NHS

*Health Development Agency*

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

*Evidence briefing*

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This document is also published on the Health Development Agency website at: www.hda.nhs.uk/evidence

# Foreword

In 1999 the white paper, *Saving Lives: Our Healthier Nation*, was published. It signalled that the Health Development Agency (HDA) would be established and that it would have, as one of its roles, building the evidence base in public health with a special focus on reducing inequalities in health. In April 2001 the Department of Health published its Research and Development Strategy. The strategy identified the task for the HDA as 'maintaining an up-to-date map of the evidence base for public health and health improvement, advising on the setting of standards in the light of evidence for public health and health promotion practice, and effective and authoritative dissemination of evidence to practitioners' (Department of Health, 2001). To translate this into reality the HDA has developed a number of ways of taking a systematic approach to compiling the evidence, identifying gaps and making the evidence base accessible. The publication of this, one in a series of evidence briefings, marks a significant milestone in that activity.

This evidence briefing is a review of reviews about the effectiveness of public health interventions to prevent and/or reduce illicit drug use among young people. 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 has published other evidence briefings that deal with alcohol misuse, teenage pregnancy and parenthood, HIV prevention, the prevention of sexually transmitted infections, obesity, prevention of low birth weight, breastfeeding, accidental injuries in children and older people, the promotion of physical activity, smoking and public health, and health impact assessment.

Taken together these briefings will provide a comprehensive synthesis of the evidence drawn from systematic and other kinds of reviews. They will all be available on the HDA's website – www.hda.nhs.uk/evidence – and the electronic versions will be updated on a regular basis as new evidence becomes available.

The first editions of the 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 future editions of the evidence briefings it is planned to extend the coverage of evidence beyond reviews to other methodologies and other types of study, where these are available.

The construction of the HDA Evidence Base has 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 would like to acknowledge the following: the NHS 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 acts as the overall guide for the evidence-building project of the HDA. 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. The HDA is, however, responsible for the presentation and organisation of the material in the briefings.
We would also like to express our gratitude to the drug prevention evidence base reference group.

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.hda.nhs.uk/evidence

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Department of Health (1999). *Saving Lives: Our Healthier Nation*. London: Stationery Office.

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# Contents

# Summary

## Introduction

Since the 1970s there has been a real increase in the overall levels of illicit drug use, particularly among young people. Major national surveys of secondary schoolchildren (NatCen and NFER, 2001, 2002) suggest that among 11 to 15 year olds in England reported levels of drug use increased between 1998 and 2000 (DH, 2002). Figures for 2001 indicate that 20% of this age group had used illicit drugs in the preceding year (DH, 2002); figures for 2003 show a slight increase, with 21% of this group having used drugs in the preceding year (NatCen and NFER, 2004). It is estimated that Class A drug use costs society and the economy between £10bn and £17.4bn a year. Problem users in England and Wales are estimated to cost around £35,500 per person each year. Recreational use by young people and older people costs around £28m and £6.2m a year respectively (Godfrey et al., 2002).

The costs of drug use to society and individuals include risk of chronic illnesses, such as HIV, hepatitis C and hepatitis B, and risk of accidental injury. Among accidents involving fatalities, drugs have been found in 15 to 20% of riders and drivers (DETR, 1998, in ACMD, 2000). Costs to individuals also include the extent to which drug use exacerbates a range of problems that young people might experience. For example, drug misuse contributes to and intensifies the problems experienced by homeless young people and young people in and leaving the care system (Wincup et al., 2003; Ward et al., 2003). Drug misuse is also strongly associated with social exclusion (Stead et al., 2001).

The probability of a young person developing problems through drug use increases directly with the number of risk factors that they experience, although these links can be tenuous. Risk factors include:

- Individual biography
- Personality factors
- Familial factors
- Environmental/contextual factors
- Educational factors.

Some groups of individuals are more at risk than others. Vulnerable/at-risk groups have been identified as:

- Children whose parents misuse drugs
- Young offenders
- Looked-after children
- Young homeless
- School excludees/truants
- Sex workers.

Drug use prevention approaches tend to fall into two categories – universal and targeted:

- Universal approaches are designed to reach everyone within a particular population regardless of their risk of substance misuse
- Targeted approaches focus on high-risk sub-groups of individuals or those already engaged in problematic behaviour. In the drugs field the main (but not sole) focus for the primary prevention of drug use has been adolescents in schools.

## Methodology

The Evidence Briefing series from the HDA presents the findings of reviews of reviews on the current evidence for the effectiveness of interventions to improve health and reduce health inequalities. The following procedure was used to identify reviews to be included in the briefing:

- Systematic searching of the literature for published reviews
- Selection of relevant systematic and other reviews and meta-analyses
- Critical appraisal of the selected reviews
- Synthesis of the findings into an evidence briefing.

The Evidence Briefing series is intended to inform policy and decision makers, NHS providers, public health physicians and other public health practitioners in the widest sense. As part of its evidence into practice programme, the HDA is working with practitioners to examine effective current practice. This should lead to identification of effective techniques and recommendations for changes in practice. Other streams of the programme will use effective change management techniques that should lead to changes in the delivery of public health interventions, improved health and reduced health inequalities.

The evidence in this briefing on the prevention and/or reduction of illicit drug use among young people is derived primarily from systematic reviews, meta-analyses and literature (also known as narrative) reviews, reporting generally on intervention evaluation studies, and published since 1996. The briefing benefited from discussion and guidance from an expert reference group, and was subject to ongoing internal and external appraisal and peer review.

The reviews considered for inclusion in the briefing were undertaken primarily in the UK and US. Reviews were classified by the authors into categories 1, 2 or 3, and defined as follows:

1 Typically where the whole of the review is judged to be of high quality (ie it forms part of the core material on which evidence-based statements are made in the evidence briefing)
2 Typically where only part of the review is judged to be of high quality
3 Where the review provides background or contextual material.

In all, 21 reviews were incorporated into the main document; 15 were included as evidence (of which one was classified as category 1 and 14 as category 2), and six were included as background or contextual material. The findings are presented with reference to these categories.

A full description of the procedures and quality standards for the Evidence Briefing series may be found at www.hda.nhs.uk/evidence

## Findings

The findings presented in this summary are based on either category 1 or category 2 evidence. For further details see the main body of the report.

### *What we know*

Generally, the effectiveness of drug prevention programmes has tended to be assessed in relation to so-called 'gateway' drugs, such as alcohol, tobacco and marijuana, rather than specifically illicit drug use.

The impact of drug prevention programmes on illicit drug use has not been adequately reviewed (Black et al., 1998). However, a number of points about the effectiveness of interventions can be made, as follows:

- Evidence shows that school-based interventions aimed at adolescents can delay for a short time the start of substance misuse by non-users, and temporarily reduce use by some current users, although the effects decrease with time (White and Pitts, 1998)
- Universal prevention programmes appear to be more effective for lower-risk adolescents than those at higher risk (Windle and Windle, 1999)
- Review evidence suggests that one US life skills training (LST) programme (Botvin et al., 1990b, 1995a) demonstrated some continuing success five years after the end of the programme (White and Pitts, 1998). Although a recent external evaluation suggests that neither LST nor other primary prevention programmes are likely to have a major impact on drug use and drug problems, LST is one of the few programmes that has been extensively evaluated and for which there is research evidence of a small but positive impact on drug use (Coggans et al., 2003).

#### Delivery

- Review evidence suggests that interactive educative programmes using peers are more effective than non-interactive interventions in preventing drug misuse (Black et al., 1998).

- Information-based programmes, including project DARE (Drug Abuse Resistance Education), led by police officers have not had much effect on substance misuse behaviour (Ennett et al., 1994a, 1994b in Allott et al., 1999). For British settings see Noble, 1997; Whelan and Culver, 1997, in Allott et al., 1999.
- Teacher-led programmes in Britain fall into three groups – curricular programmes, Theatre in Health Education (THE), and resource packs:
  - Evaluation results of one curricular programme that has been delivered and evaluated in Britain, Project CHARLIE (Chemical Abuse Resolution Lies in Education), reported prevention of drug use in a small sample of young people who received the programme in primary school and who were followed up in secondary school (see Lloyd et al., 2000)
  - A qualitative assessment of THE delivered in eight British schools (Fine and Durrant, 1996, in Allott et al., 1999) suggests that the programme was more effective in changing attitudes than merely providing information, although more research is needed
  - An evaluation of the Lambeth Drug Prevention Team's Drug Studies Resource Pack concluded that the pack was extremely effective in raising awareness, although more research is necessary (Fine and Durrant, 1996, in Allott et al., 1999).
- In peer-led interventions, the child or young person delivering the programme tends to benefit most from the experience (Parkin and McKeganey, 2000).
- British parent-oriented programmes have not been adequately evaluated, although there is an indication that such programmes are poorly attended. Attendance is even lower among parents who drink and smoke more heavily, suggesting that programmes might stigmatise these parents and so discourage high-risk families from attending (Cohen and Linton, 1995, in Allott et al., 1999).

### Components of effective programmes

Effective programmes include those that modify attitudes and/or normative beliefs and/or impact on behaviour, such as preventing or reducing drug use.

- Effective programmes have tended to include booster sessions (White and Pitts, 1998).
- Intensive programmes given a large amount of curriculum time (eg 10 or more sessions) have been shown to be effective, although intensity alone does not necessarily ensure effectiveness (White and Pitts, 1998).
- The effectiveness of individual elements included in multi-component programmes have not been sufficiently assessed; evaluations tend to be limited to comparisons of the effects of the whole programme (Allott et al., 1999).

## *What we don't know*

### Interventions

- Most British interventions are not properly evaluated in terms of their outcome, making it hard to judge their effectiveness.
- There is a lack of good 'sound' evidence for targeted interventions not based in schools (White and Pitts, 1998).
- There is a lack of evaluated curricular programmes targeting primary school-age children (Lloyd et al., 2000).
- While studies show the impact of programmes on attitudes, knowledge, resistance skills and intentions of pre-adolescent children (for example, Ambtman et al., 1990; Church et al., 1990, in Lloyd et al., 2000), very few have examined impact on behaviour in the long term (Lloyd et al., 2000).

### Methodological issues

- Weaknesses in evaluations, such as low participation rates and inappropriate choice of outcome measures, mean that there is a limit to the conclusions that can be drawn from them (Allott et al., 1999). More rigorous evaluation, together with development of alternative evaluation strategies, are required.
- Because drug taking is illegal, it is often difficult to identify, recruit and retain participants.
- Many studies over-rely on self-reporting, and very few use more objective data, such as saliva or blood tests (White and Pitts, 1998).

## Recommendations

In the absence of rigorously evaluated programmes it is recommended that prevention programmes should:

- Focus on those areas indicated as being most likely to effect positive change in attitudes, normative beliefs, and behaviours that prevent and/or reduce drug use

- Include an evaluation of process and delivery and wherever possible an evaluation of impact and outcomes
- Notify details of programmes to the Drug Education and Prevention Information Service (DEPIS), which supports planners and advisers of drug education and prevention (www.doh.gov.uk/drugs/depis).

## Future work

To complement this and other evidence briefings, the HDA is currently reviewing other types of evidence of effective practice, including, for example, unpublished reports. The HDA is also embarking on a programme of work to translate 'evidence into practice'. The HDA's role in developing the evidence base for public health is to disseminate advice and guidance, and support change in practice and systems to improve the quality of public health (Kelly et al., 2004). The objectives of the HDA's Evidence into Practice programme are to:

- Bring together evidence of effectiveness drawn from syntheses of research with the practical knowledge of how such evidence might be implemented
- Bring about changes in public health practice based on evidence, theory and practical knowledge and wisdom
- Ensure the sustainability and viability of these changes
- Identify good practice and link it to the best available evidence (Kelly et al., 2004).

# Background

## Aims

The aims of this briefing are to summarise the available research evidence in relation to the prevention and/or reduction of illicit drug use among young people, particularly vulnerable young people identified as 'at risk' of problematic drug use.* Through review and appraisal of the relevant research literature, the briefing attempts to:

- Highlight what interventions have the potential to prevent and/or reduce illicit drug use, particularly among vulnerable groups, and contribute to narrowing the health inequalities associated with illicit drug use
- Identify gaps and inconsistencies in the evidence base and to provide a steer on future research commissioning.

The audience for whom this briefing is intended includes: policy makers, commissioners of research, academics and practitioners working in the field of illicit drug use.

## Focus

This evidence briefing focuses on the question, 'What works to prevent and/or reduce illicit drug use among young people?' The remit of this first edition was to map and synthesise review-level evidence using systematic reviews, meta-analyses and literature reviews. The briefing is therefore a review of reviews and while it does not constitute what is conventionally known as a systematic review, it does attempt to systematically identify, appraise and synthesise the available evidence in relation to the prevention and/or reduction of illicit drug use among young people. The choice of review-level evidence has the advantage of aggregating large amounts of primary data, which can be evaluated and summarised (Elliott et al., 2001).

The approach, however, is not without its drawbacks in that the sources from which the data are drawn 'tend to be weighted towards a relatively narrow spectrum of potential evidence – that which is mostly drawn from randomised controlled trials and/or sits easily within traditional evidence hierarchies' (Kelly et al., 2002). Consequently 'other types of methodological approaches – especially but not exclusively, qualitative work – tend to be under-represented in reviews of effectiveness' (Kelly et al., 2002). The comprehensive synthesis of the world literature presented in this briefing is, however, regarded as a first step in the process of building the evidence base. It is intended that as our programme of work on the evidence base continues, the HDA will turn its attention to other types of work that usually does not find its way into systematic reviews or meta-analyses.

Such work is drawn from other research traditions. It includes a very large amount of methodologically disparate work ranging from observational studies to qualitative work. There are, however, a number of problems in attempting to incorporate such work into a review of reviews. First, in some areas (and qualitative work is a good case in point), the thresholds to determine the acceptability of evidence are hotly contested. Second, there is no agreed method for synthesising or reviewing such work (see Dixon-Woods et al., 2004). As the procedures and methodologies for expanding the evidence base into the broader non-randomised controlled trial (RCT) landscape are yet to be developed, it is acknowledged that this does therefore limit the data pool from which we draw our material, and that our own method of judging whether the material should be included is a reflection of

* Those regarded as 'at risk' have been identified within the current *Drugs Strategy* (Home Office Drugs Strategy Directorate, 2002) and include: school excludees/truants, those leaving care, sex workers, young offenders and homeless young people.

our review procedures rather than a reflection of how good the original primary research was.

