 2 RCTs[1,2] [+[1],-[2]] that skills training had a mixed effect on drug use in young people aged 12 to 17[1] and 18 to 25[2] and who were considered homeless. At 6 months after skills training there was a statistically significant reduction in the use of cocaine ($p<0.05$, effect size not calculable)[2] and methamphetamines ($p<0.05$, effect size not calculable)[2], but not in crack ($p>0.05$, effect size not calculable)[2], heroin ($p>0.05$, effect size not calculable)[2], sedatives ($p>0.05$, effect size not calculable)[2] or cannabis ($p>0.05$, effect size not calculable)[2]. At 12 months after skills training there was a statistically significant reduction in use of drugs other than cannabis ($p<0.001$, $d=0.13$)[1], but not in the use of cannabis, which statistically significantly increased ($p<0.001$, $d=-0.40$)[1]. There was no significant difference in drug use after skills training compared to after art sessions (p value not reported, effect size not calculable)[2]. The skills training in 1 study focused on improving problem solving and conflict resolution skills[1] whereas the other study focused on improving self-management and communication skills[2].

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The evidence is only partially applicable to preventing or reducing drug misuse in the wider population of people who are considered homeless as the studies only included young people.

[1] Milburn et al. (2012) [+]

[2] Nyamathi et al. (2012) [-]

Intention to misuse drugs

No relevant evidence was identified.

Personal and social skills related to drug misuse prevention

No relevant evidence was identified.

Knowledge of drugs and their risks

Evidence Statement 24: Effectiveness of skills training and information for increasing knowledge of drugs and their risks in people who are considered homeless

There was weak evidence from 1 non-randomised controlled trial[1] [-] that there was a statistically significant improvement in knowledge about drugs and their risks after skills training and information (Drug Prevention in Youth) with peer educators in young people aged 10 to 19 living in shelters ($p<0.001$, effect size not calculable). There was no statistically significant improvement in knowledge about drugs and their effects after a Drug Prevention in Youth programme that used adult educators ($p=0.13$, effect size not calculable) or after no programme ($p=0.33$, effect size not calculable). The skills training focused on ways to intervene if a family member or friend is using drugs.

Applicability: The evidence is only partially applicable to increasing knowledge of drugs and their risks in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The evidence is only partially applicable to increasing knowledge of drugs and their risks in the wider population of people who are considered homeless as the study only included young people.

[1] Fors and Jarvis (1995) [-]

3.3.9 People who attend nightclubs and festivals

No studies were identified.

Evidence Statement 25: Effectiveness of drug misuse prevention interventions for people who attend nightclubs and festivals

No relevant evidence was identified.

3.3.10 People who are known to use drugs occasionally/recreationally

Twelve studies compared the effectiveness of interventions for preventing or reducing drug misuse in people who are known to use drugs occasionally or recreationally (de Dios et al. 2012 [+]; de Gee et al. 2014 [++]; Elliott et al. 2014 [+]; Fischer et al. 2013 [-]; Lee et al. 2013 [+]; Lee et al. 2010 [+]; McCambridge et al. 2008 [++]; Norberg et al. 2014 [+]; Shrier et al. 2014 [+]; Tait et al. 2015 [+]; Walker et al. 2011 [+]; Walton et al. 2013 [++]).

Studies that explicitly included people who were drug dependent were excluded from this part of the review as they were not considered to be occasional or recreational users. It is worth noting that only one of the studies included in this part of the review explicitly excluded participants who were drug dependent (de Dios et al. 2012), therefore there is a possibility that the other included studies did include some participants who were drug dependent. It is not possible to tell whether the other included studies did not include people who were drug dependent or whether the exclusion criteria for the studies were poorly reported.

The studies included in the review for this group are summarised in table 9.

Table 9. Summary of included studies for people who are known to use drugs occasionally/recreationally.

Study papers	Participants and country	Intervention	Comparator	Relevant outcomes	Quality
Studies that explicitly excluded people who were drug dependent					
De Dios et al. (2012) RCT	34 people who smoked marijuana at least 3 times in past month (USA)	Motivational interviewing plus mindfulness meditation (n=22)	Assessment only control (n=12)	Marijuana use. Marijuana abstinence.	+
Studies that may have included people who were drug dependent					
De Gee et al. (2014) RCT	119 young people who use cannabis at least weekly (Netherlands)	Motivational enhancement therapy (Weed-Check) (n=58)	Informational session (n=61)	Cannabis joints per week. Cannabis using days per week. Cannabis problems score. Severity of dependence score.	++
Elliott et al. (2014) RCT	317 young people who reported marijuana use in the previous month (USA)	Web based assessment and feedback (eToke) (n=161)	Assessment only control (n=156)	Marijuana use. Marijuana problems. Marijuana abuse symptoms. Marijuana dependence symptoms.	+
Fischer et al. (2013) RCT	134 people who were active cannabis users for at	Brief intervention on cannabis use (n=72)	Brief intervention on general health (n=62)	Cannabis use. Driving under the influence of cannabis.	-

	least 1 year and had used cannabis on at least 12 of the past 30 days (Canada)				
Lee et al. (2013) RCT	212 people who had used marijuana on 5 or more days in the past month (USA)	Motivational interviewing (n=106)	Assessment only control (n=106)	Marijuana use. Marijuana consequences (also referred to as marijuana problems).	+
Lee et al. (2010) RCT	341 young people who had used marijuana in 3 months prior to screening (USA)	Web-based intervention based on motivational interviewing and skills training (n=171)	Assessment only control (n=170)	Marijuana use. Marijuana consequences (also referred to as marijuana-related problems).	+
McCambridge et al. (2008) RCT	326 young people who used cannabis at least weekly (UK)	Motivational interviewing (n=164)	Drugs information and advice (n=162)	Cannabis use. Cannabis dependence score. Cannabis consequences.	++
Norberg et al. (2014) RCT	174 people who had used ecstasy at least 3 different times in past 90 days (Australia)	Motivational enhancement therapy (E Checkup) (n=89)	Motivational interviewing informed education only (n=85)	Ecstasy use. Severity of dependence.	+
Shrier et al. (2014) Uncontrolled before and after	22 young people using marijuana 3 times or more a week (USA)	Motivational interviewing using an ecological momentary approach with text messages (MOMENT) (n=22)	None	Desire to use marijuana. Marijuana use. Days abstinent. Marijuana problem score.	+
Tait et al. (2015) RCT	160 people who reported use of amphetamine type stimulants in the past 3	Web-based decisional balance and behaviour change intervention (breakingtheice) (n=81)	Waiting list control (n=79)	Amphetamine type stimulant use. Use of more than 1 drug at the same time.	+

	months (Australia)			Quality of life.	
Walker et al. (2011) RCT	310 young people who reported use of cannabis on at least 9 days out of previous 30 (USA)	Motivational enhancement therapy with optional cognitive behaviour therapy (n=103)	Education with optional cognitive behaviour therapy (n=102) Delayed feedback (n=105)	Cannabis use. Cannabis related consequences. Dependence symptoms. Abuse symptoms.	+
Walton et al. (2013) RCT	328 young people who reported cannabis use in the last year (USA)	Therapist-based brief intervention (unclear if group based or 1 to 1) (n=118)	Computer-based brief intervention (n=100)	Cannabis use. Cannabis consequences. Other drug use. Perceived risk. Self-efficacy. Intention to use.	++

Studies that explicitly excluded people who were drug dependent

Motivational interviewing with mindfulness meditation

De Dios et al. (2012) [+] compares motivational interviewing combined with mindfulness with an assessment-only control group in 34 people (average age 23) who had smoked marijuana at least 3 times in the month prior to the study starting. The motivational interviewing group received 2 sessions of 45 minutes each that included guided mindfulness meditation exercises and a discussion of mental and physical experiences during meditation exercise; the barriers to practising meditation and applying mindfulness concepts to daily life; and the connection between anxiety, stress, worry and marijuana use. Participants were given a CD containing the guided meditation exercises used in the first session, which they were encouraged to use between the 2 sessions. They were also encouraged to keep a diary of when they used the CD, their experiences, and their marijuana use. The study found that participants who received motivational interviewing and mindfulness meditation reported statistically significantly fewer days of marijuana use compared to the control group at 1 month (difference of 6.15 days, $p<0.05$, effect size not calculable), 2 months (difference of 7.81 days, $p<0.05$, effect size not calculable) and 3 months (difference of 6.83 days, $p<0.05$, effect size not calculable). There were no differences between the groups in the number of

participants abstaining from marijuana at 1 month, 2 months or 3 months (data and p values not reported, effect sizes not calculable). The study found that the odds of using marijuana were statistically significantly reduced on days when participants meditated compared to days when they did not meditate (OR 0.51, 95% CI 0.22 to 0.86, p<0.05). It is not clear how the allocation sequence was generated or whether allocation was concealed.

Studies that may have included drug dependent participants

Face to face motivational interventions

De Gee et al. (2014) [++] compared motivational enhancement therapy (Weed-Check) with an information session in 119 young people aged 14 to 21 (average age 18) who used cannabis at least weekly prior to starting the study. The Weed-Check was a brief motivational interviewing intervention consisting of 2 sessions 1 week apart. Each session lasted for 60 to 90 minutes and aimed to increase awareness of the possible negative consequences of cannabis use. The first session was used to assess participants, establish rapport, and discuss 3 year goals. The second session was a structured feedback session, comparing cannabis use to age-specific norms. The informational session was 1 session of around an hour that consisted of discussing the effects of cannabis on the body with computerised animations. Personal advice was only given when explicitly requested. The study found no statistically significant difference between the Weed-Check and informational session groups in the change in number of joints used per week from baseline to 3 months (11.5 to 10.4 Weed-Check vs. 11.3 to 10.1 informational session, p=0.96, d=0.033). However, participants using more than 14 joints per week at baseline had a statistically significantly greater reduction in cannabis use in the Weed-Check group compared to in the informational session group (6.1 vs. 3, p=0.05, effect size not calculable). There was no statistically significant difference between the groups at 3 months in the change in the number of cannabis using days per week (p=0.977, d=0.125), cannabis problems score (p=0.907, effect size not reported), or severity of dependence score (p=0.908, d=-0.037). The prevention workers were aware of which group participants had been assigned to after the baseline assessment.

Lee et al. (2013) [+] compared an intervention based on motivational interviewing with an assessment only control in 212 people (average age 20) who had reported marijuana use on 5 or more days in the previous month. The motivational interviewing intervention consisted of 1 face to face session in which participants discussed their marijuana use, reasons for use, consequences of their use, risk factors for abuse or dependence, their estimated annual spending on marijuana, perceived costs and benefits of stopping or reducing use, confidence to avoid smoking in certain situations, family history risk, and risk of interaction with other

substances. Participants who did not attend the face to face session had the option to receive their personalised feedback in the post. There was no statistically significant difference in the mean number of days marijuana was used in the past 30 days between the motivational interviewing (14.06) and assessment only (14.87) groups at 3 months (rate ratio 0.96, 95% CI 0.80 to 1.15, p>0.05) or 6 months (motivational interview 13.21 days vs. control 11.68 days; rate ratio 1.11, 95% CI 0.85 to 1.43, p>0.05). The mean number of joints smoked per week was statistically significantly lower after motivational interviewing (6.91) than after assessment only at 3 months (8.45; rate ratio 0.76, 95% CI 0.60 to 0.96, p<0.05), however, this did not remain statistically significant at 6 months (motivational interview 7.26 joints vs. control 7.47 joints; rate ratio 1.03, 95% CI 0.73 to 1.46, p value not significant). The mean number of marijuana related problems after motivational interviewing (7.84) and after assessment only (8.67) was not statistically significantly different at 3 months (rate ratio 0.90, 95% CI 0.76 to 1.07, p value between 0.10 and 0.05) or 6 months (motivational interview 6.54 vs. control 6.75; rate ratio 1.15, 95% CI 0.90 to 1.47, p>0.05). It is unclear if there was a significant difference in loss to follow up in the motivational interviewing and assessment only groups. It is unclear if researchers collecting data were blinded to whether the participant received motivational interviewing or assessment only.

McCambridge et al. (2008) [++] compared motivational interviewing with drugs information and advice in 326 young people aged 16 to 19 (average age 18) who used cannabis at least weekly. The motivational interviewing intervention consisted of a single face to face session lasting for 1 hour. Discussions included the costs and benefits of drug use; values, goals, risks, problems and concerns; decision-making; and self-monitoring or change. The drug information and advice provided to the control group consisted of a discussion with a youth worker and a series of harm reduction leaflets. The study found no statistically significant difference in the change between baseline and 3 months or baseline and 6 months between motivational interviewing and information provision for the change in prevalence of cannabis use (motivational interviewing 100%, 79%, 72%; control 100%, 84%, 78%; baseline to 3 months odds ratio 1.45, 95% CI 0.65 to 3.21; baseline to 6 months odds ratio 1.48, 95% 0.84 to 2.59), change in mean frequency of cannabis use over 30 days (motivational interviewing 17.3, 14.6, 13.8; control 18.3, 15.9, 14.5; mean difference from baseline to 3 months 0.53, 95% CI -1.23 to 2.29; mean difference from baseline to 6 months -0.28, 95% CI -2.90 to 2.35), change in mean number of cannabis joints in past week (motivational interviewing 10.3, 10.1, 8.5; control 11.1, 10.1, 10.5; mean difference from baseline to 3 months -0.84, 95% CI -2.33 to 0.66; mean difference from baseline to 6 months 1.33, 95% CI -1.72 to 4.38), change in mean cannabis dependence score (motivational interviewing 4.1, 3.4, 3.6; control 4.6, 3.5, 3.4; mean difference from baseline to 3 months -0.32, 95% CI -1.04 to 0.40;

mean difference from baseline to 6 months -0.61, 95% CI -1.35 to 0.12), or change in mean cannabis problems score (motivational interviewing 6.5, 5.0, 4.7; control 7.0, 5.3, 5.2; mean difference from baseline to 3 months 0.04, 95% CI -0.61 to 0.70; mean difference from baseline to 6 months 0.23, 95% CI -1.11 to 1.58). There were statistically significant differences for the sample as a whole between baseline and 3 months and baseline and 6 months for mean 30 day frequency of cannabis use (baseline 17.8 [10.1], 3 months 15.2 [11.6], 6 months 14.2 [11.8], p<0.0001 for baseline vs. 3 months and baseline vs. 6 months), mean cannabis dependence score (baseline 4.4 [3.0], 3 months 3.4 [3.0], 6 months 3.5 [3.2], p<0.0001 for baseline vs. 3 months and baseline vs. 6 months), and mean cannabis problems score (baseline 6.8 [4.2]; 3 months 5.1 [4.2], 6 months 4.9 [4.4], p<0.0001 for baseline vs. 3 months and baseline vs. 6 months). The data were not reported for the prevalence of cannabis use and mean cannabis joints per week in the whole sample. It is unclear whether the researchers were aware after baseline assessment whether participants had received a motivational interview or information.

