Drug misuse prevention: targeted interventions

Appendix 3 to Evidence Review 1

Contains:
- Application of scope – inclusion and exclusion
- Summary of effectiveness evidence

National Institute for Health and Care Excellence

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Appendix 3A: Application of scope - inclusion and exclusion criteria

Criteria	Application in evidence review	Notes
Inclusion criteria		
English language 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		
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	Drug misuse prevention had to be a primary aim or joint primary aim. Interventions that aren't specifically aimed at preventing drug misuse were not included, even if they report outcomes related to drug misuse (e.g. HIV reduction programmes aimed primarily at reducing risky sexual behaviour but that also include drug prevention elements).	The scope notes that interventions in the following settings will be included • Social environments where drugs may be available such as nightclubs, pubs, festivals and music venues. • Fitness environments such as gyms and sporting events. • Environments where drugs may be used in a sexual context (for example, 'chemsex' parties). • Online and 'virtual' environments, including social media. • Youth clubs and youth organisations. • Schools, colleges and universities. • Health, social care and other environments where interventions may be delivered, for example, primary health care services, sexual health services and custody suites.
Studies which report **relevant outcomes** (e.g. drug use, intention to use drugs, knowledge and awareness, and personal and social skills)	Where a joint aim, drug outcomes have to be reported separately.	Activities listed in scope (abridged): • skills training (group or 1-1), information provision (eg lessons

Criteria	Application in evidence review	Notes
Inclusion criteria		
		or talks) or advice as part of outreach activities • peer education initiatives • opportunistic skills training, advice and information provision • targeted print and new media to influence social norms or enhance skills and provide information and advice • family-based programmes (covered in PH4) • group-based behaviour therapy for children and young people (covered in PH4) • parental skills training (covered in PH4)
Studies of interventions which are **targeted at 1 or more of the 10 groups of interest**	The groups are: 1. people who have mental health problems 2. people involved in commercial sex work or 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 team 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 use drugs occasionally / recreationally.	Interventions targeting particular ethnic groups were not included unless participants fell into one of the target populations of interest Studies that focused on one gender or age group were not included unless participants fell into one of the target populations of interest. To note, given that we have to focus on drug misuse prevention as a primary aim, we are unable to consider more general issues related to eg homelessness, truancy, parenting, sexual exploitation. To note that severe mental illness and misuse of substances is under remit of guidance being developed on 'dual diagnosis'. The guideline scope defines severe mental illness as • schizophrenia, schizotypal and

Criteria	Application in evidence review	Notes
Inclusion criteria		
		delusional disorders • bipolar affective disorder • severe depressive episode(s) with or without psychotic episodes. 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 review 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.
Exclusion criteria		
Studies relating to the treatment of drug dependence or misuse or disorder	The study was excluded where the title or abstract was clear that the study was focused on treatment. The exception was for studies describing adolescents as drug abusers – these were included. To note, that if there was *any* uncertainty, the full text was considered. Interventions aiming to prevent relapse among people who had previously been treated for drug misuse were also excluded.	
Studies relating to pregnant women		
Studies undertaken in workplaces or custodial settings		
Interventions related to law enforcement or restricting the supply of drugs.		To be mindful of this when considering issues re night time economy more generally (or in relation to expert testimony)
Studies of interventions to promote safer injecting **or** preventing overdose **or** preventing relapse		NICE has issued guidance on needle and syringe programmes
Studies of universal interventions or interventions which involve universal screening	Schools-based interventions were not included unless they make explicit reference to a target population of interest.	To be mindful of this when considering recommendations - can only consider aspect of targeted approach within

Criteria	Application in evidence review	Notes
Inclusion criteria		
	Studies targeted at children in US continuation or alternative high schools were not included. Children attend these schools for a wide variety of reasons so we cannot be confident that they are a proxy for target group 4. Papers relating to SBIRT (screening, brief intervention and referral to treatment) were not included because it was clear that the intervention would not be possible to run without screening OR the interventions were primarily aimed at identifying groups for treatment. To note that NICE cannot make recommendations about any screening programmes.	wider approach. The review team carefully considered interventions where a questionnaire / screening / assessment tool was used to identify individuals to take part. Papers were considered in more detail and potentially included if there was any doubt. The implications for final implementation were considered and whether screening was an essential aspect of the intervention.

