



***National Institute for
Health and Clinical Excellence***

**Drug use prevention
among young people:
a review of reviews**

Evidence briefing update

January 2006

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Foreword

The Health Development Agency (HDA) was established in 2000. Between then and 2005, when the functions of the HDA were transferred to the National Institute for Health and Clinical Excellence (NICE), the HDA helped to build the evidence base in public health with an emphasis on what works and a special focus on reducing inequalities in health.

The HDA had the task of mapping and synthesising the evidence across priority areas of public health. It developed a number of ways of taking a systematic approach to compiling the evidence, identifying gaps and making the evidence base accessible. The evidence briefing series was one of the ways in which the HDA Evidence Base was disseminated (full details of the process of developing the Evidence Base and the associated methodological activities can be found in Graham and Kelly 2004; Kelly et al. 2002, 2003, 2004; Killoran and Kelly 2004; Swann et al. 2005).

The necessity for reviewing reviews, or tertiary-level research, stems from the proliferation over the last decade, or more, of systematic and other types of review in medicine and public health. The HDA published a range of evidence briefings that cover:

- Teenage pregnancy and parenthood
- HIV prevention
- Prevention of sexually transmitted infections
- Management of obesity and overweight
- Ante- and post-natal home-visiting programmes
- Prevention of low birth weight
- Breastfeeding
- Accidental injuries in children and older people
- Public health interventions for increasing physical activity among adults
- Smoking and public health
- Drug misuse

- Youth suicide prevention
- Health impact assessment
- Prevention and reduction of alcohol misuse
- Prevention and reduction of exposure to second-hand smoke
- Secondary interventions for chronic illness
- Housing.

This evidence briefing is an update of the first briefing on drug use prevention among young people (Canning et al. 2004).

Taken together these briefings provide a comprehensive synthesis of the evidence drawn from review-level literature. They are available on the NICE website – www.publichealth.nice.org.uk

These evidence briefings have been based on evidence drawn from systematic and other kinds of reviews. This means that the type of evidence that does not traditionally find its way into reviews has not been considered in detail for these documents.

In another HDA evidence series, evidence reviews, the scope of the coverage is extended to primary research, other kinds of evidence and other types of study. Evidence reviews are traditional reviews, overviews or syntheses of multiple evidence sources drawn from different research traditions. These take a variety of forms and formats (see for example the evidence reviews on drug misuse prevention (Coomber et al. 2004a) and risky behaviour (Coomber et al. 2004b). In some cases evidence reviews consist of analyses of primary studies, drawn from the published and unpublished literature. In other cases they comprise summaries of the theoretical concepts and ideas that relate to the evidence base in public health. Overall, evidence reviews provide a general evidence resource on a range of public health topics.

The construction of the HDA Evidence Base involved collaboration with a number of partners who have interests and expertise in practical and methodological matters concerning the drawing together of evidence and its dissemination. In particular the HDA acknowledged the following: the Centre for Reviews and Dissemination at the University of York; the EPPI-Centre at the Institute of Education at the University of London; Health Evidence Bulletins Wales; the ESRC UK Centre for Evidence Based Policy and Practice at Queen Mary College, University of London and its nodes at the City University London and the MRC Public Health Sciences Unit at the University of Glasgow; members of the Cochrane and Campbell collaborations; the United Kingdom and Ireland Public Health Evidence Group and the members of the Public Health Evidence Steering Group. This latter organisation acted as the overall guide for the HDA's evidence-building project. The cooperation of colleagues in these institutions and organisations has been of significant help in the general work in preparing the framework for how we assess the evidence.

Every effort has been made to be as accurate and up-to-date as possible in the preparation of this briefing. However, we would be very pleased to hear from readers who would like to comment on the content or on any matters relating to the accuracy of the briefing. We will make every effort to correct any matters of fact in subsequent editions. Comments can be made by using our website, www.publichealth.nice.org.uk

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Introduction

Background

In response to the demand for effective drug prevention programmes, in 2004 the Health Development Agency (HDA – now the National Institute for Health and Clinical Excellence, NICE) published *Drug use prevention among young people: a review of reviews* (Canning et al. 2004). Its aim was to provide a comprehensive and up-to-date synthesis of evidence of what works to prevent and/or reduce drug use among young people. This was achieved by reviewing tertiary-level evidence (ie review and meta-analysis papers) and highlighting interventions with the potential to prevent and/or reduce drug use, and identifying gaps and inconsistencies in the evidence base, providing a steer for future research. That first evidence briefing covered the time period 1996–2001.

The aim of this current document is to update that evidence briefing by reviewing tertiary-level evidence published between January 2002 and September 2004. Consistent with the previous briefing, it focuses on ‘what works’ to prevent and/or reduce illicit drug use among young people aged between 7 and 25 years old.

Drug use prevalence among young people

In 2004, one in 10 (10%) schoolchildren aged between 11 and 15 years old reported having taken illicit drugs in the last month; almost twice as many (18%) reported drug use in the previous year (National Centre for Social Research/National Foundation for Educational Research 2005). Although these figures are lower than the previous year’s survey the absolute change was rather small (2–3%). The substance reportedly used most widely was cannabis (11%), followed by glue/solvents (6%). Reported class A drug use in the previous year has been the same since 2001 (4%).

Data from the 2003/04 British Crime Survey (BCS), the most recent available for the general population, indicates that drug use among young people (aged 16–24) increases somewhat as they get older (Chivite-Matthews et al. 2005). In this analysis, over a quarter (28%) of young people aged between 16 and 24 used an illicit drug in the previous year. The most widely used drug was cannabis (24.8% in the previous year), followed by cocaine (4.9%) and ecstasy (5.3%). The use of other class A drugs has remained stable at around 8%; although the reported use of some drugs decreased (amphetamine, LSD and ecstasy), cocaine use increased.

The European School Survey Project on Alcohol and Other Drugs (ESPAD) survey (Hibell et al. 2004) has revealed that more 15–16 year olds in the UK are reporting taking drugs than young people in any other European country. The results showed that UK school pupils (15–16 year olds) consistently report higher levels of lifetime use of any illegal drug than other young Europeans (36% vs 16%). The most popular drug was cannabis (35% in lifetime; 16% in the previous month), which 52% said was very easy or fairly easy to obtain.

It must be noted that school surveys could underestimate young people’s drug using behaviour as they do not take account of excluded pupils, whose drug use may be higher than their peers (Becker and Roe 2005). For example, analysis of the BCS shows that 24% of those considered vulnerable reportedly used drugs on a frequent basis in the previous year (Becker and Roe 2005). Additional surveys need to be conducted to capture drug use among these populations of young people.

All of these survey findings highlight a strong need for drug use prevention, as there is evidence that the earlier a person starts taking drugs, the greater the likelihood

that they will develop more serious drug and health problems over time compared to early abstainers (Lynskey et al. 2003). Similarly, there are strong links between problems with drugs and poor academic performance (Ellickson et al. 2004; Hallfors et al. 2002), truancy (Hallfors et al. 2002) and initiation into criminal activity (South and Teeman 1999). Furthermore, there are also strong links between problems with drugs and social exclusion, including unemployment (South and Teeman 1999), homelessness (Wade and Barnett 1999) and prostitution (Pearce 1999). These findings suggest that drug use may be one particular expression of an underlying and wide-ranging behavioural repertoire (see Pearson 1996).

Drug prevention and definitions

It is necessary to define key terms used in drug prevention as they can hold different meanings among professionals.

Types of prevention

The Institute of Medicine has proposed a framework for classifying prevention that has three categories: universal, selective and indicated prevention (Mrazek and Haggerty 1994). This system replaces the traditional primary, secondary and tertiary categories. The new framework weighs up the risks of developing drug use in a population and the extent of interventions. Each category describes target populations that are expected to gain optimal benefits from interventions. See also the European Monitoring Centre for Drugs and Drug Addiction website, www.emcdda.eu.int (section: Prevention of drug use).

Universal prevention

Universal prevention targets a whole population group (eg national, local community, school or neighbourhood) and each member of the population is considered to benefit from prevention programmes. The aim of universal prevention is to prevent young people from starting to use illegal substances. An example of universal prevention is a school drug-prevention curriculum.

Selective prevention

Selective prevention targets subsets of the population whose risk of developing drug use is above average,

identified by the presence of biological, psychological, social or environmental risk factors (Mrazek and Haggerty 1994). An after-school programme for children with behavioural problems is an example of selective prevention.

Indicated prevention

Indicated prevention target individuals who seem to be at risk of developing drug use but who do not meet DSM-IV (*Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition*) criteria for dependence. Indicated prevention programmes normally screen individuals to judge the levels of risk (Mrazek and Haggerty 1994). An example of indicated prevention is an intervention to reduce consumption of cannabis in non-problematic users.

There are benefits and problems for each prevention type (see also Canning et al. 2004). For example, universal prevention programmes can be more expensive than selective or indicated prevention, as they target a whole population (eg every pupil of a school). However, since selective and indicated prevention programmes are targeted at young people with factors associated with drug use, there is a risk of stigma or labelling the participants, which could lead to more problems (Smyth and Saulnier 1996). Furthermore, having risk factors does not necessarily mean that they will develop drug use. For example, one study found that of children who exhibited two risk factors for drug use when they were in nursery (eg overactivity, deficits in social problem-solving skills and parental substance abuse) there was only about a 50% chance of them reporting drug use (including alcohol, cannabis, heroin, cocaine, LSD or inhalants) by age 11 (Kaplow et al. 2002).