Norberg et al. (2014) [+] compared motivational enhancement therapy (E check-up) with education only in 174 people (average age 23 to 24) who had used ecstasy at least 3 different times in the previous 90 days. The E check-up consisted of 1 motivational interview, combined with personalised feedback and education, that lasted 50 minutes. Participants and therapists reviewed a booklet on ecstasy use patterns, motivation to reduce use, risk perception, confidence in resisting use, options for social support for reducing use, commitment and action. They discussed personalised feedback based on results from a baseline assessment. Therapists created change plans with participants who reported an interest in reducing ecstasy use, and participants who were not interested were encouraged to monitor their use to avoid increases. Participants were given a diary to track their ecstasy use and could take the booklet and form with their personalised feedback on home. The education only group reviewed the same booklet as the E check-up group. In the education only group, therapists answered any questions within 15 minutes with an approach consistent with motivational interviewing. Therapists were encouraged not to evoke change talk or plan for change. Participants were allowed to take the booklet home with them. There were no statistically significant differences between the groups over time for the number of ecstasy pills used (E check-up 4.29 to 1.79; education only 4.66 to 2.39 at 6 months; p=0.70; d=0.15), number of days of ecstasy use (E check-up 2.10 to 1.18 at 6 months; education only 2.25 to 1.18 at 6 months; p=0.80; d=0.05), or severity of dependence score (E check-up 2.46 to 1.95 at 24 weeks; education only 2.46 to 1.92 at 24 weeks; p=0.96; d=0.01).There were statistically significant reductions for the whole sample in the number of ecstasy pills used (data not reported, p<0.0001, d=0.41) and the number of days ecstasy was used (data not

reported, p<0.0001, d=0.41), but not for the severity of dependence score (data not reported, p=0.06, d=0.14). It is not clear whether missing data were accounted for and it is not clear if participants were adequately protected against contamination, as the same therapists delivered the E check-up and education only interventions.

Walker et al. (2011) [+] compared motivational enhancement therapy combined with optional cognitive behaviour therapy with an educational control combined with optional cognitive behaviour therapy and with a delayed feedback control in 310 young people in 9th to 12th grade (equivalent to an age of 14 to 18, average age was 16) who had smoked cannabis on 9 or more days in the previous 30 days. Participants in the motivational enhancement therapy and educational feedback groups received 2 sessions of 45 to 50 minutes each, 1 week apart. In the motivational enhancement therapy intervention, participants discussed cannabis use, concerns about use, the role of cannabis in their current life and in the future, pros and cons of use, and self-efficacy. They also reviewed a personal feedback report. In the educational feedback group, participants were shown PowerPoint presentations on current research and facts about cannabis. After either the motivational enhancement therapy or educational feedback sessions, participants were offered 4 optional cognitive behaviour therapy sessions of 50 minutes each, covering goal setting, cannabis refusal skills, enhancing social support and increasing pleasant activities, planning for emergencies, and coping with relapse or setbacks. Only 10 to 13% of participants had at least 1 cognitive behaviour therapy session. The delayed feedback group did not undergo a baseline assessment or intervention for the first 3 months. After 3 months, participants in the delayed feedback group could choose to receive motivational enhancement therapy or the education control. The 12 month data for this group were not recorded. The study reported statistically significantly fewer days of cannabis use after the motivational enhancement therapy (31.80 days) compared to the delayed feedback control group at 3 months (37.46 days; p<0.05, d=-0.293). There was no statistically significant difference between the education and delayed feedback control group in the number of days of cannabis use in the previous 60 days at 3 months (34.53 vs. 37.46 days, p>0.05, d=-0.151). There was no statistically significant difference between the motivational enhancement therapy and education groups for the number of days of cannabis use at 3 months (31.80 vs. 34.53 days, p>0.05, d=-0.138) or 12 months (33.71 vs. 34.24 days; p>0.05, d=-0.024). Attendance at the optional cognitive behavioural sessions was associated with reduced cannabis use at 3 months (data not reported, p<0.05, effect size not calculable) and 12 months (data not reported, p<0.05, effect size not calculable). There were statistically significantly fewer dependence symptoms after motivational enhancement therapy (2.70 symptoms) and education (3.02 symptoms) compared to the delayed feedback control group (3.77 symptoms; p<0.05 for both; d=-0.540

for motivational enhancement therapy, d=-0.380 for education) at 3 months. There was no statistically significant difference in the number of dependence symptoms between the motivational enhancement therapy and education groups at 3 months (2.70 vs. 3.02, p>0.05, d=-0.160) or 12 months (2.74 vs. 2.92, p>0.05, d=-0.088)). At 3 months there were statistically significantly fewer abuse symptoms after motivational enhancement therapy (1.05 symptoms) compared to the delayed feedback control group (1.52 symptoms, p<0.05,d=-0.445), but there was no statistically significant difference between the education (1.30 symptoms) and delayed feedback control groups (1.52 symptoms, p>0.05, d=0.209). There was no statistically significant difference in the number of abuse symptoms between the motivational enhancement therapy and education groups at 3 months (1.05 vs. 1.30 symptoms, p>0.05, d=0.874) or 12 months (1.10 vs. 1.14 symptoms, p>0.05, d=-0.040). There were statistically significantly fewer cannabis problems at 3 months after the motivational enhancement therapy (14.68 problems) and education (14.24 problems) compared to the delayed feedback control group (21.58 problems; p<0.05 for both; d=-0.587 for motivational enhancement therapy, d=-0.629 for education). There was no statistically significant difference between motivational enhancement therapy and education at 3 months (p>0.05, d=0.043) or at 12 months (p>0.05, d=-0.103). There was no statistically significant difference in abstinence rates between the groups at 3 months (4% in motivational enhancement therapy, 2% in education, 1% in delayed feedback, p>0.05, effect size not calculable) or 12 months (12% in motivational enhancement therapy, 5% in education, p>0.05, effect size not calculable). The study reported that there was also no difference between the groups in the use of other drugs at 3 months or 12 months (data not reported, p values not reported, effect sizes not calculable). It is unclear if allocations were concealed and whether knowledge of allocated interventions was prevented during the study.

Motivational interviewing with text messages

Shrier et al. (2014) [+] looked at the effectiveness of motivational interviewing using an ecological momentary approach with text messages (MOMENT) in 22 young people aged 15 to 24 (average age 19) who were using marijuana 3 times per week or more. Participants recorded marijuana use and motivation to reduce use in daily diaries. They were also prompted to complete ‘momentary reports’ at random times, 4 to 6 times a day, stating their desire to use marijuana, who they were with, their affective state, and marijuana use since the previous report. After completing daily diaries and momentary reports for 1 week, participants received a 1 hour motivational enhancement therapy session on marijuana use and history, goals, motivation for reducing use, social and emotional triggers, and ways to manage triggers. One week later, participants received another 1 hour motivational enhancement therapy session, covering a plan for reducing use, self-efficacy, and coping

strategies. Participants completed daily diaries and momentary reports for 2 weeks after the second motivational enhancement session, which was 4 weeks after the study started. During these 2 weeks, participants also received messages via a personal digital assistant if they reported the presence of a top 3 trigger for marijuana use in their momentary reports, or if they had reported any use in their daily diaries. The messages used empathetic language and their content was influenced by motivational interviewing techniques. Three months after the start of the study, participants completed another 2 weeks of daily diaries and momentary reports, without receiving messages. The odds of marijuana use in a top 3 trigger context were not statistically significantly different between baseline and 4 weeks (OR 0.85, 95% CI 0.60 to 1.20, p=0.35), or between 4 weeks and 3 months (OR 0.64, 95% CI 0.35 to 1.17, p=0.14), however, they were statistically significant when comparing use at baseline and 3 months (OR 0.54, 95% CI 0.31 to 0.95, p=0.03). There were no statistically significant differences in the odds of using marijuana in contexts other than the top 3 trigger contexts between baseline and 4 weeks (OR 0.85, 95% CI 0.58 to 1.25, p=0.41), 4 weeks and 3 months (OR 0.83, 95% CI 0.46 to 1.49, p=0.53), and baseline and 3 months (OR 0.70, 95% CI 0.42 to 1.17, p=0.17). There was no statistically significant difference in the number of times a day marijuana was used at baseline compared to 4 weeks (1.00 vs. 0.80; RR 0.78, 95% CI 0.60 to 1.02, p=0.07), or between 4 weeks and 3 months (0.80 vs. 0.73; RR 0.93, 95% CI 0.59 to 1.46, p=0.76) or between baseline and 3 months (1.00 vs. 0.73; RR 0.73, 95% CI 0.49 to 1.08, p=0.11). There were statistically significant differences in the desire to use marijuana in a top 3 trigger context between baseline and 3 months (p<0.0001, effect size not calculable) and between 4 weeks and 3 months (p=0.0002, effect size not calculable), however, there was no statistically significant difference between baseline and 4 weeks (p=0.48, effect size not calculable). There were statistically significant differences in the desire to use marijuana in contexts other than the top 3 trigger contexts between baseline and 4 weeks (p=0.08, effect size not calculable), baseline and 3 months (p<0.0001, effect size not calculable), and 4 weeks and 3 months (p=0.02, effect size not reported). There were no statistically significant differences between 3 months and baseline for the percentage of days abstinent in the previous 30 days (p=0.13, effect size not calculable) or the marijuana problems score (p=0.16, effect size not calculable). The study authors did not report how missing data were accounted for and 36% of participants left the study before the first assessment.

Web-based motivational interviewing and skills training

Lee et al. (2010) [+] compared web-based motivational interviewing and skills training with an assessment-only control in 341 young people aged 17 to 19 (average age 18) who had used marijuana in the 3 months prior to the study starting. The web-based feedback group

received personalised feedback based on information they provided, including perceived and actual norms around marijuana use, perceived pros and cons of marijuana use, self-reported negative consequences of marijuana use, and ways in which reducing or eliminating use might be associated with reduced social and academic harm. Participants could print the information and view it online for up to 3 months. Skills training for avoiding marijuana, changing marijuana use, and engaging in alternative activities in high-risk contexts was provided. In the assessment only group, participants did not receive any feedback or information. The study reported no significant differences between web-based motivational interviewing and skills training compared to a control group for marijuana use (11.03 vs. 11.01 at baseline, 9.14 vs. 9.06 at 3 months, 11.05 vs. 11.94 at 6 months, p values not reported, d=0.0005 at 3 months, d=-0.047 at 6 months) or marijuana related problems (2.38 vs. 2.09 at baseline, 2.47 vs. 1.99 at 3 months, 2.59 vs 2.19 at 6 months, p values not reported, d=0.145 at 3 months and 0.115 at 6 months) at 3 months or 6 months. It is unclear whether the group allocation was known to participants or assessors during the study.

Web based assessment and feedback

Elliott et al. (2014) [+] compared a web-based assessment and feedback intervention (eToke) with assessment only in 317 young people aged 18 to 23 (average age 19) who had used marijuana in the last month. The web-based assessment and feedback intervention was a self-directed educational program that lasted from 20 to 45 minutes. It provided participants with personalised feedback on drug use norms and annual expenses, health information and resources, and tips to decrease use. Some participants in the assessment only group were not asked about their marijuana use at baseline (n=84); only data from the 238 participants who provided data on their marijuana use is presented here. The study found no statistically significant differences between the groups at 1 month in the mean number of days marijuana was used in the previous month (10.01 [9.59] vs. 10.90 [11.25], p>0.05, d=0.08), the mean number of marijuana problems (7.57 [8.20] vs. 7.17 [7.79], p>0.05, d=0.10), the mean number of marijuana abuse symptoms (0.77 [0.82] vs. 0.76 [0.89], p>0.05, d=-0.04) or the mean number of marijuana dependence symptoms (1.94 [1.73] vs. 1.96 [1.85], p>0.05, d=0.03) at 1 month. The study authors noted that there were no differences in marijuana outcomes between participants in the assessment only group who were asked about their marijuana use and participants who were not asked about their marijuana use. It is unclear how the allocation sequence was generated and whether allocation was concealed.

Web based decisional balance and behaviour change approach with skills training

Tait et al. (2015) [+] compared a web-based decisional balance and behaviour change intervention (breakingtheice) with a waiting list control in 160 people (average age 22) who reported use of amphetamine type stimulants such as methamphetamine, ecstasy, non-medical use of prescription stimulants in the past 3 months. The web-based intervention consisted of 3 modules that were full automated, based on motivational interviewing and cognitive behaviour therapy principles. In the first module, participants explored areas that are affected by use of amphetamine type stimulants, for example, relationships and finances. The second module covered pros and cons of use using a decisional balance approach. The third module covered behaviour change, including setting goals, actions on specific dates, strategies to help with cravings, refusal skills, how to manage a 'slip', and an action plan for high risk situations. The study reported no statistically significant interactions at 6 months between group and time for use of amphetamine-type stimulants in the previous 3 months (see evidence table in appendix 1 for data, p=0.65, effect size not calculable). The web-based intervention and control groups both reduced use by 6 months (b=-2.59, SD 0.98, p=0.008, effect size not calculable), and there were no statistically significant between-group differences in use at either 3 months (p=0.95, effect size not reported) or 6 months (p=0.65, effect size not calculable). The amphetamine type stimulant score was statistically significantly reduced in the whole sample (b=-2.59, SE 0.98, p=0.008, effect size not calculable), however, there was no statistically significant difference between the intervention group and the control group at 3 months (p=0.95, effect size not calculable) or 6 months (p=0.65, effect size not calculable) or in the change in score between baseline and 6 months (see evidence table in appendix 1 for data; p values not reported; d=0.10). There were no statistically significant differences between the groups for mean use of more than 1 drug at the same time at 3 months or 6 months (see evidence table in appendix 1 for data; 3 months p=0.08, effect size not reported; 6 months p=0.68, d=0.05). The study authors also report that there were no statistically significant differences between the groups for quality of life, and no evidence that quality of life was improved by the web-based intervention (see evidence table in appendix 1 for data; 3 months p=0.43, effect size not reported; 6 months p=0.69, d=0.19). It is unclear whether allocation was adequately concealed and whether knowledge of the allocated interventions was adequately prevented during the study. There was a reasonably high loss to follow up and relatively low levels of engagement within the intervention group.