Appendix 3B: Summary of effectiveness evidence

B.1 Activities in the scope

Intervention	Outcome	Significant improvement with intervention	Intervention had mixed effect	No significant difference [a]
Group-based skills training	Drug use	**-**	Weak (ES 1.42)	**-**
	Personal & social skills	**Strong** (ES 1.43)	-	**-**
	Knowledge	**-**	Weak (ES 1.44)	**-**
Opportunistic skills training	Knowledge	Weak (ES 1.47)	-	**-**
Web-based approach (new media)	Drug use	-	-	**Strong** (ES 1.48)
Text-message interventions (new media)	Drug use	**Moderate** (ES 1.49)	-	**-**
Family-based interventions	Drug use	-	Weak (ES 1.50)	-
	Intention	-	-	Weak (ES 1.51)
	Personal & social skills	**Strong** (ES 1.52)	-	-
	Knowledge	-	-	Weak (ES 1.53)
Group-based behaviour therapy for children and young people	Drug use	-	Weak (ES 1.54)	**-**
	Personal & social skills	**Strong** (ES 1.55)	-	**-**
	Knowledge	Weak (ES 1.56)	-	**-**
Parental skills training	Drug use	**Moderate** (ES 1.57)	-	**-**
Parental skills training in combination with other interventions	Drug use	-	Weak (ES 1.58)	**-**
	Intention	-	-	Weak (ES 1.59)
	Personal & social skills	**Strong** (ES 1.60)	-	**-**
	Knowledge	-	-	Weak (ES 1.61)

[a] No significant difference between intervention and comparator, or before and after the intervention, depending on the study.

B.2 Key to groups

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
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
8. People who are considered homeless

9. People who attend nightclubs and festivals
10. People who are known to use drugs occasionally/recreationally

B.3 Skills training interventions

Intervention	Outcome	Significant improvement with intervention	Intervention had mixed effect	No significant difference [a]
Skills training for children and young people alone				
Skills training and information for children and young people (face to face)	Intention	-	Weak (ES 1.20, group 7) vs. before intervention	-
	Knowledge	Weak (ES 1.24, group 8) vs. before intervention	-	-
Skills training for children and young people (face to face)	Drug use		Weak (ES 1.23, group 8) vs. art sessions	
	Personal & social skills	-	-	Weak (ES 1.12, group 5) vs. before intervention
Online skills building for children and young people	Drug use	-	Weak (ES 1.7, group 3) vs. control	**Moderate** (ES1.32, group 10) vs. assessment
	Personal & social skills	**Moderate** (ES 1.8, group 3) vs. control	-	-
****Skills training for parents or carers alone***				
Skills training for parents (face to face)	Drug use	**Moderate** (ES 1.17, group 7) vs. standard care	-	-
Skills training for parents (face to face) **with case management**	Drug use	-	-	Weak (ES 1.10, group 5) vs. standard care
Skills training for parents (face to face) **with behaviour systems**	Drug use	-	Weak (ES 1.14, 1.18; group 6, 7) vs. standard care	-
****Skills training for children and young people combined with skills training for parents or carers***				
Skills training for parents and children (face to face)	Drug use	-	Weak (ES 1.23, group 8) vs. standard care	**Moderate** (ES 1.16, group 7) vs. before intervention
	Personal & social skills	**Moderate** (ES 1.11, 1.21; group 5, 7) vs. before intervention	-	-
Skills training for foster parents; skills training and information for children (face to face)	Drug use	**Moderate** (ES 1.13, group 6) correlation	-	-
	Personal & social skills	**Moderate** (ES 1.15, group 6) correlation	-	-
Skills training for adults at risk of drug misuse				
Cognitive behavioural intervention (face to face)	Drug use	**Moderate** (ES 1.1, group 1) vs. before intervention	-	**Moderate** (ES 1.1, group 1) vs. psychoeducation

[a] No significant difference between intervention and comparator, or before and after the intervention, depending on the study.
* Family-based approach.