## Format of this evidence briefing

The remainder of this section describes various patterns of drug use, provides an overview of the political context in which drug use occurs and defines some of the most commonly used terms in the drugs field, such as risk, problematic and recreational use and the various concepts of prevention. It also describes the HDA's approach to building the public health evidence base. Other sections describe the methodology underpinning this evidence briefing, present the findings of the research and discuss key points. This is followed by a series of recommendations for policy, research and practice. Finally, the appendixes contain further information about risk and protective factors, and universal and targeted programmes; details of the search strategy; the Critical Appraisal Tool (CAT) that was used to appraise data; and a list of the articles identified as relevant.

## Epidemiology of illicit drug use

Since the 1970s there has been an increase in the overall levels of illicit drug use, particularly among young people. Obtaining accurate data on illicit drug use is problematic, mainly because it is a criminal offence to possess and take certain drugs. Most of the data available relies on self-reported use.* Results from the British Crime Survey (BCS) (Kershaw et al., 2000) show that the highest levels of drug use tend to be at the two extremes of the household income scale, and that the lowest prevalence is in the middle-income groups (Ramsay et al., 2001). Furthermore, there is a strong relationship between levels of drug use in inner city, urban and rural areas, with use of any illicit drug highest in inner city areas and lowest in rural areas (Aust and Condon, 2003).

* According to Bellis et al. (2003): 'There are a number of caveats to the data that should be borne in mind when looking at the prevalence of drug use per se. The British Crime Survey (BCS), Northern Ireland Crime Survey (NICS) and Scottish Crime Survey (SCS) are household surveys and therefore exclude persons resident in institutions such as prisons, the army, student halls of residence, residential drug treatment centres and the homeless. The exclusion of these groups may result in an underestimation of drug taking prevalence. Household surveys, it could be argued, are better at estimating social drug use as opposed to the use of more chaotic or stigmatised drugs, or patterns of use.'

## Drug use among young people

Major national surveys of secondary schoolchildren (NatCen and NFER, 2001, 2002) suggest that among 11 to 15 year olds in England, reported levels of drug use increased between 1998 and 2000 (DH, 2002). While figures for 2001 and 2002 indicate that 20% of this age group had used illicit drugs in the preceding year, figures for 2003 show a slight increase, with 21% of this group having used drugs in the preceding year (NatCen and NFER, 2004).

For 2003, the drugs most frequently reported among this age group included: cannabis (13%), volatile substances (8%) and a Class A drug (4%) (NatCen and NFER, 2004). However, according to the Home Office (which does not compare BCS data prior to 1996 due to changes in methodology and weighting), it was estimated in the 2002/2003 BCS that 47% of 16 to 24 year olds have used an illicit drug and 17% have used a Class A drug at least once in their lives (Condon and Smith, 2003). A key point is that Class A use in the last year among 16 to 24 year olds has remained stable since 1996. Around 8% had used a Class A drug in the last year.

The BCS indicated that while lifetime use of any drug declined between 1998 and 2000, reductions among women were not as great as for men (Ramsay et al., 2001). There have also been changes in drug use among minority ethnic groups (Ramsay et al., 2001), and there are growing concerns regarding the 'normalisation' of drug use by these groups (Sangster et al., 2002).

### *Trends in drug use*

The BCS has indicated that changes are occurring in patterns of drug use (Ramsay et al., 2001) including polydrug* use (Aujean et al., 2001). The most popular illicit drug consumed in the UK using measures from 'last year' is cannabis (13%) (DH, 2003). BCS data for 2002/03 revealed that 11% of 16 to 59 year olds have used cannabis 'in the last year' (Condon and Smith, 2003). However, research shows continued growth in the use of cocaine across all ages (Ramsay et al., 2001). According to the Home Office, changes in patterns of drug use between the 1996 and 2002/03 BCS reveal decreases in the use of amphetamines and LSD among 16-24 year

* Polydrug use: 'The use of more than one drug, often with the intention of enhancing or countering the effects of another drug.' (Aujean et al., 2001)

olds. The only drug for which use has increased between these two sweeps is cocaine (Condon and Smith, 2003).

Figures comparing 2000 with 2001/02 also indicate a decrease in the use of heroin used 'in the last year' (Aust et al., 2002), although the low prevalence of certain drugs nationally may mask localised areas of high or growing prevalence, and this is particularly the case for heroin (Parker et al., 1998a). During the last three decades volatile substance abuse (VSA) has been associated with 1,923 deaths, although the year 2000 saw the lowest rates since 1983 (Field-Smith et al., 2002). Anabolic androgenic steroids (AAS) that enhance body mass and fitness-related performance are used nationally; estimates suggest that 9% of men and 2% of women gym users in England and Scotland use AAS (Korkia and Stimson, 1993, in BMA, 2002). It is estimated that at least 30,000 and possibly as many as 60,000 regular users of anabolic steroids would be found in a city the size of London (Walker, 1994, in BMA, 2002).

### *Government's updated drugs strategy*

In 1998, the new Labour government produced its 10-year drugs strategy, *Tackling Drugs to Build a Better Britain* (UKADCU, 1998). This was updated in 2002 (Home Office Drugs Strategy Directorate, 2002). The 2002 strategy deals with four issues:

- Young people – to help young people resist drug misuse in order to achieve their full potential in society
- Communities – to protect communities from drug-related anti-social and criminal behaviour
- Treatment – to enable people with drug problems to overcome them and live healthy and crime-free lives
- Availability – to stifle the availability of illicit drugs on the streets.

### *Licit and illicit drugs*

The current drugs strategy has broadened the meaning of drugs to include alcohol and tobacco, although the available funds are largely targeted at illicit drug-related measures. Within the current drugs strategy, tobacco and alcohol and the use of prescribed drugs without medical control have been identified as having close links with illegal drug problems. Research has indicated that there is an association between licit and illicit drug use (eg HAS, 1996; Measham et al., 1993), and while both licit and illicit drug use might be considered together, particularly as there are similarities in the intervention approaches used to reduce licit and illicit drug use, there are problems with this approach. First, the behavioural epidemiology of drug use varies from drug to drug. Second, while one intervention may be effective in reducing licit drug use, it does not necessarily follow that it will be effective with illicit drugs. Third, there is very little literature that exclusively focuses on drug awareness, education and prevention in relation to polydrug use (Aujean et al., 2001). So, while there are clearly advantages to sharing the learning across the substances it has been argued that drug prevention approaches should be drug specific (Gossop, 1997; Meyrick et al., 1997).

### *Profiling individual drugs and drug users*

The view that different types of substances, licit and illicit, should be treated differently is shared by those who advocate a 'youth development approach', which argues that young people are capable of decision making on a par with adults (eg Langer and Warheit, 1992; Ajzen 1985, 1988). Advocates of the approach argue that young people are not passive victims of their social and environmental circumstances but instead are rational and active decision makers who consider the risks and benefits of substance use (Brown et al., 1997). Petraitis and colleagues (1998) associate illicit substance use with a range of factors including other problematic behaviours, exposure to other users and bonds with deviant peers. A criticism of the current government policy on drugs in the UK is that it does not adequately distinguish between types of drugs, types of drug users, and diverse reasons for taking drugs (Parker et al., 1998a). Gossop (1997) suggests that one difficulty with discussing cannabis alongside drugs such as crack cocaine and heroin is that a misleading impression can be given of the relative dangers of each drug. Parker et al. (1998b) have developed this concern further and argued that:

> *'…parents, teachers and state officials, by too often arguing that all illicit drugs are bad and dangerous, have failed to distinguish between drugs. If we imply that cannabis and heroin are both equally dangerous yet focus on cannabis we should not be surprised if young people underestimate the potency of heroin use since most hold benign attitudes towards cannabis.'*

The strategy of profiling individual drugs, however, is not without its difficulties. Research by Boys et al. (1999) has revealed that the lack of high profile media stories relating to amphetamines led some respondents to

deduce that these drugs were far less dangerous than ecstasy. Research also indicates that there can be self-differentiation between one group of drug users from another and this is clearly demonstrated in the field of bodybuilding. Bloor et al. (1998) reveal how bodybuilders legitimise their drug-taking activities and will draw a distinction between steroid use and steroid abuse. Bloor and colleagues' research revealed that abuse of steroids is regarded 'in a similar light to the taking of opiates or amphetamines and provides a contrast to the ennobling and self-realising project of the dedicated, steroid-using bodybuilder' (Bloor et al., 1998).

### *The concept of normalisation and risk-taking behaviour in young people*

The concept of normalisation developed by Parker et al. (1998a) refers to the accommodation of previously 'deviant' activities into mainstream cultural activities. Parker et al. (1998a) argue that drug use is one of these deviant activities and has moved from being a small minority to a majority activity among young people. The drug use described in the normalisation thesis is largely recreational and is centred on less physically addictive drugs which can be more easily accommodated by adolescents and young adult users into their busy lives. Parker et al. (1998a) argue that young people today are involved in a more difficult, more demanding society 'in which coping with uncertainty about the future and the pay offs of everyday decisions all conspire to make [this] a vanguard generation who must grow up in a risk society'. It is argued that young people today take risk not as an expression of rebelliousness but as a tactic to achieving conventional goals. Various studies have shown that drug use is strongly associated with early drinking, smoking and sexual activity, indicating that it is part of a repertoire of 'risk-taking' behaviours in young people.

### *Dimensions of risk*

The concept of risk has a number of dimensions and, for some, riskiness is itself attractive (and indeed in certain contexts this is true in mainstream culture, eg entrepreneurship in business, participation in dangerous sports). For others, certain levels of risk can be accepted and rationalised on various grounds (eg there is no such thing as risk-free living, or long-term risks might be irrelevant as drug-taking is only a temporary phase). This process of risk rationalisation bears close relation to the notion of 'techniques of neutralisation' developed by the American sociologist Matza to explain how juvenile delinquents justified offending to themselves (Sykes and Matza, 1957). The idea of neutralisation techniques or risk rationalisations is one way perhaps of explaining how young people can go through a temporary period of drug experimentation – which may seem frighteningly inexplicable and irrational to their parents and other adults – while remaining committed to the conventional morality to which they eventually return when they 'grow out' of drugs.

Parker et al. (1998a) have argued that in the UK there needs to be a distinction made between transitory 'delinquency' and persistent long-term offending. Parker et al. (1998a) suggest that the UK has distinguished itself from other European administrations, for example Germany, by politicising drugs, crime and the state of youth. This politicising has become associated with a public discourse that promotes public fear and anxiety about crime, drugs and youth and has resulted in an inability to distinguish between transitory 'delinquency' in adolescence and persistent long-term offending.

### *Perceptions of risk*

Research carried out by the Health Education Authority (HEA) during its three year £5m drugs advertising campaign in England in the 1990s also revealed how complex the idea of risk is (Tasker et al., 1999). The research identified how different sections within audiences interpret risk messages in different ways. The British Medical Association's (BMA) guide to 'living with risk' (1990) has suggested that the amount of information available about a particular event influences people's perceptions of the likelihood of such an event occurring. The BMA suggests that if more media attention were paid to common health risks and less to unusual disasters and accidents, this might lead to a shift in public perceptions about the major causes of disease and disability.

### *Definitions of problematic/recreational drug use*

Gilman (1992) suggests that there are two very different kinds of drug use in Britain – recreational and 'problematic' (addiction). Recreational drug use refers mainly to drugs that are taken for pleasure, or for social reasons, while problematic drug use is usually associated with social exclusion and deprivation. Although the distinctions between recreational drug use and problematic drug use are regarded as essential for the development of effective targeting in this area, there are those who question the use of both terms. Parker et al. (1995) argue that the boundaries between recreational and problematic drug use are becoming blurred as a

result of the changing patterns and settings of drug use behaviour. Instead, Parker et al. (1995) prefer to think of a continuum of drug use behaviour, which involves pathways, careers and journeys rather than moving from soft or recreational drug use to hard drug use.

The issue of how drug use should be defined varies and several indices have been developed, including the International Classification of Diseases 10 (ICD10) and the Diagnostic Statistical Manual IV (DSMIV), which provide definitions of dependency. It has been argued that the importance of definitions and diagnostic criteria in the area of drug and alcohol use permits more focus on potential sub-groups and takes into account differences in aetiology, presentation and treatment (Gilvarry, 2000). In contrast, and with specific reference to abuse versus dependence, Fulkerson et al. (1999) have suggested that, 'If the appropriate goal of any intervention with substance-using adolescents is cessation of use (the only defensible treatment goal for minors), there may be no clinical utility for such a distinction.'

### *Risk factors associated with problematic drug use*

It has been predicted that roughly 10% of drug users become problem users (Parker et al., 1995). From a public health point of view it has been argued that greater attention and resources should be paid to those 'at risk' of becoming problem drug users and also those with problematic drug use in order to reduce the associated harm. The likelihood of a young person becoming at risk has been associated with a number of risk factors (see Appendix A), although these links can be tenuous. Children whose parents misuse drugs, for example, tend to be regarded as being at particular risk of drug use, as well as having their health and development compromised (ACMD, 2003). Others identified as 'at risk' within the current drugs strategy include school excludees/truants, those leaving care, sex workers, young offenders and homeless people.