Brief interventions

Fischer et al. (2013) [-] compared a brief intervention on cannabis use with a brief intervention on general health in 134 people (average age 21) who had been active cannabis users for at least 1 year and who had used cannabis on at least 12 days in the previous 30

days. Some participants received the intervention orally (n=25 in brief intervention on cannabis use, n=25 in brief intervention on general health group) and some received the intervention in a written format (n=47 in brief intervention on cannabis use, n=37 in brief intervention on general health group). All of the interventions were fact-based with some motivational components. The interventions on cannabis use covered cannabis-related health risks and suggestions to modify the risks. The interventions on general health consisted of information on nutrition, stress and exercise, and suggestions to modify health risks. The oral interventions were delivered face-to-face by a psychologist in 1 session of 20 to 30 minutes. The written interventions were an 8-page booklet containing images and text. The study showed no statistically significant difference in mean number of days cannabis was used in the previous 30 days before the intervention and 3 months after the oral cannabis intervention (21.96 days vs. 18.78 days, p=0.125, effect size not calculable), written cannabis intervention (24.82 days vs. 24.38 days, p=0.469, effect size not calculable), oral general health intervention (21.36 days vs. 21.18 days, p=0.737, effect size not calculable) or the written general health intervention (25.35 days vs. 23.55 days, p=0.108, effect size not calculable). There was also no statistically significant difference in use when the cannabis interventions were combined (baseline 23.83 days vs. 3 months 22.31 days, p=0.094, effect size not calculable) or when the general health interventions were combined (baseline 23.74 days vs. 3 months 22.53 days, p=0.133, effect size not calculable). There was a statistically significant difference in use in the sample as a whole between the start of the study (23.79 days) and 3 months later (22.41 days, p=0.024, effect size not calculable). The percentage of participants driving under the influence of cannabis was not statistically significantly different before and 3 months after the oral cannabis intervention (40.00% vs. 30.42%, p=0.414, effect size not calculable), oral general health intervention (29.17% vs. 27.27%, p=0.317, effect size not calculable), or written general health intervention (29.73% vs. 27.59%, p=0.414, effect size not calculable). It was also not statistically significant when the oral and written general health groups were combined (baseline 29.51% vs. 3 months 27.45%, p=0.257, effect size not calculable). The percentage of participants driving under the influence of cannabis was statistically significantly lower 3 months after the written cannabis intervention (46.81% vs. 30.77%, p=0.020, effect size not calculable). It was also statistically significant when the oral and written cannabis intervention groups were combined (baseline 44.44% vs. 3 months 30.65%, p=0.020, effect size not calculable) and across the whole sample (baseline 37.59% vs. 3 months 29.20%, p=0.011, effect size not calculable), but not when the oral and written general health intervention groups were combined (baseline 29.51% vs. 3 months 27.45%, p=0.257, effect size not calculable). The statistical significance of the between-group differences was not reported in the paper. Participant characteristics at baseline, including cannabis use and driving under the influence of cannabis, were not

reported and were not compared for significant differences. It is not clear if there were any differences in loss to follow up between the groups or how missing data were accounted for. It is not clear if participants and researchers were blinded to treatment allocation.

Walton et al. (2013) [++] compared a therapist-based brief intervention with a computer-based brief intervention and with enhanced usual care in 328 young people aged 12 to 18 (average age 16) who had used cannabis in the previous year. The therapist-based brief intervention was provided face to face by a researcher with a computer to prompt content. The computer-based brief intervention used an interactive animated program with touch screens, where a virtual buddy guided participants through animated role-plays and provided audio feedback. The enhanced usual care control group received brochures of warning signs of cannabis problems, resources (such as treatment, and suicide hotlines) and cannabis information websites. There was no statistically significant differences in frequency of cannabis use between the groups (see evidence table in appendix 1 for data, p values not reported, effect sizes ranged from d=0.019 to d=0.268). The study reported statistically significant reductions in frequency of cannabis use between baseline and 3 months, 6 months and 12 months in all 3 groups (see evidence table in appendix 1 for data; all p≤0.01 except therapist-based brief intervention at 12 months p≤0.05; effect sizes not calculable). There were no statistically significant differences in driving under the influence of cannabis between the 3 groups (see evidence table in appendix 1 for data, p values not reported, effect sizes ranged from d=0.057 to 0.218), except between the therapist-based brief intervention (0.20) and control groups (0.32) at 3 months (p≤0.01, d=-0.162). There were no statistically significant differences between the groups in cannabis consequences, except between the control and computer-based brief intervention at 3 months (13.6 vs. 11.5, p≤0.05, d=-0.140). There were no statistically significant differences in frequency of other drug use between the groups (see evidence table in appendix 1 for data, p values not reported, effect sizes ranged from d=0.075 to 0.338), except for a statistically significantly reduced frequency of other drug use in the computer-based brief intervention group compared to the control group at 3 months (1.18 vs. 0.16, p≤0.01, d=-0.338) and 6 months (1.19 vs. 0.11, p≤0.01, d=-0.320). Perceived risk and self-efficacy were not compared between the groups, but were statistically significantly higher after the therapist-based brief intervention and after the computer-based brief intervention (see evidence table in appendix 1 for data, all p≤0.01 except risk in computer-based intervention p≤0.001, effect sizes not calculable). Intention to misuse drugs was not compared between the groups, but was statistically significantly lower after the therapist-based brief intervention and after the computer-based brief intervention (see evidence table in appendix 1 for data, both p≤0.001,

effect sizes not calculable). Perceived risk, self-efficacy and intention to use were not reported in the control group. It was unclear whether allocation was concealed.

Evidence statements from studies that explicitly excluded people who were drug dependent

Drug misuse outcomes

Evidence Statement 26: Effectiveness of a brief intervention combining motivational interviewing with mindfulness meditation for preventing or reducing drug misuse in people who are known to misuse drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [+] that a brief intervention combining motivational interviewing with mindfulness meditation effectively reduced drug misuse in females aged 18 to 19 who were known to use drugs occasionally/recreationally. Cannabis was used on statistically significantly fewer days after mindfulness meditation compared to after a control intervention at 1 month, 2 months, and 3 months (all $p<0.05$, effect sizes not calculable). The study reported no differences in the number of participants who were abstaining from cannabis at 1 month, 2 months or 3 months, however, the data and p values for these comparisons were not reported (effect sizes not calculable).

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] De Dios et al. (2012) [+]

Intention to misuse drugs

No relevant evidence was identified.

Personal and social skills related to drug misuse prevention

No relevant evidence was identified.

Knowledge of drugs and their risks

No relevant evidence was identified.

Evidence statements from studies that may have included people who were drug dependent

Drug misuse outcomes

Evidence Statement 27: Effectiveness of motivational enhancement therapy compared to education or information sessions for preventing or reducing drug misuse in people who are known to use drugs occasionally/recreationally

There was strong evidence from 3 RCTs[1,2,3] [++[1], +[2,3]] that motivational enhancement therapy did not significantly prevent or reduce drug misuse compared to information sessions in people aged 14 to 21[1], 14 to 19[3], and over 16[2] who were known to use drugs occasionally/recreationally. Some participants in 1 study also received cognitive behaviour therapy[3].

There was no statistically significant difference in the number of joints used per week at 3 months (p>0.05, d=0.033[1]); the number of days cannabis was used per week (p>0.05, d=0.125[1]) at 3 months or per month at 12 months (p>0.05, d=-0.024[3]); cannabis problems at 3 months (p>0.05, d=0.133[1]) or 12 months (p>0.05, d=-0.103[3]); severity of dependence score or number of dependence symptoms at 3 months (p>0.05, d=-0.037[1]; p value not reported, effect size not calculable[3]), or 12 months (p>0.05, d=-0.088[3]) in young people who used cannabis at least weekly[1] or on at least 9 of the previous 30 days[3] prior to the study.

There were no statistically significant differences between motivational enhancement therapy and an education session at 6 months in the change in the number of ecstasy pills used (p=0.70, d=0.15[2]), change in the number of days of ecstasy use (p=0.80, d=0.05[2]), or change in severity of dependence score (p=0.96, d=0.01[2]) in people who had used ecstasy at least 3 different times in the previous 90 days.

There were also no significant differences reported between motivational enhancement therapy and educational sessions in the use of drugs other than cannabis at 3 months or 12 months (p value not reported, effect size not calculable[3]). However, in 1 of the studies, young people who used more than 14 joints per week before the start of the study had a statistically significantly greater reduction in cannabis use at 3 months after motivational enhancement therapy than after an information session (p=0.05, effect size not calculable[1]).

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in the Netherlands[1], Australia[2] and the USA[3], however, the interventions would be feasible in a UK-based setting. The studies may have included participants who were drug dependent.

[1] De Gee et al. (2014) [++]

[2] Norberg et al. (2014) [+]

[3] Walker et al. (2011) [+]

Evidence Statement 28: Effectiveness of motivational interviewing compared to education or information sessions for preventing or reducing drug misuse in people who are known to use drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [++] that motivational interviewing did not significantly prevent or reduce drug misuse compared to information sessions in people aged 16 to 19 who were known to use drugs occasionally/recreationally.

There was no statistically significant difference in the prevalence of cannabis use at 3 months (odds ratio 1.45, 95% CI 0.65 to 3.21[1]) or 6 months (odds ratio 1.48, 95% CI 0.84 to 2.59[1]); the number of joints used in the past week at 3 months (mean difference -0.84, 95% CI -2.33 to 0.66[1]) or 6 months (mean difference 1.33, 95% CI -1.72 to 4.38[1]); the number of times cannabis was used over 30 days at 3 months (mean difference 0.53, 95% CI -1.23 to 2.29[1]) or 6 months (mean difference -0.28, 95% CI -2.90 to 2.35[1]); cannabis problems at 3 months (mean difference 0.04, 95% CI -0.61 to 0.70[1]) or 6 months (mean difference 0.23, 95% CI -1.11 to 1.58[1]); severity of dependence score or number of dependence symptoms at 3 months (mean difference -0.32, 95% CI -1.04 to 0.40[1]) or 6 months (mean difference -0.61, 95% CI -1.35 to 0.12[1]) in young people who used cannabis at least weekly.

Applicability: The evidence is applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the UK. The study may have included participants who were drug dependent.

[1] McCambridge et al. (2008) [++]

Evidence Statement 29: Effectiveness of a brief motivational enhancement intervention compared to assessment only for preventing or reducing drug misuse in people who are known to use drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [+] that a brief motivational enhancement intervention did not significantly prevent or reduce drug misuse compared to assessment only in people who were known to use drugs occasionally/recreationally. The average age of the participants was 20. There was no statistically significant difference in the mean number of days cannabis was used at 3 months (rate ratio 0.96, 95% CI 0.80 to 1.15, p value not

significant) or 6 months (rate ratio 1.11, 95% CI 0.85 to 1.43, p not significant). Although the mean number of cannabis joints smoked per week by people who smoked cannabis on 5 or more days in the month prior to the study starting was statistically significantly lower after a brief motivational enhancement intervention than after assessment only at 3 months (rate ratio 0.76, 95% CI 0.60 to 0.96, p<0.05), this did not remain statistically significantly different at 6 months (rate ratio 1.03, 95% CI 0.73 to 1.46, p value not significant). There was no statistically significant difference in the mean number of cannabis related problems at 3 months (rate ratio 0.90, 95% CI 0.76 to 1.07, p<0.10) or 6 months (rate ratio 1.15, 95% CI 0.90 to 1.47, p value not significant).

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the interventions would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Lee et al. (2013) [+]

Evidence Statement 30: Effectiveness of motivational enhancement therapy compared to no intervention or assessment for preventing or reducing drug misuse in people who are known to use drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [+] that motivational enhancement therapy may have prevented or reduced drug misuse compared to no assessment or intervention in young people aged 14 to 19 who were known to use drugs occasionally or recreationally. Some participants in the study also received cognitive behaviour therapy. There was a statistically significant reduction in the number of days of cannabis use (p<0.05, d=-0.293), the number of cannabis abuse symptoms (p<0.05, d=-0.445), the number of cannabis dependence symptoms (p<0.05, d=-0.540) and the number of cannabis problems (p<0.05, d=-0.587) at 3 months after motivational enhancement therapy compared to after no assessment or intervention.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Walker et al. (2011) [+]

Evidence Statement 31: Effectiveness of brief motivational enhancement therapy with

mobile self-monitoring and responsive text messaging for preventing or reducing drug misuse in people who are known to misuse drugs occasionally/recreationally

There was moderate evidence from 1 uncontrolled before and after study[1] [+] that brief motivational enhancement therapy with mobile self-monitoring and responsive text messaging had some effect on preventing or reducing drug misuse in young people aged 15 to 24 who were known to misuse drugs occasionally/recreationally. The odds of using cannabis in a context that participants identified was likely to trigger cannabis use ('top 3 trigger contexts') were statistically significantly less 3 months after brief motivational enhancement therapy with mobile self-monitoring and responsive text messaging compared to before (OR 0.54, 95% CI 0.31 to 0.95, p=0.03), although the odds were not statistically significantly different at 4 weeks (OR 0.85, 95% 0.60 to 1.20, p=0.35). The odds of using cannabis in any other context were not statistically significantly different at 4 weeks (OR 0.85, 95% 0.58 to 1.25, p=0.41) or 3 months (OR 0.70, 95% CI 0.42 to 1.17, p=0.17). There was no statistically significant difference in the number of times cannabis was used at 4 weeks (RR 0.78, 95% CI 0.60 to 1.02, p=0.07), or 3 months (RR 0.73, 95% CI 0.49 to 1.08, p=0.11). The evidence showed no statistically significant differences at 3 months in the percentage of days abstinent in the previous 30 days (p=0.13, effect size not calculable) or the cannabis problems score (p=0.16, effect size not calculable).