Types of drugs

It is also necessary to define what 'drug' or 'drugs' mean. In this briefing, drugs refer to illegal substances (eg cannabis, cocaine, heroin). However, it is not always meaningful to differentiate drugs in terms of illegality, as buying and drinking alcohol in a pub can be illegal for anyone aged below 15, although it is not illegal for a parent to give alcohol to a child at home. This distinction is often made even more difficult as there is a lack of consistency or agreement within the prevention literature. Some studies have included alcohol, tobacco and 'illegal drugs', while others do not include alcohol and/or tobacco. Therefore, types of drugs or substances are

specified where possible in this briefing. This was not always possible as some authors did not clarify what 'drugs' meant in their studies.

Prevention approaches in schools

There are several drug prevention interventions in schools, based on different approaches, theories or models (see Botvin 1999, 2000).

Information dissemination and affective education

Information dissemination approaches attempt to prevent drug use by providing health information. According to Botvin (1999, 2000), who reviewed the effectiveness of information dissemination, these approaches may have a positive impact on knowledge and attitudes related to drugs but not drug use – and they could actually increase use. Furthermore, although many users do associate drug use with risk and make sophisticated risk assessments, more experienced or regular users are less likely to have experienced negative drug effects or place less value on those effects, according to personally defined 'cost/benefit models' (Gamma et al. 2005).

Another approach, called 'affective education', aims to prevent drug use by promoting affective development such as increasing self-understanding and self-acceptance through activities including clarification of values and responsible decision making (Botvin 1999). Consistent with information dissemination approaches, affective education was found to have no convincing effect on drug-use behaviour (Botvin 1999, 2000).

Skills training: social influence

Information dissemination and affective education are based on intuition rather than theory (Botvin 2000) and this may be a reason for their ineffectiveness. As understanding of drug use has progressed, approaches based on empirical findings and theories have been developed.

One such approach is social influence, which posits that drug use stems from direct or indirect social influences from peers and/or media (eg modelling, persuasive advertisement, and offer from peers) (Botvin 1999, 2000). There are several components of social influence approaches, all of which aim to increase an awareness of

social influences over drug use but also to teach skills for coping with such influences or pressures. For example, normative education aims to correct the misconception that the majority of adults and adolescents use drugs, as the social influence models suggest that inaccurate normative expectations can ultimately lead to drug use. Further, resistance skills training aims to equip young people with skills to recognise, cope or avoid situations where there will be peer pressure to use drugs. Evidence has shown that social influence approaches have a small but positive impact on drug use, including cannabis use (see Botvin 1999, 2000).

Competence enhancement or broad skills training

Competence enhancement or broad skills training focuses on teaching generic personal and social skills and is sometimes combined with features of the social influence approach. An example of this is the LifeSkills Training Programme, which uses cognitive-behavioural skills training methods such as behavioural rehearsal and homework assignments (Botvin 2000; Coggans 2003). It was found that when the LifeSkills Training programme was delivered with high fidelity it can have a small but enduring positive impact on drug use, including cannabis (Coggans 2003).

Multi-component programmes

Many prevention programmes have more than one type of intervention. Multi-component programmes may combine school curricular interventions with school-wide environmental changes, parent training programmes, mass media campaigns, and/or community-wide interventions (Flay 2000). Few attempts have been made to assess the effective features of multi-component programmes (Allott et al. 1999; Canning et al. 2004; Flay 2000).

Other approaches

There have been drug prevention or education attempts using performance art (eg drama or theatre workshops), which often involves professional actors as well as teachers (see Canning et al. 2004 and also Orme and Starkey 1998; Pearson 2004; Stead et al. 2000, 2001 for examples). There is some evidence to suggest that using theatre in education is effective at bringing about attitude changes and an increase in drug-related knowledge (Canning et al. 2004).

Prevention programmes in non-school settings

Although the most rigorously evaluated programmes may be school curricular programmes (Canning et al. 2004; White and Pitts 1998), there have been a number of drug prevention programmes set outside of schools. However, it has been noted that these selective or indicated interventions in non-school settings were often shorter and had poorer methodology than school programmes (White and Pitts 1998). Universal prevention programmes have also incorporated an intervention in non-school settings. For example, NE Choices (in North-East England) was a multi-component drug prevention programme and included out-of-school drama workshops for year 10 pupils (Stead et al. 2000, 2001). Also, drug prevention messages have been disseminated by media campaigns (eg leaflets, websites and posters; see Henderson 1998, 2000) and by the mass media (Derzon and Lipsey 2002).

Programme deliverers

There is diversity in the type of provider delivering drug prevention interventions. In schools, the following have been used:

- police officers
- health professionals (drug and alcohol service workers, specialist drug services for young people, school nurses)
- community groups
- personal advisers from Connexions (the advice service for young people in England)
- theatre groups
- youth services
- parents of former drug users
- national charities such as Life Education Centres
- teachers
- peers.

Methodology

Identification of references

An iterative literature search was conducted on nine electronic databases using criteria described in the first briefing (Canning et al. 2004, Appendix 1):

- CINAHL (Cumulative Index to Nursing and Allied Health Literature, which covers nursing and disciplines allied to health)
- Cochrane library (evidence-based healthcare)
- DARE (Database of Abstracts of Reviews of Effects, which includes systematic reviews on the effects of interventions)
- EMBASE (pharmacological and biomedical literatures)
- EPPI-Centre (Evidence for Policy and Practice Information and Co-ordinating Centre, which includes education and health promotion)
- MEDLINE (literature from medicine, nursing, healthcare systems and pre-clinical sciences)
- PsychINFO (bibliographies of behavioural sciences and mental health literatures)
- PubMed (includes MEDLINE and bibliographies of general science literature)
- Web of Science (literature on social science and humanities).

Electronic databases were searched between August and September 2004 and only English-language papers published between 2001 and 2004 considered. A total of 699 abstracts were identified from this literature search:

CINAHL:	6	PsychINFO:	17
Cochrane library:	134	PubMed:	132
DARE:	5	Web of Science:	7
EMBASE:	216		
EPPI-Centre:	0	Total:	669
MEDLINE:	152		

Screening and appraisal

Each abstract (n = 669) and title were screened and evaluated by two reviewers to decide whether the full paper should be retrieved. The criteria for inclusion at this stage were:

- the paper dealt with issues relating to the effectiveness of drug use/misuse prevention research
- the paper identified current topics/issues relating to drug use/misuse prevention research.

From the total of 669 abstracts, 102 papers were judged to be relevant for this briefing update and the full paper was retrieved for each. These were screened by two reviewers according to the inclusion and exclusion criteria.

Inclusion criteria

- is the paper relevant to the evidence base on the prevention and/or reduction of illicit drugs use?
- does the paper discuss and evaluate more than one intervention study designed to prevent and/or reduce drug use?
- is the paper a review or meta-analysis of illicit drug use/misuse prevention research?

Exclusion criteria

- pharmaceutical treatment regimens
- harm reduction in established users
- general discussion papers that did not identify specific interventions.

Of the 102 papers, 29 papers were judged to have potential to inform the evidence base on what works to prevent and/or reduce drug use among young people (Appendix 3). These papers were further critically evaluated

by the two reviewers by extracting key information using a procedure based on the HDA's Critical Appraisal Tool (Appendix 2). The focus of this appraisal was on three main components of a review or meta-analysis:

- methodological quality of the study
- comprehensiveness of the search strategy
- appropriateness of data combination.

Based on key information extracted and critically appraised, each paper was classified into five categories, defined as follows.

- 1 The whole of the review was judged to be of high quality (that is, it would form part of the core material on which evidence-based statements are made in this briefing update).
- 2 Only part of the review was judged to be of high quality.
- 3 The review provided background or contextual material.
- 4 The review was relevant but not useful for the purpose of this update.
- 5 The review was not relevant and discarded.

Of the 29 papers reviewed, none was judged to be of sufficient quality for category 1. Seven papers were judged to be suitable for inclusion in category 2. Of the

remaining papers, 14 were classified in category 3. The remaining eight were excluded from the review (seven category 4 and one category 5).

Compared with the previous briefing (Canning et al. 2004), fewer papers were initially identified in the screening and appraisal process. However, the total number of category 1 to 3 papers generated was the same as the previous briefing, although none was assigned to category 1.

Included publications

Of the 29 papers that were critically appraised by the two reviewers, seven papers were judged to have sufficient high-quality data to be included in this briefing update. Two are meta-analyses, three are systematic reviews and the remaining two are narrative literature reviews. Fourteen out of 29 papers were judged to be included as contextual materials and the remaining eight papers were discarded.