### *Drug use among deprived groups*

Although drug use is found across all social groups, there is a common assumption that the more damaging forms are to be found particularly among those who are relatively disadvantaged (Aguirre-Molina and Gorman, 1996; Ramsay and Spiller, 1997; ACMD, 1998; Bauman and Phongsavan, 1999). A 1998 report by the Advisory Council on the Misuse of Drugs (ACMD) concluded that there is a direct link between drugs and deprivation, and although the report suggested that direct cause and effect cannot account for every instance of drug misuse, it argues that any attempt to explain away the relationship would be misguided. In particular, the report gives special attention to the issue of housing, which is regarded by many as the key to urban drug problems (ACMD, 1998). Pearson (1996) suggests that outbreaks of heroin and crack cocaine are associated with areas of high crime and multiple deprivation, but that drug-related problems might be more easily noticed in poorer areas than in more affluent areas. Indeed, an analysis of BCS 1998 findings by income, employment status and residential neighbourhoods suggested that of the 'very poor', 'the very rich' and a comparatively smaller group of 'rising urban professionals', the last group consistently registered the highest rates of drug use (Ramsay and Partridge, 1999).

### *A multi-agency approach to drug use prevention*

Until recently, drug misuse was treated largely in isolation from other social and environmental factors, a view taken by the previous administration's drug strategy *Tackling Drugs Together* (HMSO, 1995). The present strategy advocates a multi-agency approach to tackling drug misuse and there is a widely recognised need for public health measures to deal with the issue of illicit drugs. Several key publications have contributed to the public health debate on the issue of illicit drugs and two influential documents have been published, one by the Police Foundation (2000), the other by the Royal College of Psychiatrists and Royal College of Physicians (2000), which advocate stronger health and educational measures. Documents from both the Police Foundation (2000) and the ACMD (2002) argued for the legal reclassification of cannabis to Schedule 3/Class C, respectively (the former also suggests that cannabis should be licensed for medical purposes).

More recently, the Home Office Consultation Paper (Home Office, 2002) has attempted to identify ways for Drug Action Teams and Crime and Disorder Reduction Partnerships to work more closely together to reduce drug-related crime. It is estimated that Class A drug use costs society and the economy between £10bn and £17.4bn a year. Problem users in England and Wales are estimated to cost around £35,500 per person each year. Recreational use by young people and older people costs around £28m and £6.2m a year respectively (Godfrey et al., 2002).

## *Theoretical approaches to drug prevention*

Drug prevention approaches have encompassed a number of theoretical positions and prior to the 1980s information dissemination and affective education approaches were delivered. The information dissemination approach aimed to increase pupils' knowledge about the health aspects of drug use, while affective education approaches adopted a broader stance that focused on increasing self-understanding and awareness and enhancing personal development and self-esteem. These approaches to health promotion have tended to assume that as rational individuals, people will make sensible choices about their health if they are given sufficient information.

The expected linear causal link between knowledge, attitudes and behaviour has not, however, been established, a finding applying both to 'fear-arousing' and 'factual' approaches (Dorn and Murji, 1992). In the 1980s the social influence approach emerged, which is based on the premise that social pressures entice people to use drugs and therefore young people need to be taught drug refusal skills and normative education (ie knowledge of actual drug use by peers).

## *Definitions of prevention*

The definition of prevention and the distinction between kinds of prevention are problematic within the drugs field. In an effort to gain some consensus the European Commission of Social Sciences (1998) used the Delphi method* with a group of 20 European scholars working in the field of prevention to see what consensus exists with regard to the concept and what the goals of prevention might be. The European Commission of Social Sciences (1998) concluded that there are four areas of prevention work, which can be differentiated as below:

- Primary prevention is to prevent the onset of a substance-related problem
- Secondary prevention is to intervene if a problem is likely to occur (prevention in high-risk groups) or if a problem exists but is not yet fully manifested
- Tertiary prevention (Type A) involves dealing with problems once they are fully manifested (prevention of future harm in those addicted)
- Tertiary prevention (Type B) involves prevention of further problems recurring once they have been successfully treated (relapse prevention).

Prevention programmes are also defined by the audiences to whom they are aimed and fall into two categories: universal and targeted. Universal programmes are designed to reach all persons within a particular population regardless of their risk of substance use. Targeted programmes might be selective or indicated. Selective programmes target high-risk sub-groups of individuals, while indicated programmes target individuals in whom a particular behaviour or attribute is manifest (eg illicit drug use) (see Appendix B for the advantages and disadvantages of these programmes).

## *School-based drug prevention programmes*

In the drugs field, the adolescent school setting has been the main but not sole focus for the primary prevention of drug use in young people. This is often underpinned by an implicit assumption that younger children have no experience of drugs. Because school-based prevention focuses on primary prevention, evaluation of these approaches has been determined largely with respect to the ability of these prevention approaches to decrease relatively low levels of drug involvement (eg occasional drug use or 30-day prevalence) (Botvin, 1999a). In a critique of US drug prevention programmes, Brown and Kreft (1998) argue that nearly all programmes implemented in the US are variations on what the US General Accounting Office (GAO) refers to as 'no-use' prevention programmes. Brown and Kreft (1998) suggest that there is a concern that 'at-risk' groups can be harmed by their exposure to these traditional prevention programmes. Their concern is that many of those identified as 'at risk' are often not available to participate in these programmes due to detention, suspension and expulsion from the school environment (Brown and D'Emidio-Caston, 1995).

Brown and Kreft (1998) also remark that despite massive prevention programming efforts targeted specifically towards at-risk youths before their removal from the school environment, the programmes they received were identical to those received by youths regarded not to be at risk. The authors argue that rather than helping these youths many are harmed by current prevention

* 'The self-correcting Delphi approach involves a multi-stage iterative process of at least three rounds until a consensus is reached or until it turns evident that a consensus is not possible. The responses of the participants in every round are collected synthesised by the coordinators and presented to the group again to start a new round of the process. The majority position as well as any minority positions are fed back to the group after every round, but the source of the positions is never disclosed to the panel.' (European Commission of Social Sciences, 1998)

programmes. The result is a state of 'cognitive dissonance', indicated by tension and anger due to the conflict between the 'no-use, all drugs are harmful' messages youths receive in prevention programmes versus the multiple levels of use and effects they see outside of school (Brown et al., 1997).

## Research addressed in this briefing

The main thrust of the research addressed in this briefing concerns either primary or secondary prevention, although as the reader will discover this work identified little research on secondary prevention approaches (harm reduction and cessation) for those already using drugs. Most of the studies identified were evaluations of interventions introduced in schools targeting drugs identified as 'gateway drugs', which includes tobacco, alcohol and cannabis.

## The HDA Evidence Base

Decisions about policy and practice in the public sector are increasingly driven by consideration of the best available evidence. The process of drawing together, analysing and synthesising evidence from research is a central principle of evidence-based practice. Typically, the process of reviewing an area of practice or intervention will include the production of a systematic review of effectiveness, a meta-analysis or some other review-level synthesis and interpretation of evidence from research.

As more reviews and meta-analyses are carried out across the spectrum of public health, there is an increasing need to map the areas that they cover, assess their quality and pull together any common findings about what works in particular areas to improve health and reduce health inequalities. The task of keeping abreast of such large amounts of information is now too difficult for any one person. Systematic reviews are able to condense this large amount of information, via a structured method, into summary documents.

The Health Development Agency (HDA) has taken on the task of mapping and synthesising the best available review-level evidence for the effectiveness of interventions to improve health and reduce health inequalities across priority areas of public health. This evidence briefing is part of the first set of publications from the project. Mapping and synthesis of review-level data will enable practitioners and policy makers to view the aggregate strength of the evidence in key areas, see clearly where review-level evidence is lacking, and inform the development and commissioning of future research and reviews.

Evidence briefings are essentially reviews of reviews, analysing the strengths and weaknesses at this level in a topics evidence base, identifying gaps in the evidence, analysing future primary and secondary research needs, and discussing the implications of findings for policy and practice. Each briefing has a free-standing summary that is published separately. The briefings are also published on, and supported by the HDA Evidence Base website (www.hda.nhs.uk/evidence). The website contains the latest edition of this briefing and the authors recommend that readers refer to the website to ensure they have the latest version. Access to the original reviews on which these briefings are based can also be found on the HDA Evidence Base website, when they are available. Evidence briefings are designed to be accessed by a variety of users including those simply looking for headline findings, those wanting complete and detailed syntheses, and those who need to track back to the original primary and secondary sources.

Providing comprehensive, up-to-date syntheses of the literature available in reviews is the chosen first step in a process of building the public health evidence base. As our programme of work continues, we will turn our attention to bringing into our evidence briefings work that does not usually find its way into systematic reviews.

Presently a three-tier structure underpins the HDA's work to develop the public health evidence base:

- A Public Health Evidence Steering Group (PHESG) with membership drawn from universities, public health and research and development divisions of the Department of Health, other government departments, public health practitioners, representatives of research funding bodies, the NHS Centre for Reviews and Dissemination, Cochrane and Campbell collaborations, the EPPI-Centre, and other UK and WHO representatives. The group is currently chaired by Professor Jim McEwen, emeritus professor of public health at the University of Glasgow, on behalf of the Chief Medical Officer for England. This overarching group advises on the broad strategic direction of the

evidence base and has a remit to quality assure the processes developed by the HDA to construct the evidence base

- For each topic area covered (eg accidental injuries and low birth weight), there is a reference group. These report to the PHESG and consist of key academics, practitioners and officials with expertise in the area. Reference groups control the content of the evidence base and guide the production of evidence briefings
- Finally, the HDA is working to establish a robust evaluation framework for the entire HDA Evidence Base project. This will include the formation of user panels, to guide and inform our priorities and work.

The next stage in the process is the development of practice advice, derived from the findings of the evidence briefings. This briefing does not contain advice or guidance for practice. Following the publication of this briefing, a similar process of mapping and synthesis, informed and reviewed by practitioner and research experts, will take place, leading to the production of practice-based advice and publications. Translating evidence into practice requires gathering evidence from all sources and combining it with political and social information, mindful of resource constraints, to develop learning that is passed on to practitioners. The HDA has piloted this process of evidence into practice in two topic areas (physical activity and the prevention of accidental injuries) (Kelly et al., 2004).

# Methodology

## Introduction

This briefing summarises the available research evidence relating to the prevention and/or reduction of illicit drug use among young people. This first edition has collated and synthesised review-level evidence from systematic reviews, meta-analyses and other types of reviews.

### *Systematic reviews*

Systematic reviews are based on the prior publication of primary studies. Conventionally, systematic reviews have focused on primary studies that have adopted the randomised controlled trial (RCT) method. Despite limitations (Egger et al., 2001), the RCT is a powerful tool in certain circumstances, especially if the objective of the research is to determine the effectiveness of an intervention. The systematic review of RCTs grew out of a tradition heralded by the original work of Cochrane (1972). He argued for ways of ensuring that the best treatments and interventions were made as widely available as possible, to eliminate worthless and harmful interventions, and to provide a means of public accountability. However, as Klassen et al. (1998) argue, not all systematic reviews and meta-analyses are conducted and reported appropriately and could therefore be potentially harmful.

A systematic review has been defined as 'one in which there is a comprehensive search for relevant studies on a specific topic, and those identified are then appraised and synthesised according to a predetermined and explicit method' (Cook et al., 1995, in Klassen et al., 1998). Klassen et al. (1998) suggest that the systematic approach provides the reader with a unique advantage over any other type of review: 'the ability to replicate it'. As a systematic review is regarded as a scientific process, the methods must be described in sufficient detail to enable a reader to replicate the study and get identical results (Klassen et al., 1998). One difficulty with systematic review evidence, however, is that it is almost always out of date compared to primary evidence.

Although systematic reviews can provide the best available information about the effectiveness of a particular type of intervention, many of the public health topic areas with which the HDA is concerned do not lend themselves very neatly or easily to the methods of RCTs. These types of interventions tend to be highly complex and much more difficult to operationalise than many clinical interventions. Future editions of this briefing will, therefore, incorporate other types of evidence and data.

### *Meta-analyses*

A meta-analysis has been defined as 'the statistical combination of at least two studies to produce a single estimate of the effect of the healthcare intervention under consideration, [however] the simple act of statistically combining studies does not guarantee a valid or reliable answer to a question [and] recent evidence indicates that many meta-analyses are not conducted rigorously' (Jadad and McQuay, 1995; Assendelft et al., 1995, in Klassen et al., 1998). Moher et al. (1998) argue that 'just because an article is described as a systematic review or meta-analysis, it has not necessarily been conducted and reported well'.

### *Other types of review*

In this briefing, where a systematic review and meta-analysis was not available for a particular topic area, other types of review evidence, such as narrative reviews, were included. Traditionally, when conducting a narrative review of literature, 'experts' have used informal and subjective methods to collect and interpret information (Klassen et al., 1998). Two problems have been identified with this approach: first, there was no detailed description provided by the reviewers of the review process that led to the review and its scrutinisation and approach, and

second, because of this lack of information, readers are unable to replicate and verify the results and conclusions of the reviews. 'The difficulties in verifying and replicating narrative reviews have been highlighted repeatedly in the past 10 years' (Murlow, 1987; Silagy, 1993; Hillier and Jadad, 1996, in Klassen et al., 1998). Although there are no agreed and rigorous criteria for appraising and synthesising these non-systematic types of review, they have been included in this briefing as they were felt to add breadth and depth to the topic area. It could be argued that including these other types of review has compromised methodological purity, but this ignores the real state of affairs within drug prevention research in which other methodological approaches, which do not adhere to the methods of the RCT, are regularly applied. In this review we have tried to balance methodological rigour with breadth of approach.

### *Categorising and assessing the quality of systematic reviews and meta-analyses*

One limitation of a systematic review is the difficulty of identifying all potentially relevant studies, and a comprehensive search strategy should be adopted to locate relevant studies (Klassen et al., 1998). Jadad et al. (1998) suggest that a systematic review should report having used at least three search sources, provide a description of efforts for identifying unpublished trials and include a discussion of the search's limitations.

The second criterion used to judge the quality of a systematic review/meta-analysis focuses on the assessment of trial quality. Jadad et al. (1998) suggest that this should involve 'the definition of quality, the tool used to generate the assessments, and the circumstances in which the assessments are generated'. Jadad et al. (1998) note that quality can mean different things to different people and that reviewers can decide to assess the quality of trials focusing on any methodological aspect, from the design to the reporting. Variability in the quality of studies included in systematic reviews can lead to confusing results and therefore clear and concise selection criteria are important for minimising bias and errors.