Applicability: The evidence is only partially applicable to preventing or reducing drug use in the UK because the study was undertaken in the USA, however the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Shrier et al. (2014) [+]

Evidence Statement 32: Effectiveness of web-based personalised feedback intervention based on a motivational interviewing approach with skills training for preventing or reducing drug misuse in people who are known to misuse drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [+] that there was no significant difference in cannabis use or cannabis-related problems after a web-based personalised feedback intervention based on a motivational interviewing approach with skills training compared to assessment only, or compared to baseline when the two groups were combined, in young people aged 17 to 19 who had used cannabis in the 3 months prior to starting the study (p values not reported; use d=0.005 at 3 months, d=0.047 at 6 months; problems d=0.145 at 3

months, d=0.115 at 6 months). The skills training focused on skills for avoiding cannabis and making changes to personal use.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Lee et al. (2010) [+]

Evidence Statement 33: Effectiveness of web-based assessment and feedback for preventing or reducing drug misuse in people who are known to misuse drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [+] that there was no statistically significant difference between a web-based assessment with feedback and assessment only (eToke) at 1 month in the number of days cannabis was used in the previous month (p>0.05, d=0.08), the number of cannabis problems (p>0.05, d=0.10), the number of cannabis abuse symptoms (p>0.05, d=-0.04), or the number of cannabis dependence symptoms (p>0.05, d=0.03) in young people aged 18 to 23.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Elliott et al. (2014) [+]

Evidence Statement 34: Effectiveness of a web-based decisional balance and behaviour change intervention for preventing or reducing drug misuse in people who are known to misuse drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [+] that a web-based decisional balance and behaviour change intervention (breakingtheice) was no more effective than a waiting list control in preventing or reducing drug misuse in people (average age 22) who reported use of amphetamine type stimulants in the past 3 months. There were no statistically significant differences at 3 months (p=0.95, effect size not calculable) or 6 months (p=0.65, effect size not calculable) in the use of amphetamine-type stimulants, use of more than one drug at the same time (p=0.08 and p=0.68), or quality of life (p=0.43 and p=0.69) after a web-based

decisional balance and behaviour change intervention and a waiting list control (effect sizes not calculable).

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in Australia, however, the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Tait et al. (2015) [+]

Evidence Statement 35: Effectiveness of different types of brief interventions for preventing or reducing drug misuse in people who are known to misuse drugs occasionally/recreationally

There was weak evidence from 1 RCT[1] [-] that oral and written brief interventions on cannabis use or general health did not significantly prevent or reduce drug misuse in people aged 18 to 28 who used cannabis on at least 12 of the previous 30 days. There was no statistically significant difference at 3 months in the number of days cannabis was used in the previous 30 days before and after a brief oral cannabis intervention (p=0.125, effect size not calculable), brief written cannabis intervention (p=0.469, effect size not calculable), brief oral general health intervention (p=0.737, effect size not calculable) or brief written general health intervention (p=0.108, effect size not calculable). There was also no statistically significant difference at 3 months in the percentage of participants driving under the influence of cannabis before and after a brief oral cannabis intervention (p=0.414, effect size not calculable), brief oral general health intervention (p=0.317, effect size not calculable) or brief written general health intervention (p=0.414, effect size not calculable). However, there were statistically significantly fewer participants driving under the influence of cannabis 3 months after the written cannabis intervention compared to before the intervention (p=0.020, effect size not calculable).

Applicability: The evidence is only partially applicable to preventing or reducing drug use in the UK because the study was undertaken in Canada, however, the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Fischer et al. (2013) [-]

Evidence statement 36: Effectiveness of a therapist-based brief intervention compared to standard care for preventing or reducing drug misuse in people who are known to

misuse drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [++] that a therapist-based brief intervention was no more effective than standard care for preventing or reducing drug misuse in young people aged 12 to 18 who were known to misuse drugs occasionally/recreationally. There was no statistically significant difference between a therapist-based brief intervention and standard care in the frequency of cannabis use, cannabis problems, or the frequency of other drug use at 3 months, 6 months or 12 months (p values not reported, effect sizes ranged from d=0.023 to d=0.313). Driving under the influence of cannabis was statistically significantly less frequent after a therapist-based intervention compared to standard care at 3 months ($p \leq 0.01$, d=-0.162), but not at 6 months (p value not reported, d=0.092) or 12 months (p value not reported, d=0.210).

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Walton et al. (2013) [++]

Evidence statement 37: Effectiveness of a computer-based brief intervention compared to standard care for preventing or reducing drug misuse in people who are known to misuse drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [++] that a computer-based brief intervention was not more effective than standard care at preventing or reducing drug misuse in young people aged 12 to 18 who were known to misuse drugs occasionally/recreationally. There were no significant differences in the frequency of cannabis use between a computer-based brief intervention and standard care at 3 months (d=-0.019), 6 months (d=-0.039) or 12 months (d=-0.045) (p values not reported). There was a statistically significantly lower frequency of driving under the influence of cannabis at 3 months ($p \leq 0.01$, d=-0.057) and statistically significantly fewer cannabis problems at 3 months ($p \leq 0.05$, d=) after a computer-based brief intervention compared to standard care. However, there were no significant differences in frequency of driving under the influence of cannabis or the number of cannabis problems between the computer-based brief intervention and standard care at 6 months or 12 months ($p > 0.05$, effect sizes ranged from d=0.037 to d=0.210). There was a statistically significant reduction in the frequency of other drug use after the computer-based brief intervention compared to standard care at 3 months ($p \leq 0.01$, d=-0.338) and 6 months

($p \leq 0.01$, d=-0.320), but not 12 months (p>0.05, d=-0.075).

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Walton et al. (2013) [++]

Intention to misuse drugs

Evidence Statement 38: Effectiveness of brief motivational enhancement therapy with mobile self-monitoring and responsive text messaging for reducing intention to misuse drugs in people who are known to use drugs occasionally/recreationally

There was moderate evidence from 1 uncontrolled before and after study[1] [+] that brief motivational enhancement therapy with mobile self-monitoring and responsive text messaging reduced desire to misuse drugs in young people aged 15 to 24 who were known to misuse drugs occasionally/recreationally. There was a statistically significantly reduced desire to use cannabis in a context that participants identified was likely to trigger cannabis use ('top 3 trigger contexts') 3 months after brief motivational enhancement therapy with mobile self-monitoring and responsive text messaging (p<0.0001), however, there was no statistically significant difference in desire 4 weeks after the intervention (p=0.48, effect size not reported). The evidence showed statistically significant differences in the desire to use cannabis in contexts other than the top 3 trigger contexts 3 months after the intervention (p<0.0001, effect size not calculable), but not 4 weeks after the intervention (p=0.08, effect size not calculable).

Applicability: The evidence is only partially applicable to preventing or reducing drug use in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Shrier et al. (2014) [+]

Evidence Statement 39: Effectiveness of brief interventions for reducing intention to misuse drugs in people who are known to misuse drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [++] that a therapist-based brief intervention and a computer-based brief intervention both significantly reduced intention to misuse drugs in

young people aged 12 to 18 who were known to misuse drugs occasionally/recreationally. Intention to misuse drugs was statistically significantly lower immediately after a therapist-based brief intervention and after a computer-based brief intervention (both p≤0.001, effect sizes not calculable). Some participants also received cognitive behaviour therapy.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Walton et al. (2013) [++]

Personal and social skills related to drug misuse prevention

Evidence Statement 40: Effectiveness of brief interventions for improving personal and social skills related to drug misuse prevention in people who are known to misuse drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [++] that a therapist-based brief intervention and a computer-based brief intervention both significantly improved self-efficacy in young people aged 12 to 18 who were known to misuse drugs occasionally/recreationally. Self-efficacy was statistically significantly higher immediately after a therapist-based brief intervention and after a computer-based brief intervention (both p≤0.01, effect sizes not calculable). Some participants also received cognitive behaviour therapy.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Walton et al. (2013) [++]

Knowledge of drugs and their risks

Evidence Statement 41: Effectiveness of brief interventions for increasing knowledge of drugs and their risks in people who are known to misuse drugs occasionally/recreationally

There was moderate evidence from 1 RCT[1] [++] that a therapist-based brief intervention and a computer-based brief intervention significantly increased the perceived risk of drug misuse

in young people aged 12 to 18 who were known to misuse drugs occasionally/recreationally. Perceived risk was statistically significantly higher immediately after a therapist-based brief intervention (p≤0.01, effect size not calculable) and after a computer-based brief intervention (p≤0.001, effect size not calculable). Some participants also received cognitive behaviour therapy.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting. The study may have included participants who were drug dependent.

[1] Walton et al. (2013) [++]

3.3.11 Comparison with activities identified in the scope

Table 10 shows which studies included in the review addressed activities identified in the scope. No studies looked explicitly at one-to-one skills training and information as part of planned outreach activities, so this is not presented in the table. Motivational interviewing studies did not fall under any of the specific activities identified in the scope, but are clearly within the scope. Only one study of motivational interviewing stated that they used a group-based approach (D'Amico et al. 2013); it is assumed that all other motivational interviewing interventions (including motivational enhancement therapy interventions) were done on a 1 to 1 basis.

Table 10. Summary of activities in included studies

Study	Intervention	Control	Intervention characteristics as outlined in the scope						
			Group-based skills training or information	**1 to 1 skills training and information – peer educators**	**Opportunistic skills training and information**	**Print and new media – social norms, skills and information**	**Family based support for children and young people**	**Group-based behaviour therapy* for children and young people**	**Skills training for parents or carers of children**
Baer et al. (2007)	Brief motivational intervention	Standard care	No	No	No	No	No	No	No
Catalano et al. (1999); Catalano et al. (2002); and Haggerty et al. (2008)	Group skills training for parents Case management	Standard care	Yes	No	No	No	Yes	No[1]	Yes
Cervantes et al. (2004)	Group skills training and information for parents and children	None	Yes	No	No	No	Yes	Yes	Yes
D'Amico et al. (2013)	Group-based motivational interview	Group discussions	No	No	No	No	No	No	No
De Dios et al. (2012)	Motivational interview with mindfulness meditation	Assessment only	No	No	No	No	No	No	No
De Gee et al. (2014)	Motivational enhancement therapy	Information session with computerised animation if	No	No	No	No	No	No	No

Study	Intervention	Control	Intervention characteristics as outlined in the scope						
			Group-based skills training or information	**1 to 1 skills training and information – peer educators**	**Opportunistic skills training and information**	**Print and new media – social norms, skills and information**	**Family based support for children and young people**	**Group-based behaviour therapy* for children and young people**	**Skills training for parents or carers of children**
		internet available							
Dore et al. (1999)	Group based skills training	No intervention	Yes	No	No	No	No	Yes	No
Edwards et al. (2006)	1 to 1 skills training and information, may include motivational interview	Psychoeducation	No	No	No	No	No	No	No
Elliott et al. (2014)	Web-based educational program	Assessment only	No	No	No	Yes	No	No	No
Fischer et al. (2013)	Oral or written cannabis focused brief intervention (unclear if group based or 1 to 1)	Oral or written general health focused brief intervention (unclear if group based or 1 to 1)	Unclear[2]	No	No	No	No	No	No
Fors and Jarvis (1995)	Group skills training and information with peer educators	Skills training and information with adult educators No intervention	Yes	Yes	Yes	No	No	Yes	No
Goti et al. (2010)	Information, counselling, skills training for parents	Standard care	Unclear[2]	No	No	No	Yes	No	Yes

Study	Intervention	Control	Intervention characteristics as outlined in the scope						
			Group-based skills training or information	**1 to 1 skills training and information – peer educators**	**Opportunistic skills training and information**	**Print and new media – social norms, skills and information**	**Family based support for children and young people**	**Group-based behaviour therapy* for children and young people**	**Skills training for parents or carers of children**
	(unclear if group based or 1 to 1) Motivational interview for young people								
Kim and Leve (2011)	Group skills training for parents Group skills training, information for children	Regular foster care services	Yes	No	No	No	Yes	Yes	Yes
Lee et al. (2010)	Web based motivational interview, web based skills training	Assessment only	No	No	No	Yes	No	No	No
Lee et al. (2013)	Motivational interview	Assessment only	No	No	No	No	No	No	No
Lynsky et al. (1999)	Group information sessions and skills training	None	Yes	No	No	No	No	No	No
McCambridge et al. (2008)	Motivational interview	Information and advice	No	No	No	No	No	No	No

Study	Intervention	Control	Intervention characteristics as outlined in the scope						
			Group-based skills training or information	**1 to 1 skills training and information – peer educators**	**Opportunistic skills training and information**	**Print and new media – social norms, skills and information**	**Family based support for children and young people**	**Group-based behaviour therapy* for children and young people**	**Skills training for parents or carers of children**
Milburn et al. (2012)	Group skills training for parents and children	Standard care	Yes	No	No	No	Yes	Yes	Yes
Morgenstern et al. (2009)	Motivational interview	Educational videos	No	No	No	No	No	No	No
Norberg et al. (2014)	Motivational enhancement therapy	Educational session	No	No	No	No	No	No	No
Nyamathi et al. (2012)	Group skills training	Art sessions	Yes	No	No	No	No	Yes	No
Orte et al. (2008)	Group skills training for parents and children	Details not provided	Yes	No	No	No	Yes	Yes	Yes
Parsons et al. (2014)	Motivational interview	Educational videos and structured discussion	No	No	No	No	No	No	No
Peterson et al. (2006)	Brief motivational intervention	Assessment only	No	No	No	No	No	No	No
Prado et al. (2012) and Huang et al. (2014)	Group skills training for parents	Standard care	Yes	No	No	No	Yes	No[1]	Yes
Rhoades et	Skills training for	Standard care	Unclear[2]	No	No	No	Yes	No	Yes

Study	Intervention	Control	Intervention characteristics as outlined in the scope						
			Group-based skills training or information	**1 to 1 skills training and information – peer educators**	**Opportunistic skills training and information**	**Print and new media – social norms, skills and information**	**Family based support for children and young people**	**Group-based behaviour therapy* for children and young people**	**Skills training for parents or carers of children**
al. (2014)	foster parents and biological parents (unclear if group or 1 to 1) Individual therapy and behavioural management system for children (some also received motivational interviewing) Case management								
Schwinn et al. (2015)	Online skills training	No details provided	No	Yes[3]	No	Yes	No	No	No
Shrier et al. (2014)	Motivational interview, text messages	None	No	No	No	Yes	No	No	No
Smith et al. (2010)	Skills training for foster parents (unclear if group or 1 to 1)	Group care	Unclear[2]	No	No	No	Yes	Unclear[4]	Yes

Study	Intervention	Control	Intervention characteristics as outlined in the scope						
			Group-based skills training or information	**1 to 1 skills training and information – peer educators**	**Opportunistic skills training and information**	**Print and new media – social norms, skills and information**	**Family based support for children and young people**	**Group-based behaviour therapy* for children and young people**	**Skills training for parents or carers of children**
	Behaviour management system for children Weekly family therapy Case management								
Tait et al. (2015)	Web-based intervention	No intervention	No	No	No	Yes	No	No	No
Walker et al. (2011)	Motivational enhancement therapy with optional cognitive behaviour therapy (unclear if group or 1 to 1)	Education with optional cognitive behaviour therapy Delayed feedback with no baseline assessment	Unclear[3]	No	No	No	No	No	No
Walton et al. (2013)	Therapist-based brief intervention	Computer-based brief intervention Standard care	No	No	No	No	No	No	No

* Includes group-based skills training
[1] Children only attended group therapy so that parents could practise new skills.
[2] Not clear if intervention was delivered in group sessions or one-to-one.