Table 1: Included publications

Author(s) and (year)	Title	Source	Category
Cuijpers (2002a)	Effective ingredients of school-based drug prevention programs. A systematic review	<i>Addictive Behaviors</i> 27 (6):1009–23.	2
Cuijpers (2002b)	Peer-led and adult-led school drug prevention: a meta-analytic comparison	<i>Journal of Drug Education</i> 32 (2):107–19.	2
Gottfredson and Wilson (2003)	Characteristics of effective school-based substance abuse prevention	<i>Prevention Science</i> 4 (1):27–38.	2
Hawkins et al. (2004)	Preventing substance abuse in American Indian and Alaska Native Youth: Promising strategies for healthier communities	<i>Psychological Bulletin</i> 130 (2):304–23.	2
Kumpfer and Alvarado (2003)	Family-strengthening approaches for the prevention of youth problem behaviors	<i>American Psychologist</i> 58 (6–7):457–65.	2
Shepard and Carlson (2003)	An empirical evaluation of school-based prevention programs that involve parents	<i>Psychology in Schools</i> 40 (6):641–56.	2
Skara and Sussman (2003)	A review of 25 long-term adolescent tobacco and other drug use prevention program evaluations	<i>Preventive Medicine</i> 37 (5):451–74.	2

Findings

The data derived from the reviews included in the evidence base were categorised according to four main topics or themes:

- effective components of drug prevention programmes
- effectiveness of family intervention in drug prevention programmes
- effectiveness of different types of programme providers
- effective prevention programmes for minority youth.

The findings are therefore presented according to these categories, as in Table 2.

Table 2: Included publications by category

Author(s) (year of publication)	Topic
Cuijpers (2002a)	Effective components
Gottfredson and Wilson (2003)	Effective components
Skara and Sussman (2003)	Effective components
Kumpfer and Alvarado (2003)	Specific component: family interventions
Shepard and Carlson (2003)	Specific component: family interventions
Cuijpers (2002b)	Programme providers
Hawkins et al. (2004)	Drug prevention for minority youth

Of the seven reviews reported here, six are based on studies in the USA, although Shepard and Carlson (2003) include one Norwegian study in their analysis. The paper by Gottfredson and Wilson (2003) does not report where the studies that they include were undertaken.

Effective components of drug prevention programmes

EFFECTIVE INGREDIENTS OF SCHOOL-BASED DRUG PREVENTION PROGRAMS: A SYSTEMATIC REVIEW (CUIJPERS 2002A)

Systematic review, category 2

Introduction

The author argues that since past research on drug prevention programmes has shown mixed results in terms of efficacy, no quality criteria or guidelines have been developed for schools, policy makers and prevention workers to help choose which programmes should be delivered to young people.

The aim of this paper was to respond to this need by identifying 'quality criteria' or effective components for universal school-based drug prevention programmes. To achieve this, three types of drug prevention studies were systematically reviewed, namely meta-analyses, primary studies examining mediating variables of drug use, and studies examining effective characteristics of programmes. In this review, drugs refer to tobacco, alcohol and illegal drugs and only school-based universal interventions were included.

Findings

Evidence-based programme

Key literature was identified and the author examined each paper to identify 'quality criteria' or effective characteristics. Identified characteristics were then assessed for the strength of the evidence according to a classification scheme of four categories (proven

effects, very strong evidence, strong evidence and some evidence).

No quality criteria were assessed as having 'proven effects', the highest level of evidence. Furthermore, the only quality criterion judged to have 'very strong evidence' was not an effective component of a programme but a recommendation that a programme delivered to young people should be based on rigorous research findings. The author argues that this is important, as most drug prevention programmes have shown a lack of effects.

Interactive methods

Several quality criteria were classified as having 'strong evidence'. According to one meta-analysis (Tobler et al. 2000), it was reported that there was 'strong evidence' to suggest that interactive methods in delivering drug prevention interventions (eg role-play) are more effective than non-interactive methods (eg a lecture) in reducing drug use. Unlike non-interactive methods, interactive methods can provide opportunities for communication among participants. Cuijpers (2002b), in his more recent meta-analysis (see full details on p15), argues that participants could receive feedback and constructive criticisms and have a chance to practice newly acquired refusal skills with peers, which might account for the apparent superiority of interactive approaches.

Social influence model

From the results of the meta-analysis by Tobler et al. (2000), programmes based on social influence model were reported to have 'strong evidence' to support effectiveness. There are several components within social influence programmes. According to research findings from studies that examined mediating factors for drug use, normative education (including drug-related social prevalence knowledge, social acceptability knowledge, normative expectations, and friends' reactions to drug use), students' commitment not to use drugs, and intention not to use drugs were shown to be important mediators.

Some components allied to social influence seemed to have less strong preventive effects. For example, adding life skills training to a social influence programme was judged to have 'some evidence' to support its effectiveness, according to Tobler et al. (2000). Very limited evidence was found for resistance skills training as a significant mediating variable.

Community involvement

Community involvement includes family interventions, mass media campaigns and community mobilising committees. Summarising the meta-analysis (Tobler et al. 2000) and several primary research findings, Cuijpers (2002a) reports that there was 'strong evidence' that adding community components to school-based interventions strengthened their effects. However, this finding should be interpreted with caution, as the primary research on which the author based this conclusion has also been reviewed by Flay (2000) who reported some methodological problems in these studies. In separate estimates of the effectiveness of added features, it was found that they were often small scale, reported no differential effects and/or were unable to show how effective the school-based programmes were.

Booster sessions/intensity of programmes

Although Cuijpers (2002a) acknowledges a finding from an earlier meta-analysis (White and Pitts 1998), that most effective programmes had booster sessions or additional components, the author concludes that the efficacy of booster sessions has very limited evidence. Also, no convincing evidence for the effectiveness of booster sessions was found from studies that examined mediating factors. The effectiveness of booster sessions may therefore be dependent on other features of programmes.

Similarly, based on results from White and Pitts 1998, it was reported that there was no strong evidence to suggest that intensive programmes are more effective than less-intensive ones. Cuijpers (2002a) argues that since White and Pitts (1998) did not statistically examine relationships between booster sessions and intensity, and drug use outcomes, the relationships should be treated as hypothetical.

Discussion and implications of the findings

Cuijpers (2002a) attempts to isolate effective components of drug prevention programmes. None of the programme characteristics examined was judged to have 'very strong' or 'proven' level of evidence. This implies a paucity of sound evidence in the drug prevention field and/or simply a lack of effective programmes.

Furthermore, within the social influence interventions, some components were found to be highly effective but not others. This inconsistency may mean an inappropriate

application of theory into practice and/or of a need to modify theory. Another explanation of the variability is the poor fidelity of implementation; interventions were not delivered as developers intended.

However, some caution is needed when inferring a causal relationship between the quality criteria and their reported effectiveness. Cuijpers (2002a) acknowledges that the findings of the review are limited because of the variability in methodology and interventions used. In addition, substance use was based mainly on self-report, which can be an unreliable measure for drug use behaviour.

An important point is about the validity and reliability of the classification system for the strength of evidence in this review. First, no detail was given of the screening process for methodological rigour of each study – the methodological quality of included studies is unknown. Second, the criteria for each category seem to be vague. For example, 'proven' means that the evidence leaves no doubt at all that this is an important quality criterion. This is ambiguous and leaves lots of scope for subjective judgement. Third, only the author seems to have conducted the appraisal process and this may have led to biased selection. In addition, this review did not include studies that did not show significant results. This could lead to a bias in findings, as some of the quality criteria might have shown to have no significant effect on drug-use outcomes in these non-significant studies.

Most of the included studies were conducted in the USA and so the applicability of the findings in other settings may be limited owing to cultural or societal differences.

A final point is the definition of prevention in this paper. This review included only school-based drug prevention programmes. However, the goal for these programmes can vary (eg an increase in drug-related knowledge, anti-drug attitudes and beliefs; prevention or delaying of the onset of substance use among non-users; reducing substance use or drug-related problems among drug-using individuals). In this review, it was not clear what kind of outcomes that the characteristics of each intervention could bring about, and the endurance of those effects.

A REVIEW OF 25 LONG-TERM ADOLESCENT TOBACCO AND OTHER DRUG USE PREVENTION PROGRAM EVALUATIONS (SKARA AND SUSSMAN 2003)

Systematic review, category 2

Introduction

It is argued that preventing the onset of drug use among teenagers is important, as this is a time when young people experience major biological, cognitive, social and emotional changes and these changes can affect their decision to take drugs. This review aimed to summarise evaluations of programmes that followed young people across the transitional period between junior high and high school in the USA (12–17 year olds). Twenty-five studies are included. Although types of drugs examined varied among the studies (see next section), all measured long-term outcomes (time range from 2 to 15 years).

Findings

Tobacco

A strong and enduring prevention effect for tobacco was found in the majority of studies. In 11 out of 17 studies, intervention groups showed a significantly better long-term outcome (at least 24 months) than control groups when differences in percentages of adolescents who smoked at post-test were calculated and compared. The mean percentage decrease in smoking rates (from baseline to follow-up) for intervention groups relative to controls was 11.4% with a range of 9.0% to 14.2%.

Alcohol

Evidence for programme effectiveness also exists for alcohol, but the number of studies was small ($n = 9$). A baseline to follow-up reduction in weekly alcohol use for intervention groups compared to control groups ranged from 6.9% to 11.7%.