The third criterion for assessing the quality of a systematic review/meta-analysis focuses on data combination and whether it was appropriate to do so. In particular, reviews should be judged according to whether they had assessed included trials for their heterogeneity. Moher et al. (1998) remark that while statistically combining data across studies is often perceived as an important part of a significant review, caution should be applied as 'a well-reported, systematic qualitative review is much better than an inappropriately conducted and reported quantitative review or meta-analysis'.

### *Categorising and assessing other types of review*

Papers identified as other types of review were assessed according to the minimum criteria of relevance to the prevention and/or reduction of illicit drug use among young people, and whether the dimensions of population, intervention and outcome were reported.

## Search strategy

The literature search focused on a number of drug-related topics and terms in relation to the prevention and/or reduction of illicit drug use. It also included several terms relating to inequalities and deprivation. The search terms were devised in consultation with DrugScope, a key drug agency, and also with members of a reference group established by the HDA (see Acknowledgements). The search did not include treatment regimens (eg methadone treatment) in relation to established continuing illicit drug users. Search terms are listed in Appendix C.

The search strategy covered generic terms, drug types, population groups, intervention settings and types of research. Generic terms included issues pertinent to current public health policy in England and Wales (eg inequalities, deprivation, vulnerable groups) and also other factors which might be associated with drug use behaviour (eg crime, mental health, alcohol), and locality (eg urban/rural). To maximise the retrieval rate, the search strategies combined Medical Subject Headings (MeSH terms) with textual words. In practice, the search terms varied according to the indexing requirements of the individual databases.

## Databases

A number of electronic databases accessible to the HDA were searched to retrieve the maximum number of eligible reviews. Searches of other electronic databases specific to the drug education and prevention field will be carried out and included in subsequent editions of this briefing. Given that searching the literature can be a time-consuming task, a decision was made to include English-language reviews only and to restrict the search period initially from

1996 to 2001, although future editions of this briefing will expand on this period. The HDA acknowledges that there will always be a problem of being complete and up to date, a problem common to all review methodologies.

Databases were searched in December 2001 and abstracts identified as follows:

| | |
|---|---|
| CINAHL | 65 |
| Cochrane | 129 |
| DARE | 36 |
| EMBASE | 28 |
| EPPI-Centre | 376 |
| MEDLINE | 274 |
| PsycINFO | 60 |
| **Total** | **968** |

## Screening and appraisal

### Stage one

All abstract titles and available summaries were screened and evaluated by at least two reviewers to determine whether the full paper should be retrieved. The criteria for selecting papers were:

- The paper was a review of drug prevention research
- The paper dealt with issues relating to the effectiveness of drug prevention research
- The paper identified current topics/issues relating to drug prevention research.

Where there was disagreement between reviewers regarding the relevance of an abstract, or it was unclear from the abstract whether it should be included, the full paper was retrieved for more detailed evaluation. From the total of 968 abstracts, 134 papers were selected as having potential to inform the evidence base on what works to prevent and/or reduce illicit drug use (Table 1).

Of the 134 papers identified, 92 were received by the end of February 2002, which was the cut-off point for retrieving papers for this edition. Papers that arrived after this date will be evaluated and incorporated into the second edition of this briefing (a list of these papers is available on request).

### Stage two

Three reviewers independently determined whether the 92 papers were suitable for inclusion in the evidence base using a Critical Appraisal Tool (CAT) (see Appendix D).

Inclusion criteria:

- Is the paper relevant to the evidence base on the prevention and/or reduction of illicit drug use?
- Does the paper discuss and evaluate more than one intervention study designed to prevent and/or reduce illicit drug use?

Exclusion criteria:

- Treatment regimens
- Harm reduction in established continuing users
- General discussion papers that did not identify specific interventions.

### Stage three

The three reviewers compared decisions on the suitability of the 92 papers. Where there was a lack of concordance, a decision was reached by discussion which took a step-by-step approach to the points of disagreement. This process resulted in the selection of 20 papers.

### Stage four

Using the CAT (see Appendix D), the three reviewers categorised the 20 selected papers as follows:

1 To be included as data where the whole of the review is judged to be of high quality (ie it forms part of the core material on which evidence-based statements are made in the evidence briefing)
2 To be included as data where only part of the review is judged to be of high quality
3 To be included in the evidence briefing as background or contextual material.

With the aid of the CAT, the three reviewers assessed each systematic review or meta-analysis according to three criteria outlined by Klassen et al. (1998), Jadad et al. (1998) and Moher et al. (1998), as follows: the comprehensiveness of the search strategy, the quality of the study, and the appropriateness of data combination. To judge a review's search strategy, the reviewers examined:

1 The number of databases each review had searched
2 The period covered by the search
3 Whether references were followed up
4 Whether experts in the field had been consulted
5 Whether any attempt had been made to locate grey literature.

With regard to the quality of a review the focus was on methodological quality, particularly internal validity, which Jadad et al. (1998) have defined as 'the confidence that the trial design, conduct analysis, and presentation have minimised or avoided biased comparisons of the interventions under evaluation'. The quality of reviews was also assessed according to whether a tool for assessing trial quality had been used and whether the number of individuals who generated the assessments was noted.

Finally, when looking at data combination, reviews were judged particularly according to whether they had assessed included trials for heterogeneity.

As Table 1 shows, of the 92 papers retrieved by the cut-off date, 14 were judged suitable for inclusion into the evidence base and were assigned to categories 1 or 2, with the remaining six papers assigned to category 3.

During the writing up period a review critically appraising a widely noted drug prevention programme, Life Skills Training (LST), was brought to the attention of the research team. As this potentially had very important implications for the findings of this evidence briefing, it was subjected to the critical appraisal procedure outlined above and incorporated into this briefing. The total review papers therefore increased from 20 to 21.

**Table 1: Results of the appraisal procedure**

| | | | Number |
|---|---|---|---|
| Number of papers ordered from abstract lists | | | 134 |
| | | **Total** | **134** |
| Of the 134: | Papers received by cut-off date | | 92 |
| | Papers not received by cut-off date | | 42 |
| | | **Total** | **134** |
| Of the 92 received: | Paper out of date | | 1 |
| | Not selected for evidence briefing | | 71 |
| | Selected as relevant for evidence briefing | | 20 |
| | | **Total** | **92** |
| Of the 20 initially selected for inclusion into the evidence base: | | | |
| | Systematic review | | 1 |
| | Meta-analysis | | 1 |
| | Other types of review | | 12 |
| Background papers used in introduction | | | 6 |
| | | **Sub-total** | **20** |
| Additional paper for inclusion into the evidence base: | | | |
| | Other type of review | | 1 |
| | | **Total** | **21** |

# Results

## Reviews identified

Of the 21 review papers that were critically appraised by the three reviewers, 15 were included in the evidence base. These were deemed of appropriate quality to derive evidence statements and recommendations (see Methodology). Of these 15, one was classified as category 1 and 14 as category 2, and six were included as background or contextual material (see Table 1). One of the 15 papers was a systematic review (White and Pitts, 1998), one was a meta-analysis (Black et al., 1998) and the remaining 13 articles were other types of review (see Table 1).

The quality of the systematic review and meta-analysis was judged according to the criteria outlined earlier in Section 2. The other types of review were judged according to the minimum criteria of relevance, as we attempted to balance methodological rigour with breadth of approach.

The list below (in alphabetical order) details the reviews that met the inclusion criteria for selection into the evidence base (n = 15, see Table 1). A full list of all the articles identified as relevant from the appraisal procedure, including those used for introduction/background material (n = 21, see Table 1), appears in Appendix E.

### Articles included in the evidence base


Allott, R., Paxton, R. and Leonard, R. (1999). Drug education: a review of British Government policy and evidence of effectiveness. *Health Education Research Theory and Practice* 14 (4): 491-505.

Belcher, H. M. and Shinitzky, H. E. (1998). Substance abuse in children. *Archives of Pediatrics and Adolescent Medicine* 152 (October): 952-60.

Black, D. R., Tobler, N. S. and Sciacca, J. P. (1998). Peer helping/involvement: an efficacious way to meet the challenge of reducing alcohol, tobacco and other drug use among youth? *Journal of School Health* 68 (3): 87-93.

Botvin, G. J. (1999a). Adolescent drug abuse prevention: Current findings and future directions. In: Glantz, M. D. and Hartel, C. R. (eds) *Drug abuse: Origins and interventions*. Washington DC: American Psychological Association.

Botvin, G. J. (1999b). Prevention in schools. In: Ammerman, R. T. and Ott, P. (eds) *Prevention and societal impact of drug and alcohol abuse*. Mahwah, NJ: Lawrence Erlbaum Association.

Botvin, G. J. (2000). Preventing drug abuse in schools: social and competence enhancement approaches targeting individual-level etiologic factors. *Addictive Behaviors* 25 (6): 887-97.

Coggans, N., Cheyne, B. and McKellar, S. (2003). *The Life Skills Training Drug Education Programme: a review of research*. Scottish Executive Effective Interventions Unit, Scottish Executive Drug Misuse Research Programme. Scotland: University of Strathclyde.

Dusenbury, L., Falco, M. and Lake, A. (1997). A review of the evaluation of 47 drug abuse prevention curricula available nationally. *Journal of School Health* 67 (4): 127-32.

Flay, B. R. (2000). Approaches to substance use prevention utilising school curriculum plus social environment change. *Addictive Behaviors* 25 (6): 861-85.

Lloyd, C., Joyce, R., Hurry, J. and Ashton, M. (2000). The effectiveness of primary school drug education. *Drugs: Education, Prevention and Policy* 7 (2): 109-26.

Mellanby, A., Rees, J. and Tripp, J. (2000). Peer-led and adult-led school health education: a critical review of available comparative research. *Health Education Research* 15 (5): 533-45.

Parkin, S. and McKeganey, N. (2000). The rise and rise of peer education approaches. *Drugs: Education, Prevention and Policy* 7: 3.

Smyth, N. J. and Saulnier, C. F. (1996). Substance abuse prevention among high-risk youth. *Journal of Prevention and Intervention in the Community* 14 (1/2): 61-79.

White, D. and Pitts, M. (1998). Educating young people about drugs: a systematic review. *Addiction* 93 (10): 1475-87.

Windle, M. and Windle, R. C. (1999). Adolescent tobacco, alcohol and drug use: current findings. *Adolescent Medicine: State of the Art Reviews* 10 (1): 153-63.

## Review findings

The data derived from the reviews included in the evidence base could be organised in a number of ways. Reviews tended to focus on setting, approach, population, age group, or a combination of these factors. The most easily identifiable core strands by which to group the data appeared to be 'setting' and 'approach', and although it is recognised that these are not necessarily mutually exclusive categories, these distinctions help to organise the data. Data are presented by these categories (see Table 2) and **appear predominantly in the authors' own words**.

**Table 2: Organisation of the data**

| SETTINGS | | | |
|---|---|---|---|
| Author/s (year) of review | Main focus of review findings | Sub-theme/s within review findings | Category of evidence (see Section 2) |
| White and Pitts (1998) | School-based interventions | Non school-based interventions | 1 |
| Belcher and Shinitzky (1998) | School-based learning | | 2 |
| Dusenbury et al. (1997) | School-based curricula | | 2 |
| Flay (2000) | School-based curricula | School environment, family, mass media, community components | 2 |
| Lloyd et al. (2000) | School-based education | | 2 |

| APPROACH/ES | | | |
|---|---|---|---|
| Author/s (year) of review | Main focus of review findings | Sub-theme/s within review findings | Category of evidence (see Section 2) |
| Allott et al. (1999) | Police officer-, teacher-, peer- and parent-led approaches | | 2 |
| Black et al. (1998) | Peer-led approaches | Teacher, clinician and other leaders | 2 |
| Botvin (1999a, 1999b, 2000) | School-based prevention approaches | | 2 |
| Coggans et al. (2003) | School-based prevention approaches | | 2 |
| Mellanby et al. (2000) | Peer-led | Adult-led | 2 |
| Parkin and McKeganey (2000) | Peer education | | 2 |
| Smyth and Saulnier (1996) | Prevention with high-risk youth | | 2 |
| Windle and Windle (1999) | Types of prevention | | 2 |

## SETTINGS

### Educating young people about drugs: a systematic review (White and Pitts, 1998)

British review

Main focus of review findings: School-based interventions

Sub-theme within review findings: Non-school-based interventions

Category 1

#### Population group and intervention type

The aim of this review is to assess the effectiveness of interventions designed to prevent and/or reduce the use of illicit substances by young people, or those directed at reducing harm caused by continuing use. There are many studies that evaluate the effectiveness of school-based preventive programmes targeting 'gateway' drugs. There have been reviews of programme effectiveness, including meta-analytical reviews. However, previous reviews with a focus on 'gateway' drugs have usually examined the effectiveness of programmes on 'drug use', combining alcohol, tobacco and marijuana use together. Programme effectiveness is then assessed on general substance use rather than establishing their impact on the use of specific substances. The effectiveness of these programmes on illicit substance use has not been adequately reviewed and so a purpose of this review was to focus specifically on illicit substance use. Evaluations of interventions were included if their target audience included young people aged between eight and 25 years.

#### School-based evaluations

- Fifty-five school-based evaluations were included in the White and Pitts (1998) systematic review but only 18 of these met the criteria for methodologically 'sound' studies. Ten of these showed some impact on drug-using behaviour.
- These methodologically sound studies were explored further and two meta-analyses were conducted: one considering interventions whose evaluations had extended up to one year beyond the delivery programme and another analysis of longer-term evaluations of two years or more.

#### Results from the meta-analyses

The results outlined below are taken from the two meta-analyses. The studies included within the meta-analyses were fairly consistent in showing that modern drugs education messages are rarely counter-productive.

#### Follow-up periods

- Both meta-analyses of the one and two year follow-up periods showed that the effects of interventions on illicit substance use were small and that the effects declined with time, with weighted mean effect sizes of 0.037 and 0.018, respectively, for the shorter and longer duration.
- Of 11 evaluations carried out to one year, 10 showed that the direction of effect favoured drugs education. Their impact was small but they were associated with a decrease in substance use.
- Evaluations beyond one year also pointed to the benefits of health interventions with eight of the 10 interventions showing small but positive effects and two showing marginal and insignificant counter effects.
- Over half of the evaluations of longer-term programme effectiveness showed some statistically significant impact on drug-using behaviour extending beyond the end of the programme.