Study	Intervention	Control	Intervention characteristics as outlined in the scope						
			Group-based skills training or information	**1 to 1 skills training and information – peer educators**	**Opportunistic skills training and information**	**Print and new media – social norms, skills and information**	**Family based support for children and young people**	**Group-based behaviour therapy* for children and young people**	**Skills training for parents or carers of children**
[3] Intervention used an animated young adult narrator. [4] Unclear if family therapy was behaviour based.									

3.3.11.1 Group-based skills training or information provision using lessons, talks and activities (e.g. targeted refusal skills training in schools and colleges)

Thirteen study papers from 10 studies included interventions that were group-based skills training with or without information provision using lessons, talks and activities (Catalano et al. 1999 [-]; Catalano et al. 2002 [-]; Cervantes et al. 2004 [+]; Dore et al. 1999 [-]; Fors and Jarvis 1995 [-]; Haggerty et al. 2008 [-]; Huang et al. 2014 [+]; Kim and Leve 2011 [+]; Lynsky et al. 1999 [-]; Milburn et al. 2012 [+]; Nyamathi et al. 2012 [-]; Orte et al. 2008 [+]; Prado et al. 2012 [+]). Most of the papers looked at group-based skills training with or without information provision as a standalone intervention, however, Catalano et al. (1999), Catalano et al. (2002) and Haggerty et al. (2008) reported on group-based skills training with case management.

The evidence of the effectiveness of group-based skills training with or without information provision on drug use outcomes was mixed. Kim and Leve (2011) [+] found a statistically significant association between group-based skills training with information and reduced marijuana use at 36 months ($p<0.01$, $d=0.57$). However, Haggerty et al. (2008) [-] found no statistically significant differences in the risks of abusing marijuana (HR 0.72, 95% CI not reported, $p>0.05$), opiates (HR 0.83, 95% CI not reported, $p>0.05$), or cocaine/amphetamines (HR 0.99, 95% CI not reported, $p>0.05$) 12 to 15 years after a group-based skills intervention or standard care. Prado et al. (2012) [+] and Huang et al. (2014) [+] reported statistically significantly lower illicit drug use after group-based skills training compared to standard care at 12 months ($p=0.04$, $d=0.79$ in Prado et al.[2012], effect size not calculable in Huang et al.[2014]), but no statistically significant difference in the number of people with marijuana dependence ($p=0.25$, $d=0.93$ in Prado et al.[2012]). Catalano et al. (1999) [-] found no statistically significant effect on marijuana use at 6 or 12 months ($p>0.05$, effect sizes not calculable) and Catalano et al. (2002) [-] found no statistically significant effect on marijuana use at 24 months after group-based skills training ($p>0.05$, effect size not calculable). Cervantes et al. (2004) [+] found no statistically significant difference in illicit drug use before and immediately after group-based skills training with information ($p>0.05$, effect size not calculable). Nyamathi et al. (2012) [-] found a statistically significant reduction in the use of some drugs at 6 months ($p<0.05$, effect size not calculable), but no significant difference in drug use compared to art sessions (p value not reported, effect size not reported or calculable). Lynsky et al. (1999) [-] reported some changes in intention to use marijuana and perception of risks, but the statistical significance and effect size of these changes was not reported or calculable. Milburn et al. (2012) [+] found a statistically

significant increase in marijuana use at 12 months with group-based skills training compared to standard care (p<0.001, d=-0.40) and a statistically significant decrease in hard drug use (p<0.001, d=0.13). Fors and Jarvis (1995) [-] reported a statistically significant improvement in knowledge about drugs after group-based skills training and information with peer educators (p<0.01, effect size not calculable), although there was no statistically significant improvement after group-based skills training with adult educators (p=0.13, effect size not calculable).

Group-based skills training or information provision appeared to significantly improve personal and social skills. Cervantes et al. (2004) [+] reported a statistically significant increase in academic social skills (p<0.001, effect size not calculable), family social skills (p<0.05, effect size calculable), and community social skills (p<0.05, effect size not calculable) and Orte et al. (2008) [+] reported a statistically significant improvement in several personal and social skills, including problem-solving skills and aggression, after group-based skills training (all p<0.05, effect size ranged from d=0.456 to d=1.193). Kim and Leve (2011) [+] reported a positive association between group-based skills training and prosocial behaviour (p<0.05, d=0.46). Only 1 study reported that group-based skills training did not have a significant effect on personal and social skills – Dore et al. (1999) [-] found no effect on participants' self-worth (follow up time not reported, data and p values not reported).

No studies looked at the effectiveness of group-based information provision without skills training.

Drug misuse outcomes

Evidence Statement 42: Effectiveness of group-based skills training with or without information provision for preventing or reducing drug misuse

There was weak evidence from 5 RCTs[1,2,3,4,5] [+[1,2,3],-[4,5]], 1 secondary analysis of 1 of the RCTs[6] [+], 2 follow up studies of 1 of the RCTs[7,8] [-[7,8]], and 2 before and after studies[9,10] [+[9],-[10]] that group-based skills training with or without information provision had a mixed effect on drug use. The group-based skills training in the studies focused on improving social skills[1], dealing with feelings of exclusion[1], improving problem solving skills[2], improving conflict resolution skills[2], improving communication skills[5], improving self-management skills[5], behaviour choices and options[9], decision making skills[10], and coping skills[10] in people at risk of drug misuse, and improving communication skills in parents of children and young people at risk of drug misuse[3,4,6,7,8,9].

Applicability: The evidence is only partially applicable to preventing or reducing drug use in

the UK because all of the studies were undertaken in the USA, however, the interventions would be feasible in a UK-based setting.

[1] Kim and Leve (2011) [+]

[2] Milburn et al. (2012) [+]

[3] Prado et al. (2012) [+]

[4] Catalano et al. (1999) [-]

[5] Nyamathi et al. (2012) [-]

[6] Huang et al. (2014) [+]

[7] Haggerty et al. (2008) [-]

[8] Catalano et al. (2002) [-]

[9] Cervantes et al. (2004) [+]

[10] Lynsky et al. (1999) [-]

Intention to misuse drugs

No relevant evidence was identified.

Personal and social skills related to drug misuse prevention

Evidence Statement 43: Effectiveness of group-based skills training with or without information provision for improving personal and social skills related to drug misuse prevention

There was strong evidence from 1 RCT[1] [+] and 2 before and after studies[2,3] [+[2,3]] that group-based skills training with or without information provision was associated with a significant improvement in personal and social skills related to drug misuse prevention. The group-based skills training in the studies focused on improving social skills[1], dealing with feelings of exclusion[1], behaviour choices and options[2], improving listening skills[3], improving relationships[3], and coping with criticism[3] in people at risk of drug misuse, and improving relationships[3], communication skills[2,] and problem solving skills[3] in parents whose children are at risk of drug misuse.

Applicability: The evidence is only partially applicable to preventing or reducing drug use in the UK because the studies were undertaken in the USA[1,2] and Spain[3], however, the interventions would be feasible in a UK-based setting.

[1] Kim and Leve (2011) [+]

[2] Cervantes et al. (2004) [+]

[3] Orte et al. (2008) [+]

Knowledge of drugs and their risks

Evidence Statement 44: Effectiveness of group-based skills training with or without information provision for increasing knowledge of drugs and their risks

There was weak evidence from 1 non-randomised controlled trial[1] [-] that group-based skills training with or without information provision had a mixed effect on knowledge of drugs and their risks. The skills training focused on ways to intervene if a family member or friend is using drugs.

Applicability: The evidence is only partially applicable to preventing or reducing drug use in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Fors and Jarvis (1995) [-]

3.3.11.2 One-to-one skills training, information provision and advice given as part of planned outreach activities (e.g. for young people at festivals)

No studies explicitly looked at the effectiveness of one-to-one skills training, information provision and advice given as part of planned outreach activities. One study approached people at a drop-in centre for homeless people, however, it was not clear whether the intervention was group based or one-to-one, and skills training was not provided (Baer et al. 2007).

Evidence Statement 45: Effectiveness of drug misuse prevention interventions based on one-to-one skills training, information provision and advice given as part of planned outreach activities

No relevant evidence was identified.

3.3.11.3 One-to-one skills training, advice and information provided using peer education initiatives (e.g. with gay men at nightclubs)

No studies explicitly looked at the effectiveness of one-to-one skills training advice and information provided using peer education initiatives. One study of the effectiveness of an online intervention using an animated young adult narrator found a statistically significant reduction in use of drugs other than marijuana ($p<0.05$, $d=0.34$) but not in marijuana use (p value and effect size not reported) (Schwinn et al. 2015). Another study found a statistically significant improvement in knowledge about drugs with peer educators ($p<0.001$, effect size not calculable), but was provided in a group setting rather than on a one-to-one basis (Fors and Jarvis 1995).

Evidence Statement 46: Effectiveness of drug misuse prevention interventions based on one-to-one skills training, advice and information provided using peer education initiatives

No relevant evidence was identified.

3.3.11.4 Opportunistic skills training, advice and information provision (e.g. provided by youth workers)

One study looked at opportunistic skills training, advice and information provision (Fors and Jarvis 1995). The intervention in the study was delivered in shelters for homeless people. The study showed a statistically significant improvement in knowledge about drugs and their risks after an intervention with a peer educator ($p<0.001$, effect size not calculable) but no statistically significant improvement after an intervention with an adult educator ($p=0.13$, effect size not calculable) or in participants that received no intervention ($p=0.33$, effect size not calculable).

Drug misuse outcomes

No relevant evidence was identified.

Intention to misuse drugs

No relevant evidence was identified.

Personal and social skills related to drug misuse prevention

No relevant evidence was identified.

Knowledge of drugs and their risks

Evidence Statement 47: Effectiveness of opportunistic skills training, advice and information provision as part of planned outreach activities for increasing knowledge of drugs and their risks

There was weak quality evidence from 1 non-randomised controlled trial[1] [-] that using a peer educator to deliver an intervention in a shelter to people who were homeless leads to a statistically significant improvement in knowledge about drugs and their risks compared to before the intervention ($p<0.001$, effect size not calculable), however, using an adult educator in a shelter did not lead to a statistically significant improvement in knowledge about drugs and their effects ($p=0.13$, effect size not calculable).

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Fors and Jarvis (1995) [-]

3.3.11.5 Using targeted print and new media (e.g. magazines, websites, social media, text messages) for different groups at risk of drug misuse to influence social norms or enhance skills and provide information and advice

Three studies looked at the effectiveness of using targeted new media to influence social norms or enhance skills and provide information and advice (Lee et al. 2010; Schwinn et al. 2015; Shrier et al. 2014). Four studies used a web-based approach (Elliot et al. 2014; Lee et al. 2010; Schwinn et al. 2015; Tait et al. 2015). Elliot et al. (2014) [+] found no statistically significant differences in the number of days marijuana was used (p not significant, d=0.08), the number of marijuana problems (p not significant, d=0.10), the number of marijuana abuse symptoms (p not significant, d=-0.04), or the number of marijuana dependence symptoms (p not significant, d=0.03) when compared to assessment only. Lee et al. (2010) [+] found no significant difference in marijuana use at 6 months after web-based personalised feedback (p value not reported, d=-0.047). Schwinn et al. (2015) [-] found a reduction in use of drugs

other than marijuana at 3 months (p<0.05, d=0.34) with a web-based approach to present practice scenarios and interactive games, although there was no statistically significant reduction in marijuana use. Shrier et al. (2014) [+] found the odds of using marijuana were statistically significantly reduced at 3 months after using text messages to provide motivating messages to participants in contexts that participants identified was likely to trigger cannabis use ('top 3 trigger contexts') (OR 0.54, 95% CI 0.31 to 0.95, p=0.03), but the odds of marijuana use were not statistically significantly reduced in other trigger contexts (OR 0.70, 95% CI 0.42 to 1.17, p=0.17). Tait et al. (2015) [+] found no statistically significant difference in use of amphetamine type stimulants, use of more than one drug at the same time, or quality of life compared to a waiting list control (p >0.05, effect sizes not calculable).

None of the included studies looked at the effectiveness of targeted print media for different groups at risk of drug misuse to influence social norms or enhance skills and provide information and advice.

Drug misuse outcomes

Evidence Statement 48: Effectiveness of web-based approaches for groups at risk of drug misuse

There was strong evidence from 4 RCTs[1,2,3,4] [+[1,2,3],-[4]] that a web-based approach to drug misuse prevention did not prevent or reduce drug misuse. There was no statistically significant effect on cannabis use at 1 month (p>0.05, d=0.08 for number of days cannabis was used[1]), 3 months (p value and effect size not reported[4]; p value not reported, d=0.005[2]), or 6 months (p value not reported, d=-0.047)[2]. There was also no statistically significant difference in the use of amphetamine type stimulants, use of more than one drug at the same time, or quality of life (p>0.05, effect sizes not calculable[3]). However, 1 study found a web-based approach did statistically significantly reduce the use of drugs other than cannabis at 3 months (p<0.05, d=0.34)[4].

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in the USA[1,2,4] and Australia[3], however, the interventions would be feasible in a UK-based setting.

[1] Elliott et al. (2014) [+]

[2] Lee et al. (2010) [+]

[3] Tait et al. (2015) [+]

[4] Schwinn et al. (2015) [-]

Evidence Statement 49: Effectiveness of responsive text messaging for groups at risk of drug misuse

There was moderate evidence from 1 before and after study[1] [+] that the odds of using cannabis in a context that participants identified was likely to trigger cannabis use ('top 3 trigger contexts') were statistically significantly lower 3 months after an intervention that included responsive text messaging than before (OR 0.54, 95% CI 0.31 to 0.95, p=0.03) but there was no statistically significant difference in odds in other trigger contexts (OR 0.70, 95% CI 0.42 to 1.17, p=0.17).

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Shrier et al. (2014) [+]

Personal and social skills related to drug misuse prevention

No relevant evidence was identified.

Knowledge of drugs and their risks

No relevant evidence was identified.

Intention to use drugs

No relevant evidence was identified.