B.4 Brief interventions

Intervention	Outcome	Significant improvement with intervention	Intervention had mixed effect	No significant difference [a]
Brief intervention (assumed 1 to 1)	Drug use	-	-	Weak (ES 1.35, group 10) vs. before intervention
				Moderate (ES 1.36, group 10) therapist vs. standard care
				Moderate (ES 1.37, group 10) computer vs. standard care
	Intention	**Moderate** (ES 1.39, group 10) therapist vs. before intervention	-	-
		Moderate (ES 1.39, group 10) computer vs. before intervention	-	-
	Personal & social skills	**Moderate** (ES 1.40, group 10) therapist vs. before intervention	-	-
		Moderate (ES 1.40, group 10) computer vs. before intervention	-	-
	Knowledge	**Moderate** (ES 1.41, group 10) therapist vs. before intervention	-	-
		Moderate (ES 1.41, group 10) computer vs. before intervention	-	-
Brief intervention based on motivational interviewing for young people; information, counselling and skills training for parents	Drug use	-	-	Weak (ES 1.2, group 1) vs. standard care
	Intention	-	-	Weak (ES 1.3, group 1) vs. standard care
	Knowledge	Weak (ES 1.4, group 1) vs. standard care	-	-
Brief intervention combining motivational interviewing and mindfulness meditation (assumed 1 to 1)	Drug use	**Moderate** (ES 1.26, group 10) vs. control	-	-

[a] No significant difference between intervention and comparator, or before and after the intervention, depending on the study.

B.5 Motivational interviewing interventions

Intervention	Outcome	Significant improvement with intervention	Intervention had mixed effect	No significant difference (intervention vs. comparator)
Motivational interviewing (assumed 1 to 1)	Drug use	**Moderate** (ES 1.6, group 3) vs. educational videos	-	**Moderate** (ES 1.28, group 10) vs. information sessions
Group motivational interviewing	Drug use	-	-	**Moderate** (ES 1.19, group 7) vs. alcoholics anonymous
Brief motivational interviewing (assumed 1 to 1)	Drug use	-	-	**Moderate** (ES 1.22, group 8) vs. standard care or assessment

B.6 Motivational enhancement therapy

Intervention	Outcome	Significant improvement with intervention	Intervention had mixed effect	No significant difference [a]
Motivational enhancement therapy	Drug use	**Moderate** (ES 1.30, group 10) vs. no assessment or intervention	-	**Moderate** (ES 1.27, group 10) vs. education or information
Brief motivational enhancement therapy	Drug use	**-**	-	**Moderate** (ES 1.29, group 10) vs assessment only
Brief motivational enhancement therapy with self-monitoring and text-messages	Drug use	**Moderate** (ES 1.31, group 10) vs. before intervention		
	Intention	**Moderate** (ES 1.38, group 10) vs. before intervention		

[a] No significant difference between intervention and comparator, or before and after the intervention, depending on the study.

B.7 Combined and other interventions

Intervention	Outcome	Significant improvement with intervention	Intervention had mixed effect	No significant difference (intervention vs. comparator)
Web-based personalised feedback intervention based on a motivational interviewing approach with skills training	Drugs use	-	-	**Moderate** (ES 1.32, group 10) vs. assessment only
Web-based assessment and feedback	Drug use	-	-	**Moderate** (ES 1.33, group 10) vs. assessment only
Web-based decisional balance and behaviour change intervention	Drug use	-	-	**Moderate** (ES 1.34, group 10) vs. waiting list control

Appendix 3C: Decisions on presentation of the evidence and meta-analysis

C.1 Background

Evidence review 1 underwent an external review after PHAC meeting 4. The external review team queried 1) presentation of results by at risk group and 2) absence of meta-analysis. The external review team suggested that meta-analysis may have supported the committee's decision making and provided an example meta-analysis, combining all studies that considered motivational interviewing.