#### Features of effective programmes

- Most commonly, both the effective and ineffective interventions incorporated a number of elements which aimed to:
  - Increase knowledge of the effects of different substances and of the potential harm associated with them
  - Change beliefs about the prevalence of drug use
  - Provide the skills to resist pressures to use drugs
  - Provide peer support and modelling, enhancement of self-esteem, and alternative strategies for gaining peer approval and personal reinforcement, and improved attitudes to abstinence.
- The effective interventions were a mix of focused and generic training. Both broadly based and more specifically focused interventions can have an effect.
- Of the 10 effective, soundly evaluated programmes, eight included booster sessions, or had additional

elements that served a similar purpose (eg a community or mass media component).
- A further feature of the majority of the effective programmes was that the programme was intense with a large amount of curriculum time devoted to the programme. Eight of the effective, soundly evaluated programmes had 10 or more sessions devoted to the delivery of the programme.
- Intensity does not, however, guarantee effectiveness since six of the soundly evaluated programmes were intense but ineffective.

### Effective programmes identified

The methodologically sound, effective programmes identified by White and Pitts (1998) were:

- Two separate evaluations of Botvin's generic Life Skills Training programme which demonstrated some continuing success five years after the end of the programme (Botvin et al., 1990b, 1995a)
- Two separate evaluations of the generic Midwestern Prevention Program with two and three year follow-ups (Johnson et al., 1990; Pentz et al., 1989a).
- 'Generic' Here's Looking at You 2000 programme when supported by community action with a three-year follow-up (Stevens et al., 1996; Horan and Williams, 1982).
- An assertiveness training programme reporting programme gains after 3-5 years (Horan and Williams, 1982).

Programmes which have had some success over a shorter evaluation period were:

- Generic Project ALERT, effective for up to a year, with later evaluations showing early gains dissipated rapidly (Ellickson et al., 1993)
- Refusal skills training (Schinke et al., 1988; Shope et al., 1996)
- One programme offering training in culturally sensitive skills, effective when supplemented with home-based activities (Hansen and Graham, 1991)
- A normative education programme (Hansen and Graham, 1991).

### Sub-themes within review findings

White and Pitts (1998) also included data on the sub-theme of non school-based interventions through targeted approaches.

Seven programmes designed for delivery in non-school settings met the inclusion criteria. Two studies showed evidence of effectiveness (Sarvela and Ford, 1993; Hawkins et al., 1989), as did one study relying entirely on self-reporting of drug use (O'Neill et al., 1996).

- A relapse prevention intervention directed at problem drug users' use of marijuana, cocaine, amphetamines and opiates showed initial benefits but these dissipated over the course of a year (Hawkins et al., 1989).
- An intervention aimed at young, black, pregnant women claimed a high degree of effectiveness in reducing marijuana use and is of interest as the only self-paced programme encountered; women worked through packages including activity based work at their own rate (Sarvela and Ford, 1993).
- An intervention directed towards pregnant injecting drug users was effective in reducing self-reported sharing of injecting equipment at nine-month follow-up but had no impact on opiate use, use of other drugs or frequency of injecting (O'Neill et al., 1996).
- A few schools and college-based 'gateway' drug programmes were designed specifically to meet the needs of a selected target group. One programme designed to be culturally relevant for native Americans showed promise (Schinke et al., 1988).
- Several targeted evaluations considered if programmes were differentially effective for males and females, and from these it appeared that programmes were more successfully targeted at girls (Botvin et al., 1990b; Graham et al., 1990; O'Donnell et al., 1995; Moskowitz et al., 1984; DeJong, 1987; Rickert et al., 1993; Schaps et al., 1986). However, the programme benefits applied only to knowledge, attitudes and skills rather than to drug use.
- When examining the effectiveness of interventions in influencing the subsequent behaviour of young people, non-users showed more programme gains than users in the short term (Bell et al., 1993).
- Evaluation of an intervention aimed at young people at different levels of risk behaviour demonstrated that the programme was equally effective for all groups (Johnson et al., 1990).

### Gaps and inconsistencies identified in this review

- A disproportionate number of British studies were excluded, 22 of 24 studies where data were extracted.
- In contrast, the inclusion rate was over 60% for studies from the US. The 24 British studies represented a very

small proportion of British intervention attempts. However, the majority of British programmes received only a process evaluation; their outcomes were not evaluated.
- The difference between countries reflects in part the focus in Britain on targeting hard-to-reach groups who cannot be tracked readily over a number of years.
- Sixty-two evaluations were included in this review; 18 produced evidence of programme effectiveness on drug-using behaviour, but in only two cases was hard evidence (eg saliva or blood tests) produced to demonstrate an impact on drug use. In the other 16 evaluations evidence of effectiveness was based on self-report alone. The over-reliance on self-reports is a methodological weakness in this area.
- Interventions directed at school-age children in the US, targeting primarily marijuana use, have been evaluated more thoroughly than other interventions. However, even here there are insufficient data to allow clear conclusions to be drawn.
- The meta-analyses of the methodologically sound evaluation of programmes pointed to the small effect size of the gains attributable to these programmes, but also to the consistency of the findings. Whether or not they achieved statistically significant changes, the large majority of these programmes had the same direction of effect favouring the educational programmes.
- The available evidence suggests that the best that can be achieved using currently evaluated school-based intervention strategies is a short-term delay in the onset of substance use by non-users and a short-term reduction in the amount of use by some current users.
- Long-term follow-ups of intervention programmes are required which track individuals from the age of 11 through to, and including, early adulthood to determine whether a small delay in age of onset of substance use translates into either a further delay in regular use of substances, or the non-progression to regular substance use.
- It may be that the observed effect sizes underestimate the gains that can be made from programmes. Most evaluations did not check that the programme had been delivered with fidelity. Further, the impact of programmes was typically evaluated on participants who had received 60% or more of the intended curriculum. There is a need for the development of programmes that are individually paced to ensure that all participants receive the programme in full.
- In the programmes where boosters were included the timing of the intervention, and the intensity and phasing of the programme, influenced the findings. Further research is required to determine the possible effects of booster sessions.
- The majority of interventions combined a number of different elements but rarely scrutinised the effectiveness of component elements; instead, the total programme was compared with a no-treatment control group. Recent attempts to identify the critical elements in programmes focus on assumed mediating constructs and examine how they relate to changes in drug use.
- Too few interventions were designed to target the specific needs of young people at differing stages in their drug-using careers and drawn from differing social and cultural backgrounds. Interventions rarely consider the varying contexts in which drug use (and drug use resistance) occur and allow this information to inform the design of the programme.
- What is less clear are the characteristics of continuing users who are not in contact with drug services, and the characteristics and motivations of recreational drug users and how they are different from those who have experimented with drugs and ceased their use, and those who have never experimented at all.
- Interventions need to be tailored to individuals' stage of habit acquisition and to the particular drugs that they are exposed to or to which they may become exposed. In formulating strategies for targeted interventions it is necessary to contextualise any preventive effort to focus on where, when and why drugs are being used and what meaning drug use has for users at different stages of their drug-using histories.
- Compared to school-based interventions, the seven non-school interventions included in this review had a shorter duration of intervention and lacked long-term follow-up, and so were methodologically weaker than school interventions.

## Substance abuse in children (Belcher and Shinitzky, 1998)

US review

Main focus of review findings: School-based learning

Category 2

### Population group and intervention type

The paper's aim is to review the latest studies on risk and protective factors for the development of substance abuse and the effectiveness of prevention interventions for the paediatric population. Study populations included children from birth through to adolescence who were enrolled in controlled, prospective and/or longitudinal studies.

### Review findings

- Research on the effectiveness of prevention curricula have generally focused on universal programmes that target children in junior high and high school.
- Efficacy of pre-school prevention curricula is largely undocumented in controlled randomised outcome studies.
- Curricula that target elementary school students have not been studied with the same fervour as curricula designed for adolescents.
- Although much is known about the risk factors that lead to initiation of drug abuse, early intervention strategies targeting pre-school and elementary school students are under-represented in research literature.
- Further studies are necessary to develop alcohol and drug prevention programmes that will have sustained effects across the age continuum.

## A review of the evaluation of 47 drug abuse prevention curricula available nationally (Dusenbury et al., 1997)

US review

Main focus of review findings: School-based curricula

Category 2

### Population group and intervention type

Drug prevention efforts during the past two decades relied largely on classroom curricula, usually designed for elementary and middle schoolchildren. A growing consensus in the drug abuse prevention field suggests certain types of school-based programmes can effectively reduce drug use in adolescence. Unfortunately, while research has shown that certain prevention curricula are effective, it has been suggested that most of the money (in the US) is not spent on curricula proven to work, but on aggressively marketed programmes that have not been evaluated, or worse, have been shown not to work. The goal of this review was to determine effectiveness of curricula in reducing substance use behaviour. Curricula meeting four criteria were included:

- Focused on primary prevention of alcohol and/or drug use and not simply on tobacco use
- Classroom-based curricula up to and including 12th grade
- Nationally and currently available
- Programme distributors willing to provide samples of curriculum materials to determine drug abuse prevention.

### Review findings

- Of 47 drug abuse prevention curricula identified, 10 (21%) were found to have been subjected to sufficiently rigorous evaluations, although the evaluations which met the inclusion criteria were of variable quality.
- Evaluations suggest that substance abuse prevention curricula can effectively reduce substance use.
- At least eight programmes have been effective at reducing tobacco or drug use in at least some studies.

- One programme (Life Skills Training) has been shown to have effects into young adulthood and included measures of tobacco, alcohol and marijuana use.
- Six of the 10 curricula (Alcohol Misuse Prevention Project, Growing Healthy, Know Your Body, Life Skills Training, Project Northland, and STAR) have been shown to have effects lasting for at least two years after the pre-test.
- Two curricula (Social Competence Promotion Program and Teenage Health Teaching Modules) have not been evaluated beyond post-test, so it is impossible to know whether their effectiveness will last.
- Two programmes (Project Alert and DARE) did not appear to have sustained effects on drug use, though they had variable success at reducing substance use early on.

### Gaps identified in this review

- Research has not yet determined exactly how many sessions constitute adequate coverage.
- It has not yet been determined how many years of intervention constitute adequate follow-up.

### Inconsistencies identified in this review

- Of 47 curricula available in schools, only 10 (21%) have been evaluated in rigorous studies. Meanwhile, schools are purchasing the other 37 with no real information about their effectiveness.
- Research funding should be set aside to evaluate curricula.
- Guidelines should be established to provide minimum acceptable standards for evaluation.
- Evaluation standards might also set a minimum follow-up period such as one or two years.
- Adequate sample sizes need to be determined.
- Standardised measures of substance use behaviour might be determined and should include alcohol use, marijuana use and other drug use in addition to tobacco use.
- Presentation of data should be standardised to include both percent reductions and effect sizes.
- Issues of assignment need to be addressed, ie should the whole school be assigned to condition (study) rather than classes to avoid contamination.

## Approaches to substance use prevention utilising school curriculum plus social environment change (Flay, 2000)

US review

Main focus of review findings:
School-based curricula

Sub-theme within review findings:
School environment, family, mass media, and community components

Category 2

### Population group and intervention type

The purpose of this paper is to review the effectiveness of programmes that include a classroom-based curriculum (main focus of the review findings) plus intervention components involving any one or more of school-wide climate change, parent involvement or training, mass media, and/or community (sub-themes of review findings). The purpose of this review is to determine the extent to which adding any of these components to classroom-based (CB) programmes improves overall programme effectiveness in the prevention of substance use (SU).

### Review findings

- The paper reviewed all known studies that combined a school curriculum with either school-wide environmental change, parent training, mass media or community-wide programmes. While there is evidence that parent training, mass media and community-wide programmes can be effective, there is little evidence of the added effects of any of these approaches over and above the effects of the school curricula with which they are often combined. This disappointing result is largely because most study designs did not allow for separate estimates of school curricula and any added components. The few studies that would have allowed for such estimates were either too small, or found no differential effects.
- It is somewhat surprising that so few studies have been designed to separate out the effects of curricula, school-wide environmental change, parent training, mass media, or community interventions. However, such studies can be very large and expensive.

- It is also becoming more and more difficult to include pure control groups in prevention studies. However, this limitation makes it very important to compare multi-component programmes with the very best school-based programmes – of known effectiveness.
- There is little evidence to date that school-wide climate change programmes are effective, either alone or when combined with a curriculum.
- While there have been many attempts to use mass media for prevention, success has been difficult to obtain. Studies are needed that contrast curricula of known effectiveness with a mass media programme of known effectiveness and a no-treatment (or treatment as usual) control group.
- Of the community intervention studies reviewed, only one included the three conditions necessary to separate out the added effects of a community intervention. Unfortunately, it was a small-scale quasi-experiment that reported some effects of the intensive programme (school plus parent plus community) on marijuana use, but no effects of the school-only programme (Here's Looking at You 2000, a curriculum of unproven effectiveness). However, overall it does appear that the effects of community programmes may tend to be larger, occur in more domains and are more likely to be maintained than the results of school-only programmes.

### Gaps and inconsistencies identified in this review

- Most study designs did not allow for separate estimates of school curricula and any added components.
- The few studies that would have allowed for such estimates were either too small, or found no differential effects.
- The reason for so few studies may be because such studies can be very large and expensive. Given the theoretical and practical (feasibility and cost effectiveness) importance of the question, the author recommends that such studies be supported in the near future.
- It is also becoming more and more difficult to include pure control groups in prevention studies. However, this limitation makes it very important to compare multi-component programmes with the very best school-based programmes.
- Existing studies do not inform us of the differential effectiveness of school curricula-based, school-wide environmental change, parent training, mass media or community-wide interventions.
- We require such knowledge before we will be able to recommend any programmes that combine two or more of these approaches to schools or communities for substance use prevention.
- Without such knowledge we cannot assess the cost effectiveness of adding components. Until we do so, schools and communities will not be able to make informed decisions.