3.3.11.6 Family-based programmes providing structured support for children and young people at risk of drug misuse (including motivational interviewing for parents or carers and parental skills training)

Twelve study papers from 9 studies looked at the effectiveness of family-based programmes providing structured support for children and young people at risk of drug misuse (Catalano et al. 1999 [-]; Catalano et al. 2002 [-]; Cervantes et al. 2004 [+]; Goti et al. 2010 [-]; Haggerty et al. 2008 [-]; Huang et al. 2014 [+]; Kim and Leve 2011 [+]; Milburn et al. 2012 [+]; Orte et al. 2008 [+]; Prado et al. 2012 [+]; Rhoades et al. 2014 [-]; Smith et al. 2010 [+]). All of the interventions in these studies included group-based behaviour therapy for children and

young people or skills training for adults and carers of children, and so are considered under the 2 subheadings below.

Drug misuse outcomes

Evidence Statement 50: Effectiveness of family-based interventions for preventing or reducing drug misuse in children and young people

There was weak evidence from 7 RCTs (+[1,2,3,4],-[5,6,7]), 2 follow up studies of 1 of the RCTs[8,9] (-[8,9]), 1 secondary analysis of 1 of the RCTs[10] (+) and a before and after study[11] (+) that family-based interventions had a mixed effect on drug misuse. Five[1,3,4,7,10] of the papers from 4 RCTs reported a significant improvement in drug use (at 12 months[1,3,4,10], 18 months[4], and 7 to 9 years[7]). Two studies reported a significant association between family-based interventions and reduced drug misuse at 36 months[2] and 9 years[7]. Six of the papers[1,4,5,8,9,10] from 3 RCTs reported no significant improvement in drug misuse (immediately after the intervention[12], or at 6 months[5,11], 12 months[1,4,5,10], 24 months[8], or 12 to 15 years[9]). One study showed a significant increase in drug use at 12 months[3]. One study reported no significant difference in drug problems at 1 month in 1 study[6].

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in the USA[1,2,3,4,5,7,9,10,11,12] and Spain[6], however, the interventions would be feasible in a UK-based setting.

[1] Prado et al. (2012) [+]

[2] Kim and Leve (2011) [+]

[3] Milburn et al. (2012) [+]

[4] Smith et al. (2010) [+]

[5] Catalano et al. (1999) [-]

[6] Goti et al. (2010) [-]

[7] Rhoades et al. (2014) [-]

[8] Catalano et al. (2002) [-]

[9] Haggerty et al. (2008) [-]

[10] Huang et al. (2014) [+]

[11] Cervantes et al. (2004) [+]

Intention to misuse drugs

Evidence Statement 51: Effectiveness of family-based interventions for reducing intention to misuse drugs

There was weak evidence from 1 RCT[1] [-] that family-based interventions had no significant effect on intention to use drugs.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in Spain, however, the intervention would be feasible in a UK-based setting.

[1] Goti et al. (2010) [-]

Personal and social skills related to drug misuse prevention

Evidence Statement 52: Effectiveness of family-based interventions for improving personal and social skills related to drug misuse prevention

There was strong evidence from 1 RCT[1] [+] and 2 before and after studies [+[2,3]] that family-based interventions were associated with a significant improvement in personal and social skills.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in the USA[1,2] and Spain[3], however, the interventions would be feasible in a UK-based setting.

[1] Kim and Leve (2011) [+]

[2] Cervantes et al. (2004) [+]

[3] Orte et al. (2008) [+]

Knowledge of drugs and their risks

Evidence Statement 53: Effectiveness of family-based interventions for increasing knowledge of drugs and their risks

There was weak evidence from 1 RCT[1] [-] that family-based interventions had no significant effect on perception of risks of drugs.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in Spain, however, the intervention would be feasible in a UK-based setting.

[1] Goti et al. (2010) [-]

3.3.11.7 Group-based behaviour therapy for children and young people who are at risk of drug misuse (focusing on coping mechanisms, problem-solving and goal setting)

Seven studies looked at the effectiveness of group-based behaviour therapy for children and young people (Cervantes et al. 2004 [+]; Dore et al. 1999 [-]; Fors and Jarvis 1995 [-]; Kim and Leve 2011 [+]; Milburn et al. 2012 [+]; Nyamathi et al. 2012 [-]; Orte et al. 2008 [+]). Four of the studies took a family approach – Orte et al. (2008) and Milburn et al. (2012) included group-based skills training for parents and children, Kim and Leve (2011) included group-based skills training for parents and group-based skills training with information for children, and Cervantes et al. (2004) included group-based skills training and information for both parents and children. Fors and Jarvis (1995) looked at group-based skills training in young people only, and Dore et al. (1999) and Nyamathi et al. (2012) looked at group skills training in children only. Milburn et al. (2012) reported a statistically significant increase in marijuana use at 12 months with group-based skills training compared to standard care ($p<0.001$) and a statistically significant decrease in hard drug use ($p<0.001$). Kim and Leve (2011) reported that group-based skills training was statistically significantly negatively correlated with marijuana use ($p<0.01$, $d=0.57$) and statistically significantly correlated with prosocial behaviour ($p<0.05$, $d=0.46$) (that is to say, the intervention was associated with significant increases in prosocial behaviour). However, Cervantes et al. (2004) reported no statistically significant difference in illicit drug use before and after group-based skills training ($p>0.05$, effect size not calculable). The same study reported a statistically significant increase in academic social skills ($p<0.001$, effect size not reported), family social skills ($p<0.05$, effect size not reported) and community social skills ($p<0.05$, effect size not reported). Orte et al. (2008) found that group-based skills training statistically significantly improved several personal and social skills of children, such as concentration, problem solving skills, and aggression, compared to no intervention (all $p<0.05$, effect sizes range from 0.456 to 1.193). Of the 3 studies that did not look at family-based approaches, Fors and Jarvis (1995) report a statistically significant improvement in knowledge about drugs after group-based skills

training with peer educators (p<0.001, effect size not calculable), although this was not statistically significant with adult educators (p=0.13, effect size not calculable), Dore et al. (1999) reported no effect on feelings of self-worth and Nyamathi et al. (2012) [-] found a statistically significant reduction in the use of some drugs at 6 months (p<0.05, effect size not calculable), but no significant difference in drug use compared to art sessions (p value and effect size not reported, effect size not calculable).

Drug misuse outcomes

Evidence Statement 54: Effectiveness of group-based behaviour therapy for children and young people for preventing or reducing drug misuse

There was weak evidence from 3 RCTs[1,2,3] [+[1,2],-[3]] and 1 before and after study[4] [+] that group-based skills training had a mixed effect on drug misuse. One study[1] [+] reported a statistically significant association between group-based skills training and reduced cannabis use (p<0.01, d=0.57) but another study[4] [+] reported no statistically significant difference in illicit drug use before and after group-based skills training (p>0.05, effect size not calculable). A third study[2] [+] reported a statistically significant increase in cannabis use (p<0.002, d=-0.40) but a statistically significant decrease in hard drug use (p<0.001, d=0.13) compared to standard care. One RCT[3] [-] reported a statistically significant reduction in the use of some drugs at 6 months (p<0.05, effect size not reported or calculable) but no significant difference in drug use compared to art sessions (p value and effect size not reported, effect size not calculable).

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in the USA, however, the interventions would be feasible in a UK-based setting.

[1] Kim and Leve (2011) [+]

[2] Milburn et al. (2012) [+]

[3] Nyamathi et al. (2012) [-]

[4] Cervantes et al. (2004) [+]

Intention to misuse drugs

No relevant evidence was identified.

Personal and social skills related to drug misuse prevention

Evidence Statement 55: Effectiveness of group-based behaviour therapy for children and young people for improving personal and social skills related to drug misuse prevention

There was strong quality evidence from 1 RCT[1] [+] and 2 before and after studies[2,3] [+[2,3]] that group-based skills training as part of a family-based approach improved social and personal skills (all $p<0.05$[2,3], effect sizes range from 0.456 to 1.193[3] or not reported[2]) and was associated with a statistically significant improvement in prosocial behaviour ($p<0.05$, $d=0.46$)[1].

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in Spain[3] and the USA[1,2], however, the interventions would be feasible in a UK-based setting.

[1] Kim and Leve (2011) [+]

[2] Cervantes et al. (2004) [+]

[3] Orte et al. (2008) [+]

Knowledge of drugs and their risks

Evidence Statement 56: Effectiveness of group-based behaviour therapy for children and young people for increasing knowledge of drugs and their risks

There was weak quality evidence from one non-randomised controlled trial[1] [-] that group-based behaviour therapy for children and young people was associated with a statistically significant improvement in knowledge about drugs and their risks in young people after group-based skills training with peer educators ($p<0.001$, effect size not calculable) but not with adult educators ($p=0.13$, effect size not calculable).

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Fors and Jarvis (1995) [-]

3.3.11.8 Parental skills training for parents or carers of children who are at risk of drug misuse (focusing on stress management, communication skills, helping children develop problem-solving skills, and setting behavioural targets)

Twelve study papers from 9 studies looked at the effectiveness of skills training for parents or carers of children for preventing or reducing drug misuse (Catalano et al. 1999 [-]; Catalano et al. 2002 [-]; Cervantes et al. 2004 [+]; Goti et al. 2010 [-]; Haggerty et al. 2008 [-]; Huang et al. 2014 [+]; Kim and Leve 2011 [+]; Milburn et al. 2012 [+]; Orte et al. 2008 [+]; Prado et al. 2012 [+]; Rhoades et al. 2014 [-]; Smith et al. 2010 [+]).

Only 2 study papers looked at the effectiveness of skills training for parents or carers alone – an RCT by Prado et al. (2012) and a secondary analysis of the RCT by Huang et al. (2014). Both studies found statistically significantly lower illicit drug use at 12 months after skills training for parents compared with standard care (p=0.04, d=0.79 in Prado et al. [2012], effect size not calculable in Huang et al. [2014]), however, they found no statistically significant difference between the skills training and standard care in the number of people with a marijuana dependence (p=0.25, d=0.93 in Prado et al. [2012]).

One study looked at the effectiveness of skills training for parents in combination with motivational interviewing for children (Goti et al. 2010). It looked at skills training in combination with information and counselling for parents and motivational interviewing for children and found no statistically significant difference in the number of problems from drugs or intention to use drugs from baseline to 1 month or when compared with standard care (p>0.05, problems d=0.236, intention d=-0.068), Goti et al. 2010). The study also reported that there was a statistically significant increase in perception of risk of drugs at 1 month compared to baseline after the intervention (p=0.04, d=0.00), but there was no statistically significant difference between the intervention and standard care (p>0.05, d=0.245). Some children in the Rhoades et al. (2014) study also received motivational interviewing, but it is not clear how many and the results for these children were not reported separately. Three study papers from 1 study looked at skills training for parents in combination with case management and found no statistically significant effect on marijuana use at 6 or 12 months (Catalano et al. 1999) or 24 months (Catalano et al. 2002), or the risks of developing marijuana, opiate, or cocaine/amphetamine abuse at 12 to 15 years (Haggerty et al. 2008).

Two studies looked at skills training in combination with case management and behaviour management systems. One study (Smith et al. 2010) looked at a combination of skills training for foster parents, behaviour management systems, and weekly family therapy and found that there was statistically significantly less marijuana use at 18 months (p<0.01, d=-

0.65) and use of drugs other than marijuana at 12 months and 18 months (both p<0.05, d=-0.39 at 12 months, d=-0.46 at 18 months). The second study (Rhoades et al. 2014) looked at skills training for foster and biological parents combined with behaviour management systems, individual therapy for children, and case management and found a statistically significant decrease in drug use from 7 to 9 years after the intervention (p<0.05, effect size not calculable) and a statistically significant negative correlation between drug use at 9 years and group-based skills training (that is to say, the intervention was associated with significant decreases in drug use) (p<0.05, effect size not calculable). Some children in the Rhoades et al. (2014) study also received motivational interviewing.

Four studies looked at interventions that involved skills training for parents and children (Cervantes et al. 2004; Kim and Leve 2011; Milburn et al. 2012; Orte et al. 2008). One study reported no statistically significant difference in illicit drug use before and after group skills training and information for parents and children, but did find a statistically significant increase in academic social skills (p<0.001, effect size not calculable), family social skills (p<0.05, effect size not calculable) and community social skills (p<0.05, effect size not calculable) (Cervantes et al. 2004). A second study looked at skills training for parents and children and reported statistically significantly improved personal and social skills in children, including concentration, problem solving skills, and aggression, compared to standard care (all p<0.05, effect sizes range from 0.456 to 1.193) (Orte et al. 2008). A third study looked at skills training for parents with skills training and information for children and found a statistically significant negative correlation between skills training and marijuana use (p<0.01) and a statistically significant positive correlation with prosocial behaviour (p<0.05, d=0.46) (Kim and Leve 2011). The fourth study found a statistically significant increase in marijuana use at 12 months with group-based skills training compared to standard care (p<0.001) and a statistically significant decrease in hard drug use (p<0.001) (Milburn et al. 2012).

Drug misuse outcomes

Evidence Statement 57: Effectiveness of parental skills training alone for parents or carers of children who are at risk of drug misuse for preventing or reducing drug misuse

There was moderate evidence from 1 RCT[1] [+] and 1 secondary analysis of the RCT[2] [+] that skills training for parents alone significantly lowered illicit drug use in children, but had no significant effect on children's cannabis dependence. The skills training for parents focused on enhancing communication skills.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the RCT was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Prado et al. (2012) [+]

[2] Huang et al. (2014) [+]

Evidence Statement 58: Effectiveness of parental skills training in combination with other interventions for parents or carers of children who are at risk of drug misuse for preventing or reducing drug misuse

There was weak evidence from 6 RCTs[1,2,3,4,5,6] [+[1,2,3],-[4,5,6]], 2 follow up studies of 1 of the RCTs[7,8] [-[7,8]] and 1 before and after study[9] [+] that skills training for parents in combination with other interventions (such as brief interventions, or skills training for children) had a mixed effect on drug misuse and no significant effect on problems with drugs or severity of dependence on drugs. The group-based skills training in the studies focused on improving social skills[1], dealing with feelings of exclusion[1], improving problem solving skills[2], improving conflict resolution skills[2], behaviour choices and options[9] in people at risk of drug misuse, and improving communication skills[4,7,8,9] or developing a daily behaviour management system[3,6] in parents or foster parents of children and young people at risk of drug misuse. One study did not report what the skills training focused on[5].

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in the USA[1,2,3,4,6,7,8,9] and Spain[5], however, the interventions would be feasible in a UK-based setting.