Cannabis

Eight out of 25 studies identified in this review examined programme effects on cannabis and all showed positive interim effects (3 months to 24 months). However, only one study reported data that allowed the calculation of the percentage reduction in rates of cannabis use from baseline to follow-up for intervention compared to control groups. Other studies did not have enough data to determine relative differences in outcomes between intervention and control groups. Four studies provided

long-term outcomes (over 24 months). Two showed no significant differences between conditions, but the other two showed positive outcomes in cannabis use (a reduction of 5.7% was reported for 30-day cannabis use, $p < 0.05$) or cannabis-related behaviour ('less cannabis related behaviour' on a scale, $p = 0.05$). It should be noted that the latter outcome is not only rather ambiguous but also the study did not have control groups.

Characteristics of effective programmes

The programmes that showed positive outcomes for cannabis use were all based on the social influence model and the majority had more than one type of intervention. About half of these programmes used peer educators, as well as adults. Most had booster sessions or a long-term component and the length of follow-up varied between 27 and 72 months.

Discussions and implications of the findings

This review demonstrated that prevention programmes can be effective in reducing drug use and can have lasting results. However, there are several methodological problems that can compromise the strength of these findings. Many studies did not report enough data to allow the relative difference in drug use between intervention and control groups to be calculated (from baseline to follow-up) but did provide less strong analyses (eg post-test score comparisons). Although all studies that examined cannabis outcomes used either experimental design or quasi-experimental design with comparison groups, only a few examined pre-test drug use between the conditions. Some studies only examined post-test scores between conditions. In addition, one study did not track the same subjects, providing only cross-sectional data. So it is not possible to exclude the possibility that two groups were similar in terms of drug use at baseline.

Also, there was great heterogeneity in the method of reporting outcome effects among studies, which made it difficult to examine the comparative effectiveness of programmes.

All of the programmes that measured cannabis outcomes implemented interventions based on social influence approaches, suggesting a possibility that social influence programmes are effective in tackling cannabis use (but this does not mean that they are more effective than other drug prevention approaches). It should be noted that disengagement of participants from a

programme can introduce biases – attrition rates in the studies reviewed in this paper ranged considerably from 19% to 75%.

Variability in the intensity of training for providers could also have affected the outcomes. Among the studies reviewed, the length of training for teachers ranged from 1 day to 2 weeks. Moreover, fidelity of implementation was only assessed by half of the studies that examined cannabis outcomes. Even when the fidelity was assessed, it was reported that the description was vague and monitoring was not systematic, so it is difficult to ascertain whether students received interventions as they were intended to be delivered.

CHARACTERISTICS OF EFFECTIVE SCHOOL-BASED SUBSTANCE ABUSE PREVENTION (GOTTFREDSON AND WILSON 2003)

Meta-analysis, category 2

Introduction

Previous reviews of research on school-based substance abuse prevention (alcohol, tobacco, and illegal drugs) showed variability in the size of programme effects. The authors of this paper argue that the differences in programme features among those (past) studies could explain the observed variability in the size of treatment effects. The purpose of this paper was to identify programme features that can affect effectiveness by summarising findings from 94 school-based drug (alcohol and other drugs excluding tobacco) prevention programmes using a meta-analysis. To achieve this, several programme features were examined (types and age of target populations, length of programmes and types of programme deliverer).

Findings

Target population

Findings showed that interventions targeted at high-risk populations were significantly better than those aimed at general student populations ($p < 0.05$). However, it should be noted that the effect size was small (0.07 for targeted interventions and 0.05 for universal programmes) and only 11 of the 136 intervention/comparison contrasts were aimed at high-risk students. There was some evidence to suggest that cognitive

behaviour programmes were more effective at reducing drug use in targeted populations ($d = 0.20$) than general populations ($d = 0.05$). However, the effect size was still small and the difference was not statistically significant.

Age of recipients

There was a slight advantage for programmes delivered to middle/junior high school students (11–14 year olds; $d = 0.09$) than elementary (6–11 year olds; $d = 0.04$) or high school students (14–17 year olds; $d = 0.05$). But these differences were not statistically significant and the effect size was small. The effect size of the longer follow-up studies (more than 2 years) aimed at elementary schoolchildren reached the effect size of middle/junior schools. Therefore, Gottfredson and Wilson (2003) suggest that delivering prevention programmes to elementary school students does not have long-term positive effects that outweigh the benefit of providing such programmes to middle/junior school students.

Intensity of programmes

Findings demonstrated that both short (less than 4.5 months) and long (more than 4.5 months) programmes had similar preventive effects. This indicates that extending the length of programmes may not result in further benefits and is not cost effective.

Programme deliverers

The effect sizes for programmes delivered with and without teachers, peers and police were small and no significant differences were found (varied from 0.05 to 0.08).

However, it was noted that in many cases programmes were delivered by more than one of the deliverers and further analyses were required to elucidate deliverer-specific effectiveness (peer only, co-led by peers and teachers, and no peer involvement). After controlling for the types of prevention intervention (instructional and normative change interventions only), it was found that programmes that were led by peers were more effective ($d = 0.20$; $p < 0.05$) than those which had no peer involvement ($d = 0.05$; $p < 0.05$) or those co-led by peers and teachers ($d = 0.04$; not significant). Based on these findings, Gottfredson and Wilson (2003) speculate that teachers' involvement may reduce the effectiveness of peer involvement.

Inconsistencies in methodology across studies were noted by the authors and this might have produced some biases in the results. However, further analyses showed that the robustness of the findings was not compromised by this source of variability.

Discussion and implications of findings

This meta-analysis showed some evidence for the effectiveness of the following features of school-based drug prevention programmes:

- 1 programmes targeting at-risk students
- 2 programmes being delivered to pupils aged between 11 and 14 years old
- 3 peer-led interventions.

However, small effect sizes (1 and 3) and/or non-significant differences among age bands (2) indicate a possibility that these features may not significantly account for variability in prevention effects reported by past research. A lack of strong evidence may mean that it is a synergetic effect of separate features that promotes effectiveness. Furthermore, programme intensity was not a significant feature of effectiveness and longer programmes were found to be no more effective than shorter ones.

An important point to note is that although the authors examined effectiveness it was not clear from this paper what exactly constituted 'effectiveness' of outcomes. Outcomes in this paper could include a number of different measures such as a reduction in the use or prevention of the onset of use of any drug except tobacco (studies which only measured tobacco use were excluded in this review).

A total of 94 studies were included in this review, but no detail on where the studies were conducted was reported. Application of the study findings, therefore, requires careful assessment of local circumstances for the programmes to be relevant, meaningful and effective for the target population.

Furthermore, the fidelity of implementation was not reported for these studies. Therefore, it is not possible to ascertain whether students received the intended content of programmes. Poor fidelity could mean that something other than the content of the programme had an impact on the results.

Specific component: family interventions

FAMILY-STRENGTHENING APPROACHES FOR THE PREVENTION OF YOUTH PROBLEM BEHAVIORS (KUMPFER AND ALVARADO 2003)

Review, category 2

Introduction

The authors argue that building strong family relationships and equipping parents with good parenting skills are essential components in a programme that aims to prevent problem behaviour in young people (including drug use). They report that the impact of such protective family factors on delinquent behaviour is greater for minority ethnic youth, and the female population, indicating that programmes which have family strengthening approaches could reduce inequalities in health with regard to drug use prevention.

The Center for Substance Abuse Prevention in the USA conducted an expert review of literature on family-based interventions (Center for Substance Abuse Prevention 2000, cited in Kumpfer and Alvarado 2003). A total of 108 programmes were assessed for effectiveness and strength of evidence. The highest effectiveness was found for three family-based approaches: parent training, family skills training and family therapy.

Findings

Parent training

This is behavioural training attended only by parents. Small groups are led by a trainer who aims to bring about cognitive, affective and behavioural changes in the parent by giving homework and lectures, and running interactive exercises and role-plays. Parents are taught behavioural strategies such as positive interactions with their children through play, giving rewards for good behaviour and ignoring unwanted behaviour. Kumpfer and Alvarado (2003) describe high effect sizes for this intervention (0.84 for parent report and 0.85 for observer report on their children). While evidence suggests that behavioural parent training was most effective with younger children (3–10 years old), generalisation of positive changes observed in earlier clinic-based studies seemed to be confined to the home and not school settings, and some modifications in delivery may be required for minority

ethnic families and families whose children have behaviour problems.

Family skills training

Family skills training provides parents with behavioural training and also an opportunity to practise skills with their children. The programme usually starts with parents being taught therapeutic play therapy or parent-child interactive therapy in the absence of children. Later, family groups are reunited to practise together the skills learned in the earlier session. This is followed by more sessions on issues such as family communication and effective discipline.

Kumpfer and Alvarado (2003) report that there is evidence to suggest that each component of this training has different prevention effects (eg parent training decreases conduct disorders) and reportedly works best for elementary and middle school children (6–13 years old).

Retention rates were reported to be higher for family skills training than parent-only programmes. This could be attributed to the involvement of children or attempts to reduce barriers by including meals, transport and free childcare in family programmes.