C.2 Presentation of the evidence by at risk group

The committee members agreed at PHAC meeting 1 and PHAC meeting 2 that they wanted the results of the evidence reviews to be presented by at risk group. This was because they believed the at risk groups to be very different from each other with varying capacity to benefit and they 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.

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. This focused on children, young people and adults who are most likely to start using drugs or those who are already experimenting or who use drugs occasionally (group 10 – this was an addition in response to an initial sift that demonstrated that potentially relevant papers may not being included without it). This includes those who have mental health problems (group 1); those involved in commercial sex work or who are being sexually exploited (group 2); those who are lesbian, gay, bisexual or trans (group 3); those who are not in employment, education or training (including children and young people who are excluded from school or are regular truants) (group 4). It also includes children and young people whose parents use drugs (group 5) or who are looked after (group 6). Children and young people who are in contact with young offender teams (group 7) and people who are considered homeless (group 8) were included to ensure consistency with the original guideline (PH4) and also reflected scoping searches and stakeholder comments. People who attend nightclubs and festivals (group 9) were included to reflect the settings stated in the scope ('social environments where drugs may be available such as nightclubs, pubs, festivals and music venues') and in light of crime statistics and stakeholder comments.

The interventions, comparators and outcomes reported in the studies for each at risk group for which relevant evidence was identified are summarised in tables 1 to 7. Relevant evidence was not identified for at risk groups 2 (commercial sex workers and those being sexually exploited), 4 (people not in employment, education or training) and 9 (people who attend nightclubs or festivals).

Table 1. Summary of interventions, comparators and outcomes for group 1 - people who have mental health problems

Study	Participants and country	Intervention	Comparator	Relevant outcomes
Edwards et al. (2006)	47 people with first episode psychosis (Australia)	Cognitive behavioural intervention:1 to 1 skills training (Cannabis and Psychosis Therapy) (n=23)	Psychoeducation (n=24)	Percentage of participants using cannabis. Percentage of days cannabis used in the past 4 weeks. Severity of cannabis use.
Goti et al. (2010)	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.

Table 2. Summary of interventions, comparators and outcomes for group 3 - people who are lesbian, gay, bisexual or transgender

Study	Participants and country	Intervention	Comparator	Relevant outcomes
Morgenstern et al. (2009)	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)	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 (USA)	Motivational interviewing (n=73)	Educational videos and structured discussion (n=70)	Any drug use. Cocaine use. Ecstasy use. Methamphetamine use. GHB use. Ketamine use.
Schwinn et al.	236 young	Online	Control (no further	Drug refusal skills.

(2015)	people who identified as gay, lesbian, bisexual, transgender or questioning (USA)	intervention based on social competency skills-building (n=119)	details provided) (n=117)	Peer drug use. Marijuana use. 'Other' drug use.

Table 3. Summary of interventions, comparators and outcomes for group 5 - children and young people whose parents use drugs

Study	Participants and country	Intervention	Comparator	Relevant outcomes
Catalano et al. (1999)	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)	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)	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.

Table 4. Summary of interventions, comparators and outcomes for group 6 - looked after children and young people

Study	Participants and country	Intervention	Comparator	Relevant outcomes
Kim and Leve (2011)	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)	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)	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 family) (Multidimensional	Group care (n=42)	Marijuana use. Use of drugs other than tobacco, alcohol or marijuana.

		Treatment Foster Care) (n=37)		

Table 5. Summary of interventions, comparators and outcomes for group 7 - children and young people who are in contact with young offender teams but not in secure environments

Study	Participants and country	Intervention	Comparator	Relevant outcomes
Cervantes et al. (2004)	352 young people who were first time juvenile offenders (USA)	Family-based intervention: group skills training and information for parents and children (Programa Shortstop) (n=352)	None	Use of drugs other than 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)	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)	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)	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)	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.

Table 6. Summary of interventions, comparators and outcomes for group 8 - people who are considered homeless

Study	Participants and country	Intervention	Comparator	Relevant outcomes
Baer et al. (2007)	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)	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)	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)	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 housing (USA)	Brief motivational intervention (n=92)	2 assessment only groups (n=99 and n=94)	Marijuana use. Use of drugs other than marijuana, alcohol and tobacco. Drug use

				consequences.