## The effectiveness of primary school drug education (Lloyd et al., 2000)

British review

Main focus of review findings:
School-based education

Category 2

### Population group and type of intervention

This article reviews the (mainly US) literature on the effectiveness of school-based educational interventions targeted at children below 11 years of age with the objective of preventing illicit drug use. There are very few evaluations of primary school drug education in this country and, where they have been undertaken, they have largely focused only on process or intermediate outcomes (such as changes in knowledge, attitudes or social skills). This selective review concentrates only on school-based approaches that focus in the main on children aged 10 years or younger, and in the case of research from outside the UK, on research that has focused on outcomes. Only evaluations of programmes that have included a focus on illicit drug use have been included (this includes a large number of programmes focusing only on tobacco and a few that have focused only on alcohol).

### Review findings – British studies

- The one British study that has attempted to measure the impact of primary school drug education on behaviour is the evaluation of Project CHARLIE (Chemical Abuse Resolution Lies in Education) (Hurry and Lloyd, 1997). The evaluation included a long-term follow-up of primary school pupils exposed to the programme in 1992, to assess its impact on the drug-related knowledge, attitudes and behaviour of those

aged at least 13 and a half in 1996 after they had reached secondary school. The results indicated that two out of three comparison groups were less likely to have taken illicit or illegal drugs, but this was not statistically significant. Both tobacco and illicit/illegal drug use were significantly less common among the Project CHARLIE pupils in one of the comparison groups.

- Other British studies have focused on process rather than outcomes (such as changes in knowledge, attitudes or social skills). Examples include:
  - A report on the development and piloting of a media-based information resource for children aged 9-10 years (Baker and Caraher, 1995)
  - A survey of 366 primary schools in Avon about drug education in general and their use of a particular drug education resource, *Drugs Education: a practical guide for primary school teachers*, which had been circulated to all schools (Dawson, 1997)
  - A study which examined the impact of Drug Abuse Resistance Education (DARE) on children in year 6 (aged 9-10) attending a school in Mansfield (Whelan and Moody, 1994; Wetton and McWhirter, 1998)
  - Peer drug education involving primary school pupils where the education took the form of a play performed by year 10 and 11 secondary school pupils to an audience of year 6 pupils (Leigh, 1997)
  - An assessment of the needs of the teachers, pupils and parents of 18 middle schools in Northumberland which was used as the basis for a new drug education programme aimed at the schools' 1,428 year 5 pupils (aged 9-10) (Paxton et al., 1988)
  - A few reports in the UK into the use of same-age or slightly older pupils to deliver drug education, mostly amounting to informal process evaluations.

### Review findings – research elsewhere

- Surprisingly few American studies have been undertaken which have focused on drug prevention with primary school-age children. DARE is usually delivered in the penultimate or final year of elementary school (ie children aged 10-12). It would appear that the programme can have a short-term impact on drug-related attitudes and, possibly, a short-term impact on alcohol and tobacco use. Such influences on 'soft' drug use seem to disappear in the long term, but one study has shown an impact on 'hard' drug use by males six years after programme delivery (Dukes et al., 1995, 1996, 1997).
- Life Education Centres (LECs) are mobile drug education units, delivering on-site drug education to pupils at primary and secondary schools (children aged between three and 15 years old). The LEC project started life in a chapel in Australia in 1979. While in Australia the original LECs seem to have focused on alcohol, tobacco and analgesic use (Hawthorne et al., 1995); in this country, LECs target both legal and illegal drugs. As with DARE, the evaluation of LECs has proved a highly sensitive and contentious process. However, unlike DARE, the published evaluations have not been of a very high standard. A number of studies have examined outcomes more directly, but each of these studies has had serious methodological flaws (Quine et al., 1992; Stephenson et al., 1988; Tudor-Smith et al., 1995). The safest conclusion that can be drawn from these evaluations is that, while LECs appear to be popular with children and teachers, the question of their impact on behaviour is an open one.

### Other approaches

While a number of studies have shown an impact of drug education on attitudes, knowledge, resistance skills and intentions of pre-adolescent children (Ambtman et al., 1990; Church et al., 1990; Corbin et al., 1993; Jones et al., 1995; Wiener et al., 1993), very few have adopted a sufficiently long-term design to examine the impact of such programmes on behaviour. Four such studies are briefly described below.

- The Illawarra Drug Education Programme, in New South Wales, Australia. This involves teaching, group work, peer education and parents. The programme focuses on alcohol, tobacco and illicit/illegal drugs and is targeted at the last year of Australian primary school, year 6 (10-11 year olds). It begins with a parents' evening at the school during which the programme is introduced to the parents. Four follow-up surveys evaluating this programme found that four and a half years after exposure to the project, significantly lower proportions of the programme group had ever used tobacco or cannabis compared to controls (Wragg, 1990, 1992).
- The New Hampshire Study in the US consisted of a comparative evaluation of two drug prevention approaches and a control in three separate rural communities. The first drug prevention approach consisted of a drug education curriculum designed to

provide teenagers with skills to overcome social pressures to use drugs; the second consisted of this curriculum plus a wider community approach, including a parenting course and the development of a community task force. Across the three communities, 1,200 children in grades 4, 5 and 6 (ages 9-14) were given questionnaires in 1987 and again in 1990, when they were in grades 7, 8 and 9. Results showed that while neither of the interventions had an impact on the onset of cannabis use, the comprehensive community intervention reduced regular cannabis use by over 50%. Without this community reinforcement the education programme on its own did not have a statistically significant impact (Stevens et al., 1996).

- Say Yes First (Zavela et al., 1997) was a five-year programme in the US aimed at high-risk pupils in four rural school districts. It involved teacher training and the delivery of a wide-ranging substance abuse prevention programme, which included comprehensive health education with skill-building activities for all children and academic improvement and enhancement programmes for 'at-risk' children (defined as such by an assessment based on risk factors). The programme was delivered to a cohort of young people as they progressed from grade 4 (9-10 years) to grade 8 (13-14 years), and was evaluated first by examining the impact of the degree of programme participation on drug use (a flawed measure due to the likely association between motivation to participate and drug use). More convincingly, a comparison was also made of drug use among the cohort exposed to four years of the programme, having reached grade 8, with the drug use of the previous three grade 8 year groups. Significant decreases were found in the proportion of pupils who had used alcohol, crack cocaine or steroids within the past 30 days.
- Project CARE (Hostetler and Fisher, 1997) was targeted at high-risk pupils in grade 4 (9-10 years). Drug use findings from this US project were disappointing – 'ever use' of cigarettes and 'wine coolers' (a form of volatile substance) abuse being significantly higher among the CARE group compared with controls. However it should be noted that drug use rates were low and that there were problems with loss of pupils in the control sample. A further challenge that targeting poses is the relative lack of sophistication that present drug education programmes offer. This may be one of the reasons why drug users are more critical of the drug education they receive than the abstainers (Parker et al., 1998b). This issue becomes more pertinent at secondary age, as young people's use grows, and gives even more reason for focusing programmes at younger pupils.

### Gaps and inconsistencies identified in this review

- A key conclusion is that, despite numerous pleas for further work and research targeting primary schoolchildren, there is a surprising lack of well-conducted evaluations in this field.
- There is a need for more long-term studies of primary school drug education.
- With regard to the impact findings, this review does give some grounds for optimism. In Australia, evaluation of the Illawarra Drug Education Programme suggests that life skills approaches targeted at primary school-age children can have an impact on future smoking, alcohol consumption and illegal drug use (Wragg, 1990, 1992).
- The Project CHARLIE evaluation in this country lends support to this conclusion (Hurry and Lloyd, 1997) as does the New Hampshire study in the US – albeit with additional community and parental components (Stevens et al., 1996).

# APPROACHES

## Drug education: a review of British Government policy and evidence of effectiveness (Allott et al.,1999)

British review

Main focus of review findings: Police officer-, teacher-, peer- and parent-led approaches.

Category 2

### Population group and intervention type

The purpose of this review is to evaluate the effectiveness of drug education interventions by identifying those programmes that are most effective within a British government policy framework. Current requirements for mainstream drug education in British schools were set by the statutory order for National Curriculum Science (England and Wales) (1991) and its equivalent for other parts of Britain. This obliged schools to deliver particular elements of education about drugs in key stages 1 (5-7 years) through to 4 (14-16 years), with an emphasis on drugs and how they affect the body's organs. There are three important elements in current government policy:

1 A multi-agency approach, encouraging schools to establish effective links with police, specialist drug workers, and other agencies (DfE, 1995a; UKADCU, 1998)
2 Specific recommendations for providing drug education, although due to the lack of quality research evaluating the effectiveness of different approaches this has been difficult to achieve (Dorn and Murji, 1992; ACMD, 1993)
3 The most recent white paper recommends a strong emphasis on research and evaluation to disseminate information as widely as possible (UKADCU, 1998).

Because of the wide range of interventions that exist, the review is structured by providers and focuses on those programmes which have been evaluated. The review is organised under the four main providers: police officers, teachers, peers and parents.

### Review findings

*Police-led drug education*

Information-based programmes and Project DARE are two drug education approaches that have been led by police officers. A programme involving a collaboration between police officers and teachers in the classroom is The Police Box – Learning for Life (Gibbons, 1995).

- Several evaluations of information-based drug prevention programmes have been undertaken (although few have focused on police providers), and findings suggest that providing young people with knowledge alone can actually increase drug use and promote positive attitudes towards drugs (Dorn and Murji, 1992).
- Research evaluating DARE (most of which has been carried out in the US) has had conflicting results. Initial evaluations, focusing on the programme's short-term effectiveness, tended to be positive. However, a meta-analysis of eight previous DARE evaluations found that the only significant outcome was an increased knowledge of drugs (Ennett et al., 1994b). Research examining the long-term effects of DARE has been even less favourable (Ennett et al., 1994a).
- Similar results have been recorded in Britain (Noble, 1997; Whelan and Culver, 1997). DARE was implemented throughout Nottinghamshire and Kirklees Local Education Authority (LEA) areas in the mid-1990s. Both projects have been subject to independent evaluations.
- Only one comprehensive evaluation of Learning for Life has been attempted so far and is unpublished. The results indicate the programme is ineffective as a programme of drug education.

*Teacher-led drug education*

The majority of teacher-led programmes used in Britain fall into three groups: curricular programmes, Theatre in Health Education (THE) and resource packs. Several curricular programmes have been developed in the US. Some examples are: Students Taught Awareness and Resistance (STAR) (Pentz et al., 1986), Life Skills Training (LST) (Botvin et al., 1990b) and Project Alert (Ellickson and Bell, 1990). Programmes that have been delivered in Britain include: Drug Education in Primary Schools (DIPSI) (Watson, 1997) and the Northumberland Drug Education Project (Paxton et al., 1998). A further example is Project

CHARLIE (Chemical Abuse Resolution Lies in Education), developed in the US during the late 1970s (McGurk and Hurry, 1995). Many drug-specific resource packs for teachers exist and have been listed elsewhere (DfE, 1995b). The Drug Studies Resource Pack developed by the Lambeth Drug Prevention Team is an example of the resources available to British teachers.

- Much research has been undertaken on the effectiveness of curricular programmes, with social influence and comprehensive approaches found to be most successful in preventing the onset of substance use (Logan, 1991; Hansen, 1992; Tobler, 1992; Durlak, 1997; Hall and Zigler, 1997; Hermann and McWhirter, 1997). Nevertheless, some authors have questioned the effectiveness of curricular programmes. Hawthorne (1996) examined the social impact of Life Education, a comprehensive curricular programme used throughout Australia. His findings suggest that individuals exposed to Life Education were more likely to participate in social drug use than individuals who had not been exposed to the programme.
- Few evaluations have examined the effectiveness of curricular programmes used in Britain, but McGurk and Hurry (1995) evaluated the life skills drug education programme, Project CHARLIE, and used two sets of comparisons to measure the programme's effectiveness. A four year follow-up evaluation found that Project CHARLIE participants were significantly less likely to experiment with tobacco and illegal drugs in comparison to their schoolmates who had not participated (Hurry and Lloyd, 1997).
- Little evaluative research on THE has yet been undertaken. Fine and Durrant (1996) undertook an evaluation of a THE drug education programme delivered in eight schools in Derbyshire and Nottinghamshire, and results suggest that THE appears more effective in the area of attitude change than mere knowledge gains.
- Blackman (1996) evaluated the Lambeth Drug Prevention Team's Drug Studies Resource Pack. The evaluation focused on the process of implementing the resource and its effects on pupils. The pack was extremely effective in raising awareness of drug issues. However, pupils felt the drugs education they had received was too negative and did not correspond to their own experiences. Many criticised the implementation of the resource, rather than the resource itself.

### Peer-led drug education

Generally, school-based, peer-led programmes train individuals identified as credible and influential, who then educate their peers. There are many differences between the settings, perspectives, aims and methodologies of the various peer-led methods (Hendry et al., 1995). It is difficult to outline a typical programme, but all the methods share certain methodological underpinnings.

- An example of peer education in Britain is the Youth Awareness Project (YAP) in Newham, East London, which has been qualitatively evaluated by Shiner and Newburn (1996). Their findings demonstrated how peers were able to ground drug education within young people's own experiences. This was effective in reinforcing non-drug users' anti-drug attitudes, discouraging drug users from extending their drug repertories and providing both groups with essential information to prevent drug misuse. The small participant numbers and the single setting reduce the generalisability of these findings.
- Research examining the effectiveness of peer-led methods is mixed. Overall research results appear to be positive and suggest that peer-led programmes are more effective than other approaches (Tobler, 1992; Hermann and McWhirter, 1997; Ward et al., 1997; Dorn and Murji, 1992). However, their diverse nature makes it difficult to identify the components which contribute to their success.

### Parent-led drug education

No evaluative research focusing on British parent-oriented programmes could be found in the HDA's literature search. However, Project PRIDE has been implemented in Britain (see below).