Family therapy

A small number of therapy studies with positive outcomes for families indicated for prevention were described in Kumpfer and Alvarado (2003), but few details on the efficacy of this approach are given. Unlike family skills training, which usually comprised 12 to 16 sessions, these family therapy programmes tended to be shorter (8 sessions) and were delivered to individual families, rather than in groups, by trained mental health clinicians.

Principles of effective family-focused programmes

Kumpfer and Alvarado (2003) introduce principles of effective family-focused programmes, produced by the Center for Substance Abuse Prevention in the USA (2000), by reviewing literature on prevention principles, effective family interventions, and primary family research.

There are 13 principles. One states that family programmes are usually more effective for families with relationship problems than child-focused or parent-focused programmes. Principles for the content of an effective family-focused intervention can be summarised as follows.

- Comprehensive multi-component programmes are more effective than single-component programmes in modifying a broader range of risk and protective factors. Components should include strategies for improving family relations, communication and parental monitoring. Furthermore, family programmes have more lasting results if they produce cognitive, affective and behavioural changes in the family dynamics and environment. The programmes should be age and developmentally sensitive. In addition, programmes should be culturally sensitive to improve recruitment, retention and outcomes of effectiveness.
- High-intensity programmes are needed for high-risk families. Early interventions should be given to children from 'dysfunctional' families.

Recommendations for the effective delivery of a family-focused programme are as follows.

- The use of incentives results in high rates of family recruitment and retention. To develop a supportive relationship and decrease resistance from parents and disengagement rates, it is important to foster a collaborative relationship with clients.
- Interactive approaches in skills training can increase effectiveness.
- There needs to be a careful choice of facilitators, as characteristics such as personal efficacy and confidence can affect effectiveness.

Future research and dissemination of evidence

Kumpfer and Alvarado (2003) argue that increased attention should be given to improved research methodologies that address issues such as culturally appropriate measures and strategies to control biases in participants' responses. The importance of building an evidence base for longer-term effectiveness of family-focused approaches is also emphasised. In addition, cost-benefit studies should also be integral to evaluations.

Dissemination of research findings needs to be improved. This may involve a careful selection of appropriate media and clear description of the efficacy of an intervention relative to others. The authors feel that funding is required for implementing new innovations, as well as evidence-based programmes. Furthermore, training, online technical assistance systems for drug prevention programmes (eg the Prevention Decision Support System from the Center for Substance Abuse Prevention (2000))

and community–university partnerships should be appropriately funded to implement prevention programmes with high fidelity.

Discussion and implications of findings

This paper highlighted three family interventions, the efficacy of which have been supported by research evidence. The authors draw attention to the needs for an improvement in methodology of evaluation research, for effective methods of disseminating findings and for funding to promote new innovations, evidence-based programmes and implementation of programmes with high fidelity. Furthermore, recommendations for effective family-focused interventions are listed in this paper.

Application of these principles in drug prevention, however, requires some caution. First, the principles of effective family-based interventions are not specific to prevention or reduction of drug use, but cover broader behavioural problems in young people. Second, it should be noted that the effectiveness of these principles might not be generalisable to UK settings or populations.

AN EMPIRICAL EVALUATION OF SCHOOL-BASED PREVENTION PROGRAMS THAT INVOLVE PARENTS (SHEPARD AND CARLSON 2003)

Review, category 2

Introduction

The purpose of this review is to give an overview of evidence for the effectiveness of school-based prevention programmes incorporating a parent involvement component. There are a variety of ways in which parents can participate in drug prevention programmes, including:

- parental education
- parental skills training
- parent-child activities
- social activities
- consultation services
- in-home counselling or problem solving
- parent groups
- teacher-parent discussions
- parent drop-in centres,
- parents in the classroom
- parent newsletters.

Findings

Twenty school-based prevention programmes were reviewed in this paper and their prevention aims ranged from drug use to cardiovascular disease. These programmes were assessed for the strength of evidence, and eight out of 20 programmes were judged to be either 'well established' or 'probably efficacious' interventions. Four out of these eight programmes aimed to prevent alcohol and illegal drug use and all four were assessed to be probably efficacious (the criteria being that two studies showed the intervention more effective than a non-intervention control group, or one or more studies showed the intervention to be superior, or a small series of single case design experiments showed effectiveness).

One of the four programmes was the Midwestern Prevention Project in the USA, a multi-component programme consisting of a school social influence curriculum, parent education, mass media programming, community organisation and health policy changes. The parental involvement included parent/child homework, parent skills training, parent organisation and parent/community organisation activities. The aim of this programme was to prevent alcohol and drugs use among participants aged 11 and 12. There was evidence to suggest that this programme was effective in preventing the initiation of drug abuse among both high-risk and general population students. However, no statistical data was given in this paper to allow verification.

The second, Project Northland, is a comprehensive prevention programme in the USA that aims to prevent alcohol and drug use. This programme was delivered to pupils aged between 11 and 13 years old and comprised social behavioural curricula, parental involvement, peer leadership and community changes. Parental involvement consisted of parent-child communication, a parent newsletter, social activities and a community taskforce. In comparison to controls, more abstinent students were found in experimental groups and fewer students in intervention schools reported using alcohol (no detail on drug outcomes was available).

The third programme is the Smoking Prevention Program in Norway, which targeted pupils at the age of 11. It involved a classroom programme, teacher training and parent involvement (brochures, teacher/parent discussions and a no-smoking contract).

It was reported that the group that received the most extensive interventions demonstrated the greatest positive impact on smoking outcomes (no statistical data were reported).

The fourth programme, First Step to Success (USA), aimed to prevent conduct problems and alcohol and drug abuse. Although the programme was reported to have a positive impact on aggression, its effectiveness on drug or alcohol outcomes could not be ascertained, as these outcomes were not reported in this paper.

Shepard and Carlson (2003) briefly report that there was some evidence for added value of parental involvement in multi-component programmes.

Discussion and implications of findings

This paper highlights the evidence base for the effectiveness of prevention programmes with parental involvement. A learning point is that there are a number of unique strategies that involve parents and it is possible for a programme to accommodate more than one (eg parent education and parent/child activities). However, despite the authors introducing a number of prevention strategies that include parents, their relative effectiveness was not examined. So the relative effectiveness of these interventions for preventing drug use or anti-social behaviour is not known.

The authors provide some evidence for an added value of parental involvement in multi-component programmes, but more research is needed because factors such as attrition rates and selection bias can affect programme outcomes.

Finally, there are some methodological considerations that could have had some confounding effects on the observed effectiveness of the four drug prevention programmes. All the studies used either a quasi-experimental design (without random assignment of participants to conditions) or a between-group design (with random assignment). Descriptions of methodology are not detailed enough to see whether experimental and control groups were comparable at baseline.

Programme providers

PEER-LED AND ADULT-LED SCHOOL DRUG PREVENTION: A META-ANALYTIC COMPARISON (CUIJPERS 2002B)

Meta-analysis, category 2

Introduction

According to the author, although attempts have been made by researchers to show the relative effectiveness of peer-led and adult-led programmes, these studies have generally produced inconsistent results. This inconsistency could have resulted from variability among studies in programme content, the number of sessions conducted or differences in baseline drug-use prevalence. The purpose of this meta-analysis was to examine the efficacy of peer-led and adult-led approaches by analysing study results of particular programmes incorporating both types of facilitator.

Twelve studies published before 1995 were selected and these were all school-based drug prevention programmes that aimed to influence tobacco, alcohol and cannabis use.

Findings

The mean standardised difference in drug use between peer-led and adult-led interventions at post-test showed a superiority of peer-led interventions ($d = 0.24$; $p < 0.01$). However, this superiority was found to be short-lived, as its relative effectiveness was eroded at 1 year follow-up ($d = 0.16$; not significant) and 2 year follow-up ($d = 0.08$; not significant).

Separate analyses demonstrated that among adult providers the relative effectiveness of experts against peers was greater ($d = 0.44$; $p < 0.01$) than that of teachers against peers ($d = 0.13$; not significant).

Discussion and implications of findings

Often, interactive methods use peers to deliver programmes. Based on results from two meta-analysis studies, Cuijpers (2002b) reports that the use of peer educators was another effective characteristic that has 'strong evidence'. However, this positive effect seems to be supplementary, as evidence suggests that peer

educators can only help increase the effectiveness of a programme. The review author notes that adding the use of peers (as well as other features) improved the effect size of tobacco prevention programmes from 0.11 to 0.72. Also, the effect was found to be relatively short-lived. There were no significant differences in calculated standardised differences between peer- and adult-led interventions on drug use (tobacco, alcohol and cannabis) at 1 year and 2 year follow-ups (Cuijpers 2002b).

As this meta-analysis attempted to match interventions given by peer and adult providers, the effects obtained in this study – the superiority of peer-led intervention relative to adult-led – can be more readily attributed to the difference in types of facilitators.

A large heterogeneity among the studies was noted in terms of the content of programmes, target groups, intensity of programmes, types of adult providers (for example, teachers and experts), and the role and the age of peers. Furthermore, adult-led interventions were more effective than peer-led interventions in some cases. This suggests that it may be more useful to examine what kind of skills constitute an effective programme provider and how training can improve these attributes; and what kind of prevention components (eg booster sessions) benefit from peer (or adult) facilitators.