Table 7. Summary of interventions, comparators and outcomes for group 10 - people who are known to use drugs occasionally/recreationally

Study	Participants and country	Intervention	Comparator	Relevant outcomes
Studies that explicitly excluded people who were drug dependent				
De Dios et al. (2012)	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)	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)	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)	134 people who were active cannabis users for at least 1 year and had used cannabis on at least 12 of the past 30 days (Canada)	Brief intervention on cannabis use (n=72)	Brief intervention on general health (n=62)	Cannabis use. Driving under the influence of cannabis.
Lee et al. (2013)	212 people who had used marijuana on 5 or more days in the past month (USA)	Brief motivational enhancement (n=106)	Assessment only control (n=106)	Marijuana use. Marijuana consequences (also referred to as marijuana problems).
Lee et al. (2010)	341 young people who had used marijuana in 3 months prior to	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).

	screening (USA)			
McCambridge et al. (2008)	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)	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)	22 young people using marijuana 3 times or more a week (USA)	Brief motivational enhancement therapy 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)	160 people who reported use of amphetamine type stimulants in the past 3 months (Australia)	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. Quality of life.
Walker et al. (2011)	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)	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.

C.3 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 used 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 the evidence review report. The team also presented overviews of the effectiveness evidence using presentations and tables at PHAC meetings 3, 4 and 5, as shown in tables 8 to 13. These presentations used a textual summary that roughly summarised the information in a way that is consistent with the forest plots in the external review. The presentations are included in appendix 3B to evidence review 1.

The NICE technical team found it helpful to see the results of the meta-analysis undertaken by the external review team. However, the NICE technical team believed that the conclusions that committee have drawn from the evidence would not change if the meta-analysis was presented to them.

C.4 Meta-analysis - subsequent consideration

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. Their views are summarised below:

- The senior technical analyst in the Public Health and Social care team responsible for quality assuring the guideline was content that there were clear and justifiable reasons for not undertaking meta-analysis in this instance. In relation to the evidence synthesis, she did note that the evidence statements groupings by at risk group were narrow and that a compromise may have been to also present overarching statements that grouped together common characteristic such as intervention type within each at risk group. The technical team considered the suggestion about evidence statements to be a helpful suggestion for future work but did not think it would influence committee decision making at this stage.

- A technical advisor in the Centre for Clinical Practice said that it may be decided a priori not to pool results in meta-analysis if there is a clear rationale for not doing so. She highlighted that a meta-analysis would be more likely to be undertaken where there are similar populations and comparators. She stressed that differences in study comparators, different at risk groups, a priori concerns about heterogeneity and outcome data not being reported in format that could be easily used would be considered valid reasons for not pooling, as had been the case for this guideline. She also highlighted that she would not expect decisions to be made on heterogeneity based on the *results* of a meta-analysis (as had been implied by the expert review). The technical advisor was of the view that as the committee had planned to make different recommendations for each population, it was reasonable to stratify results by at risk group rather than grouping them together. She suggested that some of the interventions within each at risk group could be grouped together. She was not convinced that it would be appropriate to pool the outcomes in the meta-analysis provided by the external review team (the studies appear to be heterogeneous because the effect sizes are in different directions). She suggested that it would be worthwhile summarising the results in tables to help committee understand the evidence (as had been undertaken).

- The senior technical advisor in the Public Health and Social care Surveillance and Methods team was of the view that meta-analysis and forest plots may have been useful for committee, despite the incomplete reporting in the included studies and observed heterogeneity. However, she flagged that the decision to undertake a meta-analysis or not is one of judgement and she recognised that there were defensible reasons for not undertaking meta-analysis in this case. She recognised that in this instance the committee had been provided with a narrative summary of the evidence that provided an alternative to meta-analysis. She also noted that while there may have been potential for meta-analysis to have guided committee decision making, retrospectively doing this may

not be helpful. She was of the view that this is an important issue to consider for future topics, rather than this review, to ensure consistency and rigour across reviews.

C.5 Overall conclusion

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