- Numerous parent-led drug education programmes have been developed in the US, but few have been evaluated (Elmquist, 1995). The Keep a Clear Mind Program (Young et al., 1996) is an example of a programme which is both evidence based and which has been evaluated. Young et al. (1996) report that the programme significantly increased children's knowledge of their parents' drug-related attitudes and had a significant effect on the pupils' normative beliefs and intended drug-related behaviour.
- One programme that has been implemented in Britain is Project PRIDE (Parents' Role In Drug and Safety

Education). Activities are undertaken at home and in the classroom. The programme is integrated into the National Curriculum and is usually delivered over a six-week period.
- Parent programmes have been plagued by low participation rates.
- Cohen and Linton (1995) found lower attendance rates among parents with higher rates of alcohol and tobacco use, and suggest drug prevention programmes may stigmatise parents, discouraging high-risk families from attending.

### Gaps identified in this review

- There are certain methodological issues which are relevant to all outcome evaluations of drug education programmes, and these include choice of outcome measures, appropriate controls, low participation, issues of self-selection and excessive attrition.
- There appears to be a general dearth of evaluative research, particularly in Britain. That which exists tends to measure outcomes but pays little attention to the implementation process.
- The current evidence base does not allow us to identify the effective components of multi-component programmes.
- There is a need to establish whether resistance skills training is a necessary part of successful drug education programmes.

### Inconsistencies identified in this review

- The varied aims of drug education programmes have led to differences in programme content, evaluation methods and declared success, leading in turn to difficulties in drawing general conclusions about effectiveness.
- There are issues around the cultural applicability of some of the programmes whose effectiveness has been reviewed. Often the language used in American resources is inappropriate for young people in Britain.
- Community approaches appear more successful than single-focused programmes, as do those that deliver a combination of information, resistance and life skills training, and normative education.

## Peer helping/involvement: an efficacious way to meet the challenge of reducing alcohol, tobacco and other drug use among youth (Black et al.,1998)

US review

Main focus of review findings: Peer-led approaches

Sub-theme within review findings:
Teacher, clinician, and other leaders

Category 2

### Population group and intervention type

Peer-led drug prevention programmes for middle school youth are reviewed as to whether or not they are a vital resource in an overall effort to minimise the use of alcohol, tobacco and other drugs. Results of 120 adolescent drug prevention programmes conducted in North America, that concurrently addressed the use of alcohol, cigarettes, cannabis, and other illicit drugs, were reviewed. None of the 120 programmes focused on illicit drugs only. Most studies focusing on drug use were conducted with children in grades 6 to 8, where drug use is low; generalisations to older age groups should be made with caution. The programmes were universal interventions targeted at the general population rather than selective or indicated interventions. The findings presented are based on a recent meta-analysis funded by the National Institute on Drug Abuse and conducted by Tobler and Stratton (1997). What is presented are general lessons learned from the entire meta-analysis on school-based drug prevention programmes, which have application to peer-led programmes as well as those conducted by teachers.

### Review findings

- The findings indicate that interactive programmes are statistically superior to non-interactive programmes in preventing drug use among adolescents. An interactive (peer-led or peer involvement) programme involves communications based on face-to-face peer interactions. A non-interactive (teacher-led) programme involves a passive approach, where content is introduced by teachers in a didactic, instructive manner in a lecture format.
- Regardless of whether only high quality experimental studies (56 – 46.6% – out of 120 studies) or all studies

are included in the analyses, interactive programmes are statistically superior to non-interactive programmes across different drugs, including tobacco and alcohol, and cannabis and other illicit drugs.
- The efficacy of four leader categories was assessed – teachers, peers, clinicians and others. Effect sizes for teacher, peer and other leaders are statistically equivalent when results are reviewed for interactive programmes, independent of whether the study was high quality (n = 56) or included in the total set (n = 120).
- Effect sizes for the mental health clinicians were exceptionally high. When clinicians were compared to the combination of all other leaders and sample size was a covariate, no statistically significant differences were observed across different types of leaders. It appears that the same benefits can be achieved with peer helpers as with more educated and experienced adults.
- The delivery method that was most effective emphasised sharing, cooperating and contributing. The style was not didactic, but highly interactive and participatory.
- Small group instruction was prized, along with constructive peer feedback to hone and sharpen refusal skills.
- The length of 68% of the interactive programmes was only six hours and produced clinically important changes; it is yet to be determined whether there is a 'dose-response' relationship because programmes of 18 hours did only marginally better.

### Gaps identified in this review

- Most studies have been conducted with middle schoolchildren where drug use is lower.
- The focus has been on a combination of drugs and not on illicit drugs only.

### Inconsistencies identified in this review

- Professionals may hear that peer programmes are ineffective or results are equivocal, contradictory or inconclusive. Based on results of the meta-analysis, this is untrue. Failures of programmes may be due to type III errors or poorly designed interventions that have little chance of producing an effect from the outset. (A type III error indicates the programme was poorly designed, the programme protocol was not adhered to, or the programme received little administrative support. Black et al., 1998)

## This section is based on three related papers:

## Adolescent drug abuse prevention: current findings and future directions (Botvin, 1999a)

## Prevention in schools (Botvin, 1999b)

## Preventing drug abuse in schools: social and competence enhancement approaches targeting individual-level etiologic factors (Botvin, 2000)

US reviews

Main focus of review findings:
School-based prevention approaches

Category 2

### Population group and intervention type

The purpose of these three reviews is to provide a brief overview of what is currently known about the effectiveness of substance abuse prevention in school settings. The primary focus is on approaches that have been subjected to careful evaluation using acceptable scientific methods and where results have been published in peer-reviewed journals.

### Review findings

*Prevention in schools (Botvin, 1999b)*

- Studies testing the efficacy of the social influence approach on alcohol and marijuana have reported reductions of roughly the same magnitude as for cigarette smoking (Ellickson and Bell, 1990; McAlister et al., 1980; Shope et al., 1992).
- Several studies also provide evidence for the efficacy of the competence enhancement approach on the use of marijuana (Botvin et al., 1984, 1990a; Epstein et al., 1995).
- The results of most long-term follow-up studies of school-based approaches indicate that prevention effects are typically not maintained (Bell et al., 1993; Ellickson et al., 1993; Flay et al., 1989; Murray et al., 1988).
- Long-term follow-up data from one of the largest school-based substance abuse prevention studies ever

conducted found reductions in smoking, alcohol and marijuana use six years after the initial baseline assessment (Botvin et al., 1995a). This study evaluated a Life Skills Training (LST) approach.* The results of this study suggest that, to be effective, school-based interventions need to be more comprehensive and have a stronger initial dosage than most studies using the social influence approach have had. Prevention programmes also need to include at least two additional years of (booster) intervention and be implemented in a manner that is faithful to the underlying intervention model.

- The results of several recent studies with minority youth show that school-based substance abuse prevention approaches such as Life Skills Training are also able to reduce alcohol and marijuana use (Botvin et al., 1994, 1995b) and that tailoring the intervention to the culture of the target population can enhance its effectiveness (Botvin et al., 1995b).
- Research studies with competence enhancement approaches have shown that they can be successfully implemented by project staff, peer leaders, and classroom teachers (Botvin and Botvin, 1992). However, not all adult programme providers are equally effective (Botvin et al., 1990b). Additional research is needed to identify the characteristics of the most effective providers, as well as the optimal match between characteristics of providers and prevention programme participants.
- At the other end of the spectrum from programmes using peer leaders is Project DARE (Drug Abuse Resistance Education), which is conducted by police officers. DARE is without a doubt one of the best known applications of the social influence model. According to a major meta-analysis of studies evaluating the DARE programme, it is less effective than other social influence approaches and has produced only minimal effects on substance use behaviour (Ennett et al., 1994b).
- Little is known concerning the extent to which different intervention components contribute to substance abuse prevention. While there is a paucity of knowledge about the relative effectiveness of various intervention components, some studies have addressed this issue. A range of studies (Evans et al., 1978; Flynn et al., 1992; Hurd et al., 1980; Pentz et al., 1989b; Perry et al., 1992; Rohrbach et al., 1994) indicate that the inclusion of additional intervention components produces stronger prevention effects than the school-based intervention alone.

*Preventing drug abuse in schools: social and competence enhancement approaches targeting individual-level etiologic factors (Botvin, 2000)*

### Effectiveness of social influence approaches

- Overall, studies have shown social influence approaches to be effective. Reductions have been reported for studies testing the impact of social influence approaches on alcohol and marijuana use (eg McAlister et al., 1980; Shope et al., 1992).
- The results of several follow-up studies of social influence approaches reported positive behavioural effects lasting for up to three years (Luepker et al., 1983; McAlister et al., 1980; Telch et al., 1982).
- Data from several longer-term follow-up studies indicate that these effects gradually decay over time (Flay et al., 1989; Murray et al., 1989), suggesting the need for ongoing intervention or booster sessions.
- Although most studies have been conducted with white youth, there is some evidence from research that included minority youth along with white youth that this approach is also effective with minority youth (Ellickson and Bell, 1990).
- The most popular and visible school-based drug education programme based on the social influence model is DARE (Drug Abuse Resistance Education). Although DARE has programme elements that are similar to social influence approaches, it has been suggested that its effectiveness may be compromised because it targets the wrong mediating processes, uses instructional methods that are less interactive than more successful prevention programmes, and/or that students 'tune out' an expected message from an authority figure (Hansen and McNeal, 1997; Tobler and Stratton, 1997).

### Effectiveness of competency enhancement approach

- Results of studies utilising competence enhancement approaches have demonstrated an impact on marijuana use (Botvin et al., 1990a, 1996).
- Long-term follow-up data from a large-scale, randomised trial testing the LST programme found lower smoking, alcohol and marijuana use among

* The main goals of LST are 'to teach prevention-related information, promote anti-drug norms, teach drug refusal skills, and to foster the development of personal self-management skills and general social skills' (Coggans et al., 2003).

intervention students relative to controls at the end of the 12th grade (Botvin et al., 1995a). The strongest effects were found in schools where the programme was delivered with the highest integrity.
- Data collected in a sample of individuals followed up during the year after high school found significantly lower levels of illicit drug use among the prevention students relative to controls with respect to the use of hallucinogens, heroin and other narcotics (Botvin et al., 2000).
- Although most studies have been conducted with white populations, recent research indicates that LST is also effective with inner-city minority populations. As with white youth, studies have shown that this prevention approach can also reduce alcohol and marijuana use in minority populations (Botvin et al., 1994, 1995b, 1996) and is able to produce reductions in more serious levels of drug involvement such as the use of multiple drugs (Botvin et al., 1996).
- Despite the impact of this prevention approach on several different populations, evidence from one study suggests that even relatively modest changes that help tailor an intervention to the culture of the target population can further enhance its effectiveness (Botvin et al., 1995b).
- There is an increasing recognition of the need to examine:
  – The extent to which prevention programmes produce an impact on hypothesised mediating variables, and
  – The extent to which changes in these variables lead to changes in drug use (Botvin et al., 1992; Donaldson et al., 1994; 1996; Hansen and McNeal, 1997).

  While the research conducted thus far examining the impact of these preventive interventions on mediators as well as efforts to identify mediating mechanisms are important first steps, it is clear that additional research is needed.

*Adolescent drug abuse prevention: current findings and future directions (Botvin, 1999a)*

Evidence of effectiveness

- Effects of roughly 40% to 75% have been found for the social influences approach with regard to the initial impact on alcohol and marijuana (Ellickson and Bell, 1990; McAlister et al., 1980; Shope et al., 1992).
- Evidence also exists for the efficacy of the competence enhancement approach on the use of marijuana (Botvin et al., 1984, 1990a; Epstein et al., 1995).
- Results from a large-scale, randomised field trial (using LST) found long-term reductions in smoking, alcohol and marijuana use at the end of the 12th grade (Botvin et al., 1995b). According to the results, the prevalence of cigarette smoking, alcohol use and marijuana use for the students in the prevention condition was as much as 44% lower than for controls.
- Recent studies have shown that this prevention approach (LST) can reduce alcohol and marijuana use in minority populations (Botvin et al., 1994, 1995b, 1996).
- One study indicated that tailoring the intervention to the culture of the target population can enhance its effectiveness (Botvin et al., 1995b).
- Although several published studies have begun to examine the impact of effective prevention approaches on hypothesised mediating variables (eg Botvin et al., 1990a; Hansen et al., 1998), relatively few studies have attempted to examine the extent to which intervention effects are actually mediated through these variables.
- Some studies assessing mediation have been published for prevention approaches based on both the social influence model (eg MacKinnon et al., 1991) and broader-based skills training models (eg Botvin et al., 1992, 1995b).

Gaps and inconsistencies identified in this review

More research is needed to:

- Increase understanding of the limits of current school-based prevention approaches and determine the long-term effectiveness of current prevention approaches
- Increase understanding of the etiology of drug use in racial-ethnic minority populations and in rural youth
- Identify effective prevention methods with rural youth
- Refine existing approaches, as well as identify new prevention approaches for both white and minority populations
- Bridge the gap between research and practice
- Determine the impact of current and future prevention approaches on other related health problems
- Further develop and test selective and indicated approaches
- Identify prevention approaches suitable for both younger and older populations
- Develop additional (non school-based) modalities for preventing drug abuse and different delivery channels
- Develop more comprehensive approaches to drug abuse prevention

- Further refine current prevention models in order to optimise their effectiveness and increase understanding of how they work
- Increase our understanding of the mediating mechanisms of effective prevention approaches.

## The Life Skills Training drug education programme: a review of research (Coggans et al., 2003)

British review

Main focus of review findings:
School-based prevention approaches

Category 2

### Population group and type of intervention

This report presents a critical analysis of the Life Skills Training (LST) (see footnote, p31) drug education and prevention programme developed in the US by Gilbert Botvin. LST has been implemented in the US for many years and is seen as one of the few effective programmes. For related reviews see Section 3.8.

The overall aim of this review is to establish what is known about the effectiveness of a particular drug education programme (LST) in reducing the prevalence of substance misuse among young people. In addition, the work aims to identify some of the process factors which may contribute to the programme's effectiveness, and comments on its cultural transferability. The main inclusion criteria for source material were primary research reports, meta-analyses and reviews of data-based research reports on the effectiveness of Botvin's Life Skills Training programme.