Although all but one study made an effort to randomly assign participants to conditions at the level of school or class, the majority of analyses were conducted at individual level. This is a methodological problem that is worth highlighting.

Caution needs to be made when generalising the results of this study to other cultural or societal settings or populations, as most of the studies were relatively old (pre-1995) and conducted in the USA. Also, this study only included school-based programmes, so the effectiveness of peer-led interventions may not extend to drug-prevention programmes in non-school settings.

A lack of process evaluation makes it difficult to examine the fidelity of implementation and quality of training provided for leaders and the role they played. Finally, although it was explained that only substance use behaviour was examined in this paper, it is not clear whether the programme effect was examined in terms of prevention or reduction/cessation of drug use.

Drug prevention for minority youth

PREVENTING SUBSTANCE ABUSE IN AMERICAN INDIAN AND ALASKA NATIVE YOUTH: PROMISING STRATEGIES FOR HEALTHIER COMMUNITIES (HAWKINS ET AL. 2004)

Review, category 2

Introduction

There is good evidence to show that there is higher drug use among native American youth and the age of initiation tends to be younger compared with other populations of young people in the USA. Like their contemporaries, the drugs most commonly taken include tobacco, inhalants, alcohol and cannabis. This review aimed to provide an overview of the literature on drug use prevention among native American youth and guidance for best practice.

Findings

Drug prevention programmes

It is reported that prevention programmes are commonly found in native American communities, but their effectiveness is not usually evaluated rigorously. Although there is a scarcity of data, these programmes can be categorised in community or individual approaches.

Community approaches

Community approaches target entire communities as a way to make positive changes in the young people's drug use. Several researchers suggest that a community approach is an appropriate method of intervention for the population, as the inclusion of a community is consistent with native American values and traditions. On the other hand, its prevention value may derive from addressing proximal factors (eg family and community) for the initiation and maintenance of drug use.

Community empowerment is one of the approaches, comprising various strategies (eg curriculum-based skills training, training for teachers, health education for community members, school-wide environment changes and coordinated care for users) that can take place in several settings (school, community and youth services). There is some evidence to suggest that community approaches have a positive impact on young people's alcohol and cannabis use. However, the poor

methodology of evaluation studies, including a lack of control groups, makes judgements of effectiveness inconclusive.

Individual approaches

In contrast to the community approaches, individual approaches focus on bringing about changes in drug use at individual level by providing skills training (such as self-control training). A feature of prevention efforts targeted at native American youth is that skills training is often coupled with 'bicultural competence' interventions. These teach adolescents coping skills for negotiating between mainstream and native cultures to increase a sense of self-efficacy in both cultures.

Research has provided evidence to support bicultural approaches, as young people who received culturally-sensitive skills training showed positive changes in drug-using behaviour, drug-related knowledge and attitudes, decision-making skills and interactive abilities, compared with controls. There is also some evidence for a long-term impact on drug use behaviour. However, the components of these individual programmes were diverse (eg presence of booster sessions and some community involvement), so it is difficult to ascertain which features were more effective than others.

Discussion and implications of findings

Although a review of drug prevention programmes aimed at native American youth may not seem relevant for drug prevention in the UK, there is a good deal to note.

First, Hawkins et al. (2004) report that there is a significant heterogeneity among Americans in factors such as the areas where they live (urban versus rural) and cultural affiliation. So homogeneity of indicated groups should not be presumed without needs assessments or pilot studies. In other words, within each indicated group there may be a wide diversity and a 'one size fits all' approach may not be appropriate.

Second, evidence regarding the effectiveness of skills training with bicultural competence interventions indicates that the training can be effective even when it is modified to make it more culturally sensitive. This suggests a possibility that skills training interventions could be modified to become more relevant for sub-populations of youth in the UK, for example minority ethnic groups, while remaining effective. This may

encourage the involvement of young people in developing more culturally appropriate interventions.

Third, the importance of extensive collaboration with targeted communities or community leaders was emphasised. This has not happened adequately in the past, as the authors note that there has been a long history of 'parachute' academics who 'drop in' to a community to provide a prevention programme and then leave as soon as data are collected. Building up trustful relationships with a community may require some time to achieve. This recommendation and possible implications are also relevant for the development and implementation of a multi-component programme in the UK that requires participation and collaboration of different organisations to be successful.

Evidence of effectiveness – key points

Programme delivery

Interactive approaches

Unlike didactic non-interactive approaches (eg a lecture), interactive approaches involve the active participation of programme providers and recipients (eg role-plays, active modelling and discussion). Interactive approaches have been found to be more effective than non-interactive approaches in reducing drug use in universal school-based drug prevention programmes (Cuijpers 2002a) and they are reported to be an effective method for delivering family-focused interventions (Kumpfer and Alvarado 2003). According to the evidence-based principles of effective family-focused programmes produced by the Center for Substance Abuse Prevention in the USA (Kumpfer and Alvarado 2003), such programmes are well received, particularly by parents with low socio-economic status, if they are delivered in an interactive manner. Also, fostering a collaborative relationship with clients is reported to be important in developing a supportive relationship and increasing parent participation in a programme (Kumpfer and Alvarado 2003). This evidence corresponds to findings from the previous briefing (Canning et al. 2004) and so lends support to the superiority of interactive approaches over non-interactive approaches.

Peer-led interventions

The previous briefing (Canning et al. 2004) reported that the effectiveness of peer-led drug education could not be firmly established owing to methodological problems (eg Parkin and McKeganey 2000). However, this briefing update provides some evidence in favour of the effectiveness of peer educators in school-based drug prevention programmes (Cuijpers 2002a/b; Gottfredson and Wilson 2003). Cuijpers (2002b) found that peer-led school-based interventions were superior to adult-led

interventions. However, this relative effectiveness did not extend to 1 or 2 year follow-ups. Furthermore, although Gottfredson and Wilson (2003) found evidence for the superiority of peer leaders, this superiority disappeared when school-based interventions were co-led by teachers. In addition, there is some evidence to suggest that peer educators can only help increase a programme's effectiveness, not produce positive effects per se; incorporating peers (as well as other features) increased the effect size of tobacco prevention programmes from 0.11 to 0.72 (see Cuijpers 2002a). These findings suggest that peer educators may contribute to the effectiveness of drug prevention programmes.

Design and content

Social influence model

There is good evidence for the effectiveness of programmes based on social influences approaches (Cuijpers 2002a). Normative education, students' commitment not to use drugs and intention not to use drugs are reported to be important mediators for drug use (Cuijpers 2002a). Furthermore, there is some evidence to support the efficacy of life skills training when it was added to social influence programmes (Cuijpers 2002a). Moreover, although its relative effectiveness compared to other approaches cannot be inferred, Skara and Sussman (2003) found that programmes which had a positive impact on cannabis use were all based on a social influences model and the majority of them had more than one type of social influence intervention.

These findings are consistent with the previous evidence briefing (Canning et al. 2004), which reported long-term effectiveness for programmes such as the LifeSkills Training programme and short-term effectiveness of

normative education programmes (White and Pitts 1998). According to Cuijpers (2002a), some social influence interventions may be more effective than others – for example, there was no convincing evidence for resistance-skills training.

Booster sessions

Most of the programmes found to have a positive impact on cannabis use had booster sessions or similar extra components that aimed to reinforce the effects of a programme (Skara and Sussman 2003). This adds to findings from the previous briefing (Canning et al. 2004), which reported that effective programmes tended to have booster components (White and Pitts 1998). However, Cuijpers (2002a) argues that since White and Pitts (1998) did not examine statistically the relationship between booster sessions and programme outcomes, the link should be treated as hypothetical.

Intensity of programmes

Cuijpers (2002a) reports that there was no convincing evidence to indicate that intensive school programmes (10 or more lessons) were more effective than non-intensive ones. This corresponds with reporting in the previous briefing (Canning et al. 2004). However, this is not surprising as both Cuijpers (2002a) and Canning and colleagues used the same study to draw this conclusion (White and Pitts 1998). Gottfredson and Wilson (2003) provide further evidence for the non-significant effects of programme intensity on efficacy.

Age of population

There is some evidence to suggest that school programmes for young people are most effective when they are delivered to pupils aged between 11 and 14 years old (Gottfredson and Wilson 2003). Evidence on the age of target populations was not reported in the previous briefing (Canning et al. 2004) and so this is an interesting addition to the evidence base. However, the effect size was weak ($d = 0.09$ for the sub-population and it was not significantly different from effect sizes for younger or older populations) and generalising this finding to the UK requires further research.

Family involvement

The previous briefing (Canning et al. 2004) did not provide strong evidence for the effects of parental involvement on drug prevention (Windle and Windle 1999), but addressed problematic issues such as low parental participation rates (Allott et al. 1999). In contrast, the possible effectiveness of

family involvement in prevention programmes was highlighted (Kumpfer and Alvarado 2003; Shepard and Carlson 2003). Behavioural parent training, family-skills training and family therapy were found to be the most effective family-strengthening interventions according to the evidence (Kumpfer and Alvarado 2003). However, more research is needed to determine whether they are significantly more effective than other types of approaches and which types of family interventions are most effective.