[1] Kim and Leve (2011) [+]

[2] Milburn et al. (2012) [+]

[3] Smith et al. (2010) [+]

[4] Catalano et al. (1999) [-]

[5] Goti et al. (2010) [-]

[6] Rhoades et al. (2014) [-]

[7] Catalano et al. (2002) [-]

[8] Haggerty et al. (2008) [-]

[9] Cervantes et al. (2004) [+]

Intention to misuse drugs

Evidence Statement 59: Effectiveness of parental skills training for parents or carers of children who are at risk of drug misuse for reducing intention to misuse drugs

There was weak evidence from 1 RCT[1] [-] that skills training for parents in combination with other interventions (such as brief interventions) had no statistically significant effect on children's intention to use drugs. Further details of the skills training that was provided were not reported.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in Spain, however, the intervention would be feasible in a UK-based setting.

[1] Goti et al. (2010) [-]

Personal and social skills related to drug misuse prevention

Evidence Statement 60: Effectiveness of parental skills training for parents or carers of children who are at risk of drug misuse for improving personal and social skills related to drug misuse prevention

There was strong evidence from 1 RCT[1] [+] and 2 before and after studies [+[2,3]] that skills training for parents in combination with other interventions (such as skills training for children) was associated with a significant improvement in personal and social skills. Parental skills training in the studies focused on developing a behavioural reinforcement system[1], improving communication skills[2], improving relationships[3], and improving problem solving skills[3].

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the studies were undertaken in the USA[1,2] and Spain[3], however, the interventions would be feasible in a UK-based setting.

[1] Kim and Leve (2011) [+]

[2] Cervantes et al. (2004) [+]

[3] Orte et al. (2008) [+]

Knowledge of drugs and their risks

Evidence Statement 61: Effectiveness of parental skills training for parents or carers of children who are at risk of drug misuse for increasing knowledge of drugs and their risks

There was weak evidence from 1 RCT[1] [-] that skills training for parents in combination with other interventions (such as brief interventions) had no statistically significant effect on perception of risks of drugs. Further details of the skills training provided were not reported.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in Spain, however, the intervention would be feasible in a UK-based setting.

[1] Goti et al. (2010) [-]

3.3.12 Sub-questions for review question 1

3.3.12.1 How does effectiveness vary according to the content and framing of any message?

Only 1 study explicitly compared different approaches to framing and content (a harm-minimisation approach with an abstinence-based approach) (D'Amico et al. 2013 [+]). The study found no statistically significant differences between the 2 approaches in reducing marijuana use (p=0.519, d=0.12) or marijuana related problems (p=0.772, d=-0.03).

Evidence Statement 62: Variation in effectiveness by content and framing

There was limited evidence on whether the effectiveness of interventions for preventing or reducing drug misuse varied by framing and content. Only 1 RCT[1] [+] directly compared different content (a harm-minimisation approach and an abstinence-based approach in reducing cannabis use or cannabis related problems) and found no statistically significant differences.

Applicability: The evidence is only partially applicable to preventing or reducing drug use in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] D'Amico et al. (2013) [+]

3.3.12.2 How does effectiveness vary according to mode of delivery?

None of the included studies compared different modes of delivery for the same information.

Five studies compared different modes of delivery for different interventions within the same study - Edwards et al. (2006) compared face to face motivational interviewing with printed or electronic PowerPoint slides, Morgenstern et al. (2009) and Parsons et al. (2014) compared face to face motivational interviewing with videotapes, Fischer et al. (2013) compared oral and written versions of brief interventions, and Walton et al. (2013) compared an intervention delivered by a therapist with an intervention delivered by a computer. However, it was not possible to compare the different modes of delivery within these studies as the intervention and comparator groups used different approaches as well as different modes of delivery.

Evidence Statement 63: Variation in effectiveness by mode of delivery for interventions for preventing or reducing drug misuse

No relevant evidence was identified.

3.3.12.3 How does effectiveness vary according to who delivers it?

Only 1 study explicitly compared whether effectiveness of interventions for preventing or reducing drug misuse varies according to who delivers the intervention (Fors and Jarvis 1995 [-]).The study found that knowledge of drugs in young people was statistically significantly improved after skills training using a peer education ($p<0.001$, effect size not calculable) but not after using an adult educator. The study did not directly compare the effectiveness of the 2 types of educators.

Two other studies reported on the variation in effectiveness of an intervention according to who delivers it. McCambridge et al. (2008) [++] reported that there were statistically significant differences in the odds of cannabis use at 3 months ($p=0.0002$, effect size not reported) and the change in 30-day frequency of cannabis use at 6 months ($p=0.0021$, effect size not reported) when different practitioners delivered the intervention. Norberg et al. (2014) reported that adherence to and competence in motivational interviewing techniques were not related to the number of ecstasy pills used (adherence $p=0.98$, $d=0.004$; competence $p=0.66$, $d=0.05$), the days of ecstasy use (adherence $p=0.76$, $d=0.04$;

competence p=0.75, d=0.04), or the severity of dependence scale score (adherence p=0.51, d=0.08; competence p=0.66, d=0.05). In addition, Baer et al. (2007) [+] reported that individual counsellor skill could have contributed to their findings, but they were unable to analyse the results statistically.

Evidence Statement 64: Variation in effectiveness of group skills training by who delivers the intervention

There was weak quality evidence from 1 non-randomised controlled trial[1] [-] that knowledge of drugs and their risks in young people was statistically significantly improved using a peer educator (p<0.001, effect size not reported) and was not statistically significantly improved with an adult educator (p>0.05, effect size not calculable). The skills training focused on ways to intervene if a family member or friend is using drugs.

Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because the study was undertaken in the USA, however, the intervention would be feasible in a UK-based setting.

[1] Fors and Jarvis (1995) [-]

Evidence Statement 65: Variation in effectiveness of motivational interviewing or motivational enhancement therapy by who delivers the intervention

There was moderate quality evidence from 2 RCTs[1,2] [++[1],+[2]] that it was unclear whether the person delivering motivational interviewing[1] or a motivational enhancement intervention[2] had an impact on the effectiveness of the intervention. One study found a significant difference in cannabis use when different people delivered a motivational interviewing intervention[1], however, another study found no difference in ecstasy use when different people delivered a motivational enhancement intervention[2]. Applicability: The evidence is only partially applicable to preventing or reducing drug misuse in the UK because one of the studies was undertaken in Australia[2], however, the interventions would be feasible in a UK-based setting.

[1] McCambridge et al. (2008) [++]

[2] Norberg et al. (2014) [+]

3.3.12.4 How does the effectiveness of an intervention vary according to where it is delivered?

None of the studies looked at whether the effectiveness of an intervention varied depending on where it was delivered.

Only 3 of the studies included in this review clearly stated where the intervention was delivered (de Gee et al. 2014 [++]; Dore et al. 1999 [-]; Walker et al. 2011 [+]). One study stated that its motivational interviewing intervention was delivered at a substance abuse treatment centre, school, home, or youth centre (de Gee et al. 2014 [++]). A second study stated that its skills training intervention was delivered in a school (Dore et al. 1999 [-]). The third study stated that participants left their classrooms to take part in the intervention, so it is likely that the intervention took place in participants' schools (Walker et al. 2011 [+]). It was not possible to compare the Dore et al. (1999) or Walker et al. (2011) studies with the de Gee et al. (2014) study as the interventions were too different.

Three studies in the review stated the location of the baseline and/or follow up assessments, however, they did not state where the interventions took place (Fischer et al. 2013 [-]; McCambridge et al. 2008 [++]; Walton et al. 2013 [++]).

Evidence Statement 66: Variation in effectiveness by where the intervention is delivered

No relevant evidence was identified.

3.3.12.5 How does effectiveness vary according to intensity/duration of the intervention?

None of the studies compared different intensities or durations of an intervention in different groups of participants, however, several studies used post-hoc analyses to assess the effect of intensity or duration of an intervention.

Three studies compared the intensity or duration of interventions that used motivational interviewing. Baer et al. (2007) [+] reported that there were no differences in findings for participants who attended 1, 2, 3 or 4 sessions of a brief motivational intervention (p values not reported, effect sizes not calculable). Morgenstern et al. (2009) [+] reported that attendance at more motivational interviewing sessions was not associated with changes in club drug use ($p>0.30$, effect size not calculable). Peterson et al. (2006) [+] reported that the length of a brief motivational intervention differed between participants who showed high and

low engagement, but did not affect the difference in outcomes between the high and low engagement groups (p value not reported, effect sizes not calculable).

Five study papers from 3 studies compared the intensity or duration of interventions that used a family-based approach. Catalano et al. (1999) [-] and Catalano et al. (2002) [-] reported that results for participants who did not attend many sessions of a family-based intervention (number or percentage not reported) were 'largely similar' to the results for the overall sample (p values not reported, effect sizes not calculable). Haggerty et al. (2008) [-] reported that there was 'no evidence' that higher levels of exposure to the intervention in Catalano et al. (1999) and Catalano et al (2002) was related to greater mortality (p value not reported, effect size not calculable). Cervantes et al. (2004) [+] found no statistically significant difference in drug use after 3 sessions of a family-based intervention compared to 4 sessions (p>0.05, effect size not calculable). Rhoades et al. (2014) [-] reported that there was no statistically significant correlation between the length of exposure to a family-based intervention and drug use at 7, 7.5, 8, 8.5 or 9 years. In addition, Huang et al. (2014) [+] reported that a family-based intervention was more effective than standard care for participants who attended at least 1 of the first 3 of the 12 sessions and for participants who attended at least 6 of the 12 sessions, however, it did not compare the outcomes for participants who had different levels of attendance.

Evidence Statement 67: Variation in effectiveness of motivational interviewing and brief motivational interventions by intensity/duration

There was strong quality evidence from 3 RCTs[1,2,3] [+[1,2,3]] that the effectiveness of motivational interviewing[2] and brief motivational interventions[1,3] did not appear to vary by the intensity or duration of the intervention.

Applicability: The evidence is only partially applicable to preventing or reducing drug use in the UK because the studies were undertaken in the USA, however, the interventions would be feasible in a UK-based setting.

[1] Baer et al. (2007) [+]

[2] Morgenstern et al. (2009) [+]

[3] Peterson et al. (2006) [+]

Evidence Statement 68: Variation in effectiveness of family-based interventions by intensity/duration

There was weak quality evidence from 2 RCTs[1,2] [-[1,2]], 2 follow up studies of 1 of the RCTs[3,4] [-[3,4]], and 1 before and after study[5] [+] that the effectiveness of family-based interventions did not appear to vary by the intensity or duration of the intervention.

Applicability: The evidence is only partially applicable to preventing or reducing drug use in the UK because the studies were undertaken in the USA, however, the interventions would be feasible in a UK-based setting.

[1] Catalano et al. (1999) [-]

[2] Rhoades et al. (2014) [-]

[3] Catalano et al. (2002) [-]

[4] Haggerty et al. (2008) [-]

[5] Cervantes et al. (2004) [+]

3.3.12.6 How does effectiveness of an intervention vary according to the intended recipient?

None of the studies in this review reported separate results for participants from different at-risk groups. In addition, no studies compared the effectiveness of the same intervention aimed at different at-risk groups.

Evidence Statement 69: Variation in effectiveness by intended recipient for interventions for preventing or reducing drug misuse

No relevant evidence was identified.

4 Discussion

4.1 Strengths and limitations of the review

Overall, the quality of the study papers was generally moderate. Most of the 35 included study papers were moderate in quality (21 study papers graded as +), some studies were low in quality (10 graded as -), and few were rated as high in quality (4 study papers graded as ++).

Several limitations are seen across the study papers:

- Several studies used assessment only as a control group, however, many of these did not control for the potential effect of assessment on drug misuse outcomes.
- Only some of the studies that included motivational interviewing assessed how well the people delivering the intervention adhered to the principles of motivational interviewing. Even fewer studies assessed whether adherence to the principles of motivational interviewing affected drug misuse outcomes.
- In some studies, participants in the intervention group did not attend any of the intervention sessions. This may have had an impact on the overall effectiveness of the intervention.
- Some studies used standard care as a comparator, however, it is not clear what standard care involved as the majority of studies were conducted outside of the UK. This is particularly an issue with the studies of looked after children and young people.
- Most studies were of children and young people, or adult men. Few studies included adult women.
- Some studies included children and young people over a wide age range without providing a subgroup analysis by age.
- Most studies' findings were based on self-reported drug use; these outcomes were rarely validated biochemically.
- Many studies reported intermediary outcomes (for example, changes in knowledge about drugs) rather than actual changes in drug use. This was particularly the case for samples including young children who were unlikely to have initiated drug use.
- Several studies evaluated the effectiveness of licensed, manualised programmes. Study authors may have been programme licensees and could potentially have benefitted financially from their interventions being evaluated positively.

- Most studies involved relatively small sample sizes thus increasing the risk that they were not powered enough to detect statistically significant effects. In addition, between 1% and 54% of participants in each study were lost to follow up, which further increases the risk the studies were underpowered.
- Most studies had a short follow-up period; this makes it difficult to assess if the effects of the interventions were sustained over time.
- Some studies had a long follow-up period; this makes it difficult to assess the impact of the intervention, as drug use may have been affected by social, environmental or maturational factors over the long follow-up period.
- There was some evidence of selective outcome reporting. For example, some studies claimed that participants moved between steps in the 'stages of change' model yet did not report any changes in participants' actual behaviour.
- Some interventions were shown to be efficacious when tested under strict trial conditions; however, it is not necessarily the case that these interventions would prove as effective when delivered in 'real world' settings.
- Many studies were poorly reported. Group differences and power calculations were consistently reported poorly. Effect sizes were often not reported, and in some studies not enough data were reported for effect sizes to be calculated by the NICE technical team.

Further detail of the strengths and weaknesses of individual study papers can be found in the evidence tables and the summary of the quality assessment (see appendix 1 and appendix 2D).

A limitation of the review is that 28 items identified through title and abstract screening were unavailable for assessment. While every attempt was made to source these items, it is possible that unobtainable papers contained relevant evidence for inclusion in the review. In addition, the Committee identified that adults in contact with criminal justice teams but not in secure environments had not been explicitly included as an at-risk group in the scope (most likely as the scope was developed from the scope for PH4). However, the lack of explicit inclusion did not preclude this group being included in the review if evidence was available. The NICE technical team did not identify any evidence relating to adults in contact with criminal justice teams but not in secure environments during the evidence sift. Some studies were observed that addresses adults in secure environments or undergoing treatment for dependency, both of which are out of scope. However, there is a small possibility that there are studies available for this group that have been overlooked.

4.1.1 Terminology used in studies

Many of the studies used specific terminology, named theories or approaches in the stated aims of the intervention. Where details were given of the intervention, it was possible to consider any similarities between studies (for example, where clear that an intervention largely considered skills training). However, in some cases the intervention was unclear.