### Review findings

Coggans et al. (2003) summarised this work, commenting that 'it is not possible to draw simple unqualified conclusions about the effectiveness of LST … the conclusions drawn by the authors of the research reports are not always well supported by the evidence.'

Key points made by Coggans et al. (2003).

- LST can have durable preventive effects on cannabis if delivered relatively completely, but these effects are small in scale. For example, there were 4% fewer cannabis users among LST students in a six-year follow-up study measured in terms of weekly or monthly use in a selected 'hi-fidelity' sub-sample. The hi-fidelity sub-sample comprised those who had received at least 60% of the intervention, excluding those who had received less than 60% of the programme. Fidelity of implementation was assessed by calculating the proportion of the programme objectives covered during sessions that were observed. However, there was no statistically significant effect on cannabis used in the whole sample, including those who received less than 60% of the programme.
- Effects on tobacco and alcohol, while not covered in detail in the Coggans et al. (2003) review, are greater than the effects on cannabis, but still relatively modest in scale.
- LST had positive effects on reducing the numbers of those who used more than one of cigarettes, alcohol and cannabis. These effects were found more consistently in the sub-sample who had received more complete programme delivery. Across the various measures of combinations of cigarettes, alcohol and cannabis, the percentage reductions ranged from 3% to 8%.
- There was some evidence of preventive effects on a wider range of drugs in a six and a half-year follow-up study. After statistical adjustment for school-level intra-cluster correlations, there were statistically significantly fewer LST students who reported use of heroin and other narcotics, or hallucinogens. Similar reductions were found with composite measures of drug use – 'total illicit substance use' and 'total illicits other than marijuana' – but no details were reported about the nature of this total use. There is doubt over the methodological soundness of this study because it followed up only 7.5% of the original cohort and no selection rationale is given.
- The programme only works when fidelity and completeness of delivery are both high. This is particularly important because attrition could be high among high-risk pupils.
- A well-implemented LST programme can positively affect knowledge, attitudes and behaviour with respect to smoking and alcohol. There is limited evidence of similar effects for cannabis or other illicit drugs. The reason for these effects may be due largely to changes in knowledge and attitudes rather than the acquisition of life skills. Nonetheless, the interactive nature of the LST programme may provide one of the better ways of facilitating knowledge acquisition and attitude change.

- Booster sessions are argued to be an important element in maximising the impact of LST, but have little empirical support.
- Training requirements are high for providers of LST.
- While the theory is persuasive, there is little empirical support for it in the research reviewed. The programme does not appear to work for the reasons underlying its design, ie not in the way it is meant to work. Changes in knowledge and attitudes are consistently found, but changes in social competence and self-esteem are not. The interactive processes in teaching and learning methods are important.
- It is not clear which aspects of the LST programme are essential for effectiveness. The interactive element is clearly important, but it is not clear that the sessions dealing with, for example, self-esteem and social competence are essential. In other words, while such sessions may not enhance, say, self-esteem, these sessions may indirectly facilitate the effectiveness of the programme.
- The body of research over the past 20 years has explored most aspects of training, delivery and mediating variables. Gaps in knowledge regarding the impact of LST are mainly due to inconclusive results rather than lack of investigation.
- There are many problems with the statistical analyses conducted in previous research; as a consequence, great care is required in the interpretation of their results.
- The programme can have statistically significant positive effects on substance use onset rates. However, to describe these effects as 'highly effective' (as is done in LST promotional material) is to overstate the degree of effectiveness. When such promotional statements are supported with other statements using relative percentage differences rather than absolute percentage differences, many observers may conclude that the programme is more effective than it actually is.
- Nonetheless, it can be argued that expectations of drug education have been unrealistically high. The research on LST demonstrates that onset can be reduced or delayed in some young people. While it seems unlikely that LST, or any other universal primary prevention programme, could have a major impact on drug use and especially drug problems, it is one of the few programmes of this nature for which there is research evidence of positive impact, albeit limited positive impact.
- On a small scale at school level, the effects of LST are likely to be very small. On a large scale, eg nationwide, the small effects may mean there is a measurable reduction in drug users in absolute terms. But the question arises as to whether the costs and resources required for training and implementation to make this work for a small number of cases would be justified.

### Gaps and inconsistencies identified in this review

- It should be noted that LST has been studied relatively extensively compared with many other drug education interventions. While criticisms can be directed at aspects of the evaluations of the programme, the research highlighted a number of issues of importance for development and delivery. This is an argument for more detailed long-term evaluations of drug education interventions.
- The body of research over the 20-year period has explored most aspects of training, delivery and mediating variables. Gaps in knowledge are mainly due to inconclusive results rather than lack of investigation.
- As awareness of drug issues increases and attitudes to drugs change, a greater differentiation of attitudes to drugs may develop. It may be that more differentiated attitudes to drugs have already developed. Either way, and in relation to a drug education programme that has not changed substantially in 20 years, what worked in some cases in the past might not work in the future.
- If recreational drug use, as opposed to dysfunctional/problematic drug use, is more acceptable even to young non-drug users, LST may not be as effective. There is a need to consider the interplay between attitudes to drugs and programme effectiveness. There is limited detail on drug-related attitudes in the reports.
- Finally, it is not clear which aspects of the LST programme are essential for effectiveness, as outlined in the previous subsection.

## Peer-led and adult-led school health education: a critical review of available comparative research (Mellanby et al., 2000)

British review

Main focus of review findings: Peer-led

Sub-theme within review findings: Adult-led

Category 2

### Population group and intervention type

This paper reviews published studies which compare peer-led with adult-led delivery of the same school-based health education programme under experimental conditions. The term 'peer-educators' generally refers to students delivering an educational curriculum who are of similar, or slightly older, age than the students receiving the programme. Thirteen studies detailing comparative trials of peer-led and adult-led education in schools were found, 10 carried out in North America, one in Finland, one in Australia and one an international collaboration. Nine studies involved substance use prevention (mostly smoking), one alcohol education, one sexual health, one oral health and one testicular cancer.

### Review findings

- This review does not specifically focus on drug use. Of the 13 studies, peer-led interventions were at least as or more effective than adult-led interventions.

### Gaps and inconsistencies identified in this review

- No published trials or evaluations of effectiveness were found from studies carried out in British schools.
- Although studies in the review provide a description of programme content, details are lacking about the comparability of the extent of training, style of programme delivery and adherence to planned structure of the sessions.
- It is not known how peer-led and more usual adult/teacher-led programmes can be used together effectively in school health education.
- There is a need to determine the strengths and weaknesses of the approaches, and the specific areas where peer-led information is most effective and therefore should be targeted.
- Further information is required on the application of specific health education theories and their effectiveness in deriving either peer-led or adult-led programmes.
- There is a need to determine whether an effective peer-led educational programme can be sustained outside of research programmes within the normal school curriculum structure.
- Peer-led education may be more effective, resulting in greater positive changes in health behaviour, than adult-led interventions, although the analytical and methodological problems of these studies indicate that the case is not entirely proven.

## The rise and rise of peer education approaches (Parkin and McKeganey, 2000)

British review

Main focus of review findings: Peer education

Category 2

### Population group and intervention type

This paper provides a short history of peer education techniques and outlines some of the definitional diversity in attempts at characterising peer education projects. The paper reviews the limited evidence on the effectiveness of peer education projects, seen in terms of the impact on peer educators themselves and the target group of the educational efforts.

### Review findings

- Black et al. (1998) have summarised the findings of Tobler and Stratton's (1997) review of 120 adolescent drug prevention programmes that had a peer-led focus to determine if they were useful strategies for minimising adolescent substance misuse. The conclusions drawn from this study were that interactive educative programmes were 'statistically superior' (Black et al., 1998) to non-interactive interventions in preventing drug misuse.
- In an evaluation of the Youth Awareness Programme (YAP), Shiner and Newburn (1996) presented evidence of impact on the recipients of this drug-related peer education project. Interviews with 52 young people concluded that knowledge of drugs, drug use and harm

reduction techniques had been improved as a result of their attendance at the relevant workshops.

- Evaluations of peer education approaches have utilised both quantitative and qualitative methods. On the basis of the evidence that Parkin and McKeganey (2000) have looked at, the strongest indication that peer approaches can have an impact is in terms of the impact upon peer educators themselves. The evidence in relation to the presumed impact upon the various target groups of such approaches, however, is considerably more problematic. On the basis of the limited evidence available, one would conclude that such approaches may be more effective at changing knowledge and attitudes than changing behaviour.
- However, there are methodological difficulties in coming even to this judgement. Part of the methodological problems of research in this general area has been the near total reliance on self-reported changes in attitudes and behaviour. Another difficulty is the limited follow-up involved in studies seeking to identify the possible impact of changes in knowledge, attitudes and behaviour. A further difficulty concerns the uncertainty of attributing any change in knowledge, attitudes or behaviour to the specific influence of a particular peer education project, given that the participants of those projects are likely to be exposed to a range of other sources of information.
- In addition to concerns over the research methods used to assess effectiveness, concerns have also been expressed over one of the core principles of the peer education approach, namely, is the approach about empowerment or inadvertent exploitation? According to Hart (1998), one of the reasons why peer education may be attractive to funders has to do with the fact that it is a relatively inexpensive model of service provision. Implicit within the peer education approach may be an element of inadvertent exploitation if it is accepted that the services which are being provided by a peer education project will almost certainly be costing less than an equivalent service being provided by paid professional workers.
- However, it has also been suggested that part of the appeal of peer education approaches may have to do with the potential to empower a variety of marginal and largely disenfranchised groups.

### Gaps and inconsistencies identified in this review

- There is a need to clarify the aims of peer education projects and formulate these aims in such a way that they can be subject to rigorous assessment of effectiveness.
- It is important to distinguish those projects that aim to change an individual's knowledge and attitudes from those oriented towards changing behaviour.
- It is important to distinguish between projects that aim to change community norms from those targeted at the level of the individual.
- The challenge facing those seeking to evaluate peer education projects is to develop an approach that is as rigorous as possible without at the same time compromising the very nature of the project being evaluated.

## Substance abuse prevention among high-risk youth (Smyth and Saulnier, 1996)

US review

Main focus of review findings:
Prevention with high-risk youth

Category 2

### Population group and type of intervention

This paper describes what is known from research about substance abuse prevention among vulnerable and at-risk youth, beginning with a discussion of definitions and the characteristics of youth who are at high risk of substance use. Evaluation data on prevention programming for this population are presented.

### Review findings

- Much of the literature on alcohol and drug risk does not distinguish substance use from substance abuse (Wodarski and Smyth, 1994). Research on high-risk prevention intervention is fraught with methodological problems. Among the most common is the failure to utilise any comparison group, either because of programme staff objections (eg Bruce and Emshoff, 1992) or an insufficient number of participants to fill two comparison group conditions (eg Springer et al., 1992; Stein et al., 1992).
- An additional problem is difficulty locating participants for follow-up data collection.
- It is also not clear what should constitute appropriate prevention goals (eg some might argue that the lack of deterioration demonstrated success). For example, one Colorado project targeted youth adjudicated as

delinquents (Stein et al., 1992). While the researchers found no significant increases in positive outcome measures, they also found no significant deterioration. Given the population targeted, some might argue that the lack of deterioration demonstrated success. However, because there was no comparison group, this point is subject to debate. An issue related to identification of goals is selection of appropriate outcome measures.

- Some studies (eg Springer et al., 1992) target risk factors associated with alcohol and other drug (AOD) abuse for reduction, such as child behaviour problems, and therefore choose a measure appropriate to this goal. However, given that our knowledge of risk factors is correlational, not causal, it would seem important to include measures of AOD use whenever possible (of course, when younger children are the participants, this requires longitudinal follow-up, a task that can prove challenging and expensive). Ideally, multiple measures of AOD use should be employed, so that there are more sources of data than self-report alone.
- Evaluation data on several programmes targeting youth at high risk indicate no or minimal evidence of positive change from pre-test to post-test. Among these were:
  - A 13-week social skills intervention with children of substance abusers (Gross and McCaul, 1992)
  - A multi-agency collaborative approach for delinquency and substance abuse prevention (Stein et al., 1992)
  - A primary drug/alcohol prevention programme for kindergarten-aged children and their mothers who resided in a public housing complex (Ruch-Ross, 1992).
- Examples of programmes with promising results are:
  - A peer-managed self-control training programme with native American youth (Carpenter et al., 1985)
  - A Values Clarification/Anti-Violence programme for adjudicated youth (Friedman and Utada, 1992)
  - Super II Early Intervention Demonstration Program for inner city families (Bruce and Emshoff, 1992)
  - The Young Children of Substance Abusers programme (YCOSA) (Resnik and Wojicki, 1991)
  - The Children of Drug Abusers programme (CODA) (Springer et al., 1992)
  - Boys/Girls Clubs (Schinke et al., 1992).
- Notwithstanding methodological limitations, the results from these programmes suggest that prevention with high-risk youth may be effective.

### Gaps and inconsistencies identified in this review

- Programmes must incorporate strong outreach components to recruit participants, as well as specific incentives to retain youth and their families (Resnik and Wojicki, 1991).
- Additional recommendations include the use of peer role models for both youth and their families and the involvement of families in programmes (Resnik and Wojicki, 1991).
- It is essential that the content and format of a programme be relevant and sensitive to the unique characteristics of the population targeted. In addition, programmes must be culturally relevant and not transferred from one population to another without careful review of their appropriateness, ideally by people who are members of the target group (Van Hasselt et al., 1993).
- Programmes that have reported promising results need to be replicated on larger samples. Ideally, this should involve some type of comparison group. When a traditional control group cannot be used, participants or programme sites from similar geographic locations should be utilised, as was done in the Schinke et al. (1992) study of Boys and Girls Clubs.
- Labelling children and adolescents as at risk for AOD use and abuse could add to the problem rather than alleviate it. Sensitive practitioners are aware that the elimination of universal prevention programmes necessitated by budget constraints can have the untoward effect of singling out youth who may already be subject to the negative effects of labelling.
- Additionally