Selected/indicated prevention

A lack of a sound evidence base for selected and indicated prevention programmes was reported in the last briefing (Canning et al. 2004). In this update there was some evidence to suggest that school prevention programmes that target at-risk students are more effective than those that target general student populations (Gottfredson and Wilson 2003). Furthermore, cognitive behaviour programmes were found to offer the greater chance of success (Gottfredson and Wilson 2003). However, the number of included prevention programmes for at-risk populations is small in this study and so the strength of the evidence is rather weak. In addition, according to the principles of effective family-focused programmes produced by the Center for Substance Abuse Prevention in the USA, high-intensity programmes are recommended for high-risk families, and early interventions for children from 'dysfunctional' families are suggested (Kumpfer and Alvarado 2003).

Incorporating bicultural competence approaches to skills training has been shown to be effective for reducing prevalence of drug use in native American youth (Hawkins et al. 2004). This approach aims to equip young people with coping skills to negotiate between mainstream and native cultures. Although the content will be different, adding bicultural approaches to skills training for some populations of minority youth in the UK may be useful. This should increase cultural sensitivity of the programme and so should make the programme more meaningful for participants.

Generalising research findings

A lack of UK evaluation studies means it is difficult to deliver evidence-based prevention programmes in this country, since diversity in environmental factors among

countries (eg cultural, societal and developmental factors) can affect effectiveness and/or implementation. Most of the papers reviewed in this briefing are based on primary research conducted in the USA, so caution is required when applying findings to different settings and populations.

Conclusions

The purpose of this evidence briefing is to provide an updated review of recent tertiary-level research findings to assess 'what works' in preventing drug use among young people. Building the evidence base is important, as the design, content and implementation of drug prevention programmes should be informed by research findings (Cuijpers 2002a).

Several effective features highlighted by recent research evidence in this briefing do not deviate significantly from the findings of the previous briefing (Canning et al. 2004). Consistent with that work, a lack of methodologically sound evidence means it difficult to conclude 'what works' in drug prevention among young people. Also, the lack of convincing evidence for the components of effective drug prevention programmes may mean that the efficacy of those components or features depends on other characteristics of the programmes and types of populations and settings. This suggests an inappropriateness of a 'one size fits all' approach to drug prevention. In other words, an important question will be what types of interventions are effective in particular populations.

Gaps and inconsistencies

Definition

There was an ambiguity over the meaning of 'effectiveness' in some of the papers reviewed for this briefing (eg Cuijpers 2002a/b; Gottfredson and Wilson 2003). Without clear descriptions or definitions, 'effective' could be taken as delaying the onset of drug use, reducing drug use, stopping use, increasing anti-drug attitudes and beliefs, or increasing drug-related knowledge.

Fidelity of implementation

Fidelity of implementation refers to 'the degree to which teachers and other programme providers implement programmes as intended by the programme developers' (Dusenbury et al. 2003). Poor fidelity can lead to 'type III errors', where observed effectiveness or ineffectiveness of a programme is falsely attributed to the conceptual underpinnings of an intervention. The previous briefing (Canning et al. 2004) had already addressed the problem of poorly implemented programmes. The briefing noted that Black et al. (1998) argued that the failure of many drug prevention programmes might be due to 'type III errors'. Also, fidelity can affect programme outcomes. It was found that programmes were effective for cannabis use when high fidelity was achieved (Coggans et al. 2003).

Many drug prevention programme evaluations do not include a process evaluation to examine whether programmes are delivered correctly. Even when the fidelity of implementation was examined in some studies, the quality was reported to be poor. Skara and Sussman (2003) report that studies which examined the fidelity of implementation did not provide clear descriptions or systematic monitoring of a programme and therefore

could not establish whether students received programmes as they were intended to be delivered. Kumpfer and Alvarado (2003) argue that to implement evidence-based programmes with high fidelity, there is a need for:

- investment in training
- online technical assistance systems for drug prevention programmes (eg the Prevention Decision Support System from the Center for Substance Abuse Prevention)
- community/university partnerships.

Variability in methodology

The previous briefing (Canning et al. 2004) reported that many evaluation studies lacked methodological rigour (eg White and Pitts 1998), such as selection of outcome measures, appropriate controls and low participation rates. A lack of methodologically sound studies is also noted in this briefing update, while heterogeneity in methodology (including the study aims, study design, unit of analysis, outcome measures and method for data analysis) is also addressed by other authors (Cuijpers 2002a/b; Gottfredson and Wilson 2003; Hawkins et al. 2004; Skara and Sussman 2003). Variability in methodology can make it difficult to compare the relative effectiveness of different programmes or interventions or features (see Cuijpers 2002a/b; Gottfredson and Wilson 2003; Skara and Sussman 2003). This highlights the need for standardisation of research methodology in drug prevention research. Such standardisation should make a comparative analysis of different programme outcomes more meaningful.

Outcome measures

Many of the studies reviewed by papers in this briefing used self-report measurement of drug use, which could have resulted in biased responses of drug use. Some studies used strategies such as biochemical validation and bogus pipeline techniques to increase the validity of self-reported use of drugs (Skara and Sussman 2003).

Furthermore, for the results to be more meaningful, enduring effects of programmes should be measured. However, it can be a challenging task to follow up participants in the long term (Canning et al. 2004).

Research element

Many studies reviewed by papers in this briefing were multi-component programmes and had more than one of intervention modality. However, the majority of these studies did not have a research element to examine the relative effectiveness of each component. This issue was also addressed in the last briefing (Canning et al. 2004 and eg Allott et al. 1999; Flay 2000). Although Cuijpers (2002a) found some evidence for the added effectiveness of combining community with school-based interventions, and life-skills training with social influence programmes, these findings may need to be treated with caution, especially the former. This is because the primary research on which the author based the study's conclusion has also been reviewed by Flay (2000), who reported methodological problems in these studies; there were separate estimates of the effectiveness of added features, and they were often small scale, reported no differential effects and/or were unable to indicate how effective the school-based programmes were.

It will be useful if future multi-component programmes have a research element that can examine the relative effectiveness of different components or interventions within a multi-component programme. However, such programmes will be difficult to implement, as they can be large and costly (Flay 2000).

'Older' young people

When students leave full-time education they may experience drastic changes in their environment, including their social network. These changes could increase

susceptibility or opportunity to start using drugs or to engage in 'binge' or 'regular' drinking. There is a lack of evidence for effective drug prevention among young people after the age of 18.

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APPENDIX 1

Search strategy

The actual search terms employed were contingent on the indexing requirements of individual databases and were therefore variants of the list below.

GENERIC TERMS

Social exclusion
Deprivation
Inequalities
Poverty
Variations
Crime / disorder
Prevention
Intervention
Alcohol
Mental health
Gender / men / women
Gender / young men / young women
Gender / male prisoners / inmates / female prisoners / inmates
SEGs
Urban / rural
Region
Prevalence

DRUG TYPE

Marijuana
Cocaine
Crack cocaine
Heroin
Methadone
Solvents
Amphetamines
Ecstasy
Ketamine
Volatile substance abuse
LSD
Magic mushrooms
GHB
Poppers
VSA
Anabolic steroids
MDMA
Class A drugs
Street drugs
Drug-related disorders
Substance-related disorders

POPULATION GROUPS

Young people
11 – 15
16 – 18
19 – 24
Under 25s
School excludes
Children of drug-using parents
Urban / rural
General

INTERVENTION TYPES/SETTINGS

Schools
Healthcare (primary, secondary, tertiary)
Community
Workplace
Family-based

Health education
Health promotion
Drug prevention
Drug education
Drug intervention

Mass media
Information-based education
Drug resistance education
Diversion approaches
Brief interventions
Peer approaches / education
Community based

TYPES OF RESEARCH

Systematic reviews of effectiveness
Systematic reviews
Reviews of effectiveness
Literature reviews
Meta-analyses
Randomised controlled trials
Controlled trials
Quasi-experimental approach/evaluation studies
Single case studies
Qualitative research (narrative, focus groups, discourse analysis etc)
Working group reports
Expert group reports

APPENDIX 2

Critical appraisal tool

Authors: _____

Title: _____

Full bibliographic details (inc ISSN/ISBN): _____

List the topic areas with which the review is concerned			
<p>Is the paper best described as a (tick as appropriate)?</p> <ul style="list-style-type: none"> • Systematic review • Meta-analysis • Synthesis • Literature review • Other review (please specify) <p>Does it address (tick as appropriate)?</p> <ul style="list-style-type: none"> • Effectiveness (interventions and treatments) • Causation • Monitoring and surveillance trends • Cost • Inequalities • Other (please specify) 			
Does the paper have a clearly focused aim or research question?	Yes	No	Unsure
Consider whether the following are discussed:			
• The population studied	Yes	No	Unsure
• The interventions given	Yes	No	Unsure
• The outcomes considered	Yes	No	Unsure
• Inequalities	Yes	No	Unsure
What measures of social difference do the authors use? (eg class, occupation, socio-economic group, gender, ethnicity, age, residence, geography, disability)			
Do the reviewers try to identify all relevant English language studies?	Yes	No	Unsure
Do the reviewers consider non-English language primary sources?	Yes	No	Unsure