Many interventions referred to the use of motivational interviewing but not all provided detail of what this involved. The term 'motivational interviewing' refers to a specific intervention, involving an interview that explores a person's motivation to change in order to assist them towards a state of action. See NICE's guidance on Behaviour Change: individual approaches (PH49) for more information.

Only one study explicitly reported the use of group motivational interviewing (D'Amico et al. 2013). This review assumes that motivational interviewing interventions in the other studies was delivered on a one to one basis.

4.2 Applicability

As noted in the evidence statements, only one of the studies included in the review was conducted in the UK, with most evidence coming from the USA. This may limit the applicability of the findings due to differences in healthcare policy, funding and service delivery. In addition, several studies compared interventions to standard care, which may differ in the USA compared to the UK. This may affect the effectiveness of the interventions in a UK setting.

The majority of studies focus on cannabis/marijuana use. This may affect the generalisability of results to other drugs.

4.3 Gaps in the evidence

No evidence was found for the effectiveness of interventions to prevent or reduce drug misuse in the following populations:

- People involved in commercial sex work or are being sexually exploited,
- People not in employment, education or training (including children and young people who are excluded from school or are regular truants)
- People who attend nightclubs and festivals.

No studies were found for drug misuse prevention interventions at any type of festival, including music festivals, books festivals or theatre festivals.

There was limited evidence for the effectiveness of interventions to prevent or reduce drug misuse in all of the other populations included in the review. In particular, no studies of adults who are in contact with offender teams but not in secure environments were identified and studies of people who are considered homeless were limited to young adults. It is also worth noting that the group known as 'people who are known to use drugs occasionally/recreationally' represents a very diverse population, and although several studies were identified for this group, the evidence does not cover the whole target population. No studies of new psychoactive substances ('legal highs'), solvents, or image- and performance- enhancing drugs were identified for this review.

Tables 11 and 12 highlight gaps in the evidence for each of the at-risk groups.

Table 11. Gaps in the evidence by intervention and at-risk group

At-risk group	Type of activity (either as an intervention or comparator)					
	Motivational interview, brief intervention or motivational enhancement therapy	Skills training	Counselling	Education or information	Family (including foster family) based approaches	Other
People who have mental health problems	Covered in 1 paper	Covered in 1 paper	Covered in 1 paper	Covered in 1 paper	Covered in 1 paper	Gap
People involved in commercial sex work or who are being sexually exploited	Gap	Gap	Gap	Gap	Gap	Gap
People who are lesbian, gay, bisexual or transgender	Covered in 2 papers	Covered in 1 paper	Gap	Covered in 2 papers	Gap	Gap
People not in employment, education or training	Gap	Gap	Gap	Gap	Gap	Gap
Children and young people whose parents use drugs	Gap	Covered in 5 papers	Gap	Gap	Covered in 4 papers	Gap
Looked after children and young people	Partly covered [a] in 1 paper	Covered in 4 papers	Covered in 1 study	Gap	Covered in 3 papers	Gap
Children and young people who are in contact with young offender teams	Covered in 2 papers [a]	Covered in 5 papers	Covered in 1 papers	Covered in 2 papers	Covered in 5 papers	Covered [b]
People who are considered homeless	Covered in 2 papers	Covered in 3 papers	Gap	Covered in 1 paper	Gap	Covered [c]
People who attend nightclubs and festivals	Gap	Gap	Gap	Gap	Gap	Gap
People who are known to use drugs occasionally/ recreationally	Covered in 11 papers	Covered in 2 papers	Gap	Covered in 4 papers	Gap	Covered [d]

Note: Some studies included more than one type of intervention or comparator.
'Covered' indicates a study paper was identified that included an intervention or comparator that fell under this activity category. The activity may have been part of an intervention or comparator that included more than one type of activity, for example, skills training in combination with counselling.
'Gap' indicates where no studies were identified that looked at the activity as either an intervention or comparator.

[a] Some children in 1 study received motivational interviewing as part of a wider family-based approach.
[b] Included 1 study of an abstinence-based approach.
[c] Included 1 study of an art program
[d] Included 1 study each of mindfulness and text messages.

Table 12. Gaps in the evidence by drug type and at-risk group

At-risk group	Drugs measured in the studies for each at-risk group
People who have mental health problems	Cannabis. 'Not cannabis, alcohol or tobacco'.
People involved in commercial sex work or who are being sexually exploited	No studies identified.
People who are lesbian, gay, bisexual or transgender	Cannabis, club drugs, cocaine and/or crack, ecstasy, GHB, heroin, inhalants, ketamine, methamphetamine, prescription drugs, steroids.
People not in employment, education or training	No studies identified.
Children and young people whose parents use drugs	Amphetamines, cannabis, cocaine and/or crack, opiates.
Looked after children and young people	Cannabis, club drugs, cocaine and/or crack, hallucinogens, heroin, inhalants, LSD, morphine, mushrooms, opiates, phencyclidine, speed, stimulants.
Children and young people who are in contact with young offender teams	Cannabis, club drugs, cocaine and/or crack, hallucinogens, heroin, inhalants, LSD, morphine, mushrooms, opiates, phencyclidine, speed, stimulants. 'Any other illicit substance', 'illicit drugs'.
People who are considered homeless	Amphetamines, barbiturates, cannabis, club drugs, cocaine and/or crack, hallucinogens, heroin, inhalants, methadone, narcotics, opiates, over the counter drugs, sedatives, speed, tranquilisers/downers. 'Various drugs', 'illicit drugs'.
People who attend nightclubs and festivals	No studies identified.
People who are known to use drugs occasionally/ recreationally	Amphetamine type stimulants, cannabis, ecstasy.

4.4 Comparison with previous reviews

4.4.1 Evidence review for NICE Public Health guidance on Interventions to Reduce Substance Misuse Amongst Vulnerable People (PH4)

A review of the evidence for community-based interventions for reducing substance misuse among vulnerable and disadvantaged young people was conducted in November 2006 to inform the recommendations in the NICE Public Health guideline on Interventions to Reduce Substance Misuse Among Vulnerable Young People (PH4). The inclusion criteria for the PH4 review differed substantially to the current review, as it:

- Only included children and young people up to age 25 years.
- Included groups not identified as target groups in the current review: children and young people generally 'at risk' of substance misuse, pregnant women and institutionalised children and young people, children and young people from black and ethnic minorities, children and young people with behavioural problems or who were aggressive, high sensation seekers, had divorced parents, experienced abuse or considered 'latchkey'.
- Included studies for which drug misuse outcomes were not reported e.g. studies that reported parental outcomes, alcohol use, and tobacco.

Despite the differences in inclusion criteria, the title and abstracts of all studies included in the evidence review for PH4 were assessed for inclusion in the current review, however, none of the studies included in PH4 were included in the current review.

Some of the populations in PH4 overlapped with the populations included in the current review:

- In children of substances users, the review for PH4 found little evidence for the effects of interventions on drug use or child behaviour. The current review found that interventions led to improvements on a range of personal and social skills, but had little effect on the risk of developing substance misuse disorders.
- In young offenders, multi-systemic family therapy was more effective than usual criminal justice services for reducing immediate drug use. The current review found family-based skills training and family-based approaches including behaviour management systems showed some effectiveness in reducing drug use.
- In young substance users, brief interventions and motivational interviewing led to some short term reductions in cannabis use, and community and family based interventions affected long term use. The current review found motivational interviewing led to some

reductions in cannabis use. It did not identify any relevant community or family-based interventions in this population.

4.4.2 NICE evidence update for Interventions to Reduce Substance Misuse Amongst Vulnerable People (Evidence Update 56)

An Evidence Update (Evidence Update 56) on selected new evidence relevant to NICE Public Health guidance on Interventions to Reduce Substance Misuse Amongst Vulnerable People (PH4) was published in April 2014.

The evidence update identified evidence that may have an impact on 2 of the existing recommendations in PH4:

- A programme of family-based support may have beneficial effects including reductions in illicit drug use and alcohol dependence and increased use of condoms during sexual activity. Evidence identified in the current review suggested that family-based support may reduce illicit drug use.
- Intensive community nursing support for mothers during prenatal and infant years may have long-lasting effects on the child, resulting in lower use of tobacco, alcohol and cannabis as well as lower frequency of use when the child is aged 12 years. The current review did not find any studies of intensive community nursing support for mothers that met the inclusion criteria of the current review.

The titles and abstracts of all studies included in the evidence update for PH4 published in April 2014 were assessed for inclusion in the current review. Only 3 of the 16 studies included in the evidence update for PH4 were included in the current review (Kim and Leve 2011; Milburn et al. 2010; Prado et al. 2012). Of the studies that were not included in the current review, 4 were systematic reviews that did not meet the inclusion criteria of having 80% eligible studies (Altena et al. 2010; Broning et al. 2012; Carney and Myers, 2012; Salvo et al. 2012), 8 were primary studies that did not target 1 of the 10 groups of interest in the current review (Conrod et al. 2010; Hallfors et al. 2006; Kitzman et al. 2010; Murphy et al. 2012; Pantin et al. 2009; Stein et al. 2011; Valente et al. 2007; Wiggins et al. 2009), and 1 was a study of treatment of drug misuse rather than prevention (Liddle et al. 2009).

4.4.3 Advisory Council on the Misuse of Drugs "Prevention of drug and alcohol dependence" report

The Advisory Council on the Misuse of Drugs published a report on Prevention of Drug and Alcohol Dependence in February 2015. The review presents findings from a review by

Brotherhood et al. (2013) of specific approaches to drug and alcohol prevention that are likely to be beneficial, have mixed evidence of effectiveness, have unknown effectiveness or are ineffective. Some of the approaches were not within the scope of this review (for example, those targeted at tobacco or alcohol use).

- Approaches reported to be 'likely to be beneficial' in the Brotherhood et al. (2013) review:
  - Motivational interviewing for multiple substance use. In the current review, motivational interviewing outside of a family-based approach did not appear to produce short-term reductions in multiple substance use.
- Approaches with mixed evidence in Brotherhood et al. (2013) review:
  - Parental programs designed to reduce use of multiple substances. Current review found mixed evidence, although many studies of family-based approaches that included parental skills training were effective in reducing drug use in children.
- Approaches that were reported to be 'ineffective' in Brotherhood et al. (2013) review:
  - No evidence on standalone school-based curricula to increase knowledge about drugs, programs that combine school and community-based interventions, mentoring programs, mass media programmes found in current review.
  - Recreational/diversionary activities and theatre/drama based education. In the current review, only 1 study explicitly looked at the effectiveness of recreational activities to reduce or prevent drug misuse. It found that art sessions reduced the use of some drugs, but not others.

5 Included studies

1. Baer J, Garrett S, Beadnell B et al. (2007) Brief motivational intervention with homeless adolescents: Evaluating effects on substance use and service utilization. Psychology of Addictive Behaviors 21: 582-586
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4. Cervantes R, Ruan K, Duenas N (2004) Programa shortstop: A culturally focused juvenile intervention for Hispanic youth. Journal of Drug Education 34: 385-405
5. D'Amico E, Hunter S, Miles J, et al. (2013) A randomized controlled trial of a group motivational interviewing intervention for adolescents with a first time alcohol or drug offense. Journal of Substance Abuse Treatment 45: 400-408
6. de Dios M, Herman D, Britton W et al. (2012) Motivational and mindfulness intervention for young adult female marijuana users, Journal of Substance Abuse Treatment, 42, 56-64
7. de Gee E, Verdurmen J, Bransen E (2014) Gerard M., A randomized controlled trial of a brief motivational enhancement for non-treatment-seeking adolescent cannabis users. Journal of Substance Abuse Treatment 47: 181-188
8. Dore M, Nelson-Zlupko L, Kaufmann E (1999) "Friends in need": Designing and implementing a psychoeducational group for school children from drug-involved families. Social work 44: 179-190
9. Edwards J, Elkins K, Hinton M, et al. (2006) Randomized controlled trial of a cannabis-focused intervention for young people with first-episode psychosis. Acta Psychiatrica Scandinavica 114: 109-117
10. Elliott J, Carey K, Vanable P (2014) A Preliminary Evaluation of a Web-Based Intervention for College Marijuana Use, Psychology of Addictive Behaviors, 28, 288-293
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12. Fors S, Jarvis S (1995) Evaluation of a peer-led drug abuse risk reduction project for runaway homeless youths. Journal of Drug Education 25: 321-333

13. Goti J, Diaz R, Serrano L et al. (2010) Brief intervention in substance-use among adolescent psychiatric patients: a randomized controlled trial. European child & adolescent psychiatry 19: 503-511
14. Haggerty K, Skinner M, Fleming C et al. (2008) Long-term effects of the Focus on Families project on substance use disorders among children of parents in methadone treatment. Addiction 103: 2008-2016
15. Huang S, Cordova D, Estrada Y et al. (2014) An application of the Complier Average Causal Effect analysis to examine the effects of a family intervention in reducing illicit drug use among high-risk Hispanic adolescents. Family process 53: 336-347
16. Kim H, Leve L (2011) Substance use and delinquency among middle school girls in foster care: a three-year follow-up of a randomized controlled trial. Journal of Consulting and Clinical Psychology 79: 740-750
17. Lee C, Kilmer J, Neighbors C et al. (2013) Indicated prevention for college student marijuana use: a randomized controlled trial, J Consult Clin Psychol, 81, 702 – 709
18. Lee C, Neighbors C, Kilmer J et al. (2010) A Brief, Web-Based Personalized Feedback Selective Intervention for College Student Marijuana Use: A Randomized Clinical Trial. Psychology of Addictive Behaviors 24: 265-273
19. Lynsky D, Heischober B, Johnston P et al. (1999) Youth alternative sentencing program: a description and evaluation of an alcohol and marijuana intervention program, International journal of trauma nursing, 5, 10-16
20. McCambridge J, Slym R, Strang J (2008) Randomized controlled trial of motivational interviewing compared with drug information and advice for early intervention among young cannabis users, Addiction, 103, 1809-1818
21. Milburn N, Iribarren F, Rice E et al. (2012) A family intervention to reduce sexual risk behavior, substance use, and delinquency among newly homeless youth, The Journal of adolescent health: official publication of the Society for Adolescent Medicine, 50, 358-64
22. Morgenstern J, Bux D, Parsons J et al. (2009) Randomized Trial to Reduce Club Drug Use and HIV Risk Behaviors Among Men Who Have Sex With Men. Journal of Consulting and Clinical Psychology 77: 645-656
23. Norberg M, Hides L, Olivier J et al. (2014) Brief Interventions to Reduce Ecstasy Use: A Multi-Site Randomized Controlled Trial, Behavior Therapy, 45, 745-759
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