Consider whether details are given for:			
• Databases searched	Yes	No	Unsure
• Years searched	Yes	No	Unsure
• References followed up	Yes	No	Unsure
• Experts consulted	Yes	No	Unsure
• Grey literature searched	Yes	No	Unsure
• Search terms specified	Yes	No	Unsure
• Inclusion criteria described	Yes	No	Unsure
• Sensitivity and specificity	Yes	No	Unsure
• What materials were excluded	Yes	No	Unsure
• Whether the data extraction was performed in a systematic way (this is repeated further down)	Yes	No	Unsure
Is the primary source used by the reviewers drawn from:			
• Peer-reviewed published materials	Yes	No	Unsure
• Non peer-reviewed published materials	Yes	No	Unsure
• Unpublished materials	Yes	No	Unsure
• Self-referential materials	Yes	No	Unsure
How are reviews rated?			
• Do the authors address the quality (rigour) of the included studies?	Yes	No	Unsure
Consider whether the following are used:			
• A rating system	Yes	No	Unsure
• More than one assessor	Yes	No	Unsure
Do the authors acknowledge theoretical issues in:			
• The materials they have reviewed?	Yes	No	Unsure
• Their own approach?	Yes	No	Unsure
Is the evidence categorised by reviewers?			
If the evidence is calibrated, ranked or categorised, what measure/scale is used?			
Have the results been combined?			
If results have been combined was it reasonable to do so? Consider the following:			
• Are the results of included studies clearly displayed?	Yes	No	Unsure
• Are the studies addressing similar research questions?	Yes	No	Unsure
• Are the studies sufficiently similar in design?	Yes	No	Unsure
• Are the results similar from study to study (test of heterogeneity)?	Yes	No	Unsure
• Are the reasons for any variation in the results discussed?	Yes	No	Unsure
Have the data been presented in a way which allows an independent assessment of the strength of the evidence to be made?	Yes	No	Unsure

Can statements made by the reviewers be tracked back to the primary sources precisely (by page number)?	Yes	No	Unsure
Are sufficient data from individual studies included to mediate between data and interpretation/conclusions?	Yes	No	Unsure
Does the paper cover all appropriate interventions and approaches for this field (within the aims of the study)?	Yes	No	Unsure
If no, what?			
Issues of bias			
Does the review make clear what steps have been taken to deal with potential bias?	Yes	No	Unsure
If yes, what are these?			
Have the authors taken care to avoid double counting of primary data?	Yes	No	Unsure
Do the authors refer to primary research studies in which they themselves have been involved?	Yes	No	Unsure
Do the authors have a vested interest in the direction of the evidence?	Yes	No	Unsure
If bias has not been overtly considered, or only partly considered, what are the potential biases which should have been acknowledged?			
To what extent does the treatment of bias in the paper affect any conclusions in it about strengths of evidence?			
What is the overall finding of the review? Consider:			
<ul style="list-style-type: none"> • How the results are expressed (numeric – relative risks, etc)? • Whether the results could be due to chance (p-values and confidence intervals)? 			
Do the authors acknowledge any weaknesses in what they have written?			

Relevance to UK population

Can the results be applied/are the results generalisable to a UK population/population group?

- | | | | |
|---|-----|----|--------|
| • Are there cultural differences from the UK? | Yes | No | Unsure |
| • Are there differences in healthcare provision with the UK? | Yes | No | Unsure |
| • Is the paper focused on a particular target group (age, sex, population sub-group etc)? | Yes | No | Unsure |

Can a judgement now be made of the review in the following four areas:

- | | | | |
|-----------------------------------|-----|----|--------|
| • The strengths of the evidence? | Yes | No | Unsure |
| • The weaknesses in the evidence? | Yes | No | Unsure |
| • The gaps in the evidence? | Yes | No | Unsure |
| • The currency in the evidence? | Yes | No | Unsure |

Recommended category 1, 2, 3, 4 or discard

Additional comments:

Reviewer:

Date:

APPENDIX 3

Publications identified by the appraisal procedure

The following list details all articles identified as relevant by the appraisal procedure (n = 30), ie judged to have potential to inform the evidence base on the effectiveness of drug prevention programmes aimed at young people. They are grouped in categories according to the strength of evidence. Category 3–5 papers did not form part of the evidence base.

Category 1

None

Category 2

Cuijpers P (2002a) Effective ingredients of school-based drug prevention programs. A systematic review. *Addictive Behaviors* 27:1009–23.

Cuijpers P (2002b) Peer-led and adult-led school drug prevention: a meta-analytic comparison. *Journal of Drug Education* 32:107–19.

Gottfredson DC, Wilson DB (2003) Characteristics of effective school-based substance abuse prevention. *Prevention Science* 4:27–38.

Hawkins E, Cummins LH, Marlatt G (2004) Preventing substance abuse in American Indian and Alaska Native youth: promising strategies for healthier communities. *Psychological Bulletin* 130:304–23.

Kumpfer KL, Alvarado R (2003) Family-strengthening approaches for the prevention of youth problem behaviors. *American Psychologist* 58:457–65.

Shepard J, Carlson JS (2003) An empirical evaluation of school-based prevention programs that involve parents. *Psychology in Schools* 40:641–56.

Skara S, Sussman S (2003) A review of 25 long-term adolescent tobacco and other drug use prevention programme evaluations. *Preventive Medicine* 37:451–74.

Category 3

Brener ND, Billy JO, Grady WR (2003) Assessment of factors affecting the validity of self-reported health-risk behavior among adolescents: evidence from the scientific literature. *Journal of Adolescent Health* 33:436–57.

De La Rosa MR, White MS (2001) A review of the role of social support systems in the drug use behavior of Hispanics. *Journal of Psychoactive Drugs* 33:233–40.

Dusenbury L, Brannigan R, Falco M et al. (2003) A review of research on fidelity of implementation: implications for drug abuse prevention in school settings. *Health Education Research* 18:237–56.

Evans-Whipp T, Beyers JM, Lloyd S et al. (2004) A review of school drug policies and their impact on youth substance use. *Health Promotion International* 19:227–34.

Harachi TW, Catalano RF, Choi Y (2001) Etiology and prevention of substance use among Asian American youth. *Prevention Science* 2:57–65.

MacLean SJ, D'Abbs PH (2002) Petrol sniffing in Aboriginal communities: a review of interventions. *Drug and Alcohol Reviews* 21:65–72.

McBride N (2003) A systematic review of school drug education. *Health Education Research* 18:729–42.

Montoya ID, Atkinson J, McFaden WC (2003) Best characteristics of adolescent gateway drug prevention programmes. *Journal of Addictions Nursing* 14:75–83.

Mowbray CT, Oyserman D (2003) Substance abuse in children of parents with mental illness: risks, resiliency, and best prevention practices. *Journal of Primary Prevention* 23:451–82.

Nkowane AM, Saxena S (2004) Opportunities for an improved role for nurses in psychoactive substance user: review of the literature. *International Journal of Nursing Practice* 10:102–10.

Skiba D, Monroe J, Wodarski JS (2004) Adolescent substance use: reviewing the effectiveness of prevention strategies. *Social Work* 49:343–53.

Strand PS (2002) Treating antisocial behavior: a context for substance abuse prevention. *Clinical Psychology Review* 22:707–28.

Tait RJ, Hulse GK (2003) A systematic review of the effectiveness of brief interventions with substance using adolescents by type of drug. *Drug and Alcohol Review* 22:337–46.

Webster-Stratton C, Taylor T (2001) Nipping early risk factors in the bud: Preventing substance abuse, delinquency, and violence in adolescence through interventions targeted at young children (0-8 years). *Prevention Science* 2:165–92.

Category 4

Allen D (2002) Research involving vulnerable young people: a discussion of ethical and methodological concerns. *Drugs: Education, Prevention and Policy* 9:275–83.

Banwell C, Denton B, Bammer G (2002) Programmes for the children of illicit drug-using parents: issues and dilemmas. *Drug and Alcohol Review* 21:381–6.

Hallfors D, Van Dorn RA (2002) Strengthening the role of two key institutions in the prevention of adolescent substance abuse. *Journal of Adolescent Health* 30:17–28.

Liepman MR, Calles JL, Kizilbash L et al. (2002) Genetic and nongenetic factors influencing substance use by adolescents. *Adolescent Medicine: State of the Art Reviews* 13:375–401.

McCollister KE, French MT (2003) The relative contribution of outcome domains in the total economic benefit of addiction interventions: a review of first findings. *Addiction* 98:1647–59.

Stevenson JF, Mitchell RE (2003) Community level collaboration for substance abuse prevention. *Journal of Primary Prevention* 23:371–404.

Vakalahi HF (2001) Adolescent substance use and family-based risk and protective factors: a literature review. *Journal of Drug Education* 31:29–46.

Category 5

Dembo R, Walters W (2003) Innovative approaches to identifying and responding to the needs of high risk youth. *Substance Use and Misuse* 38:1713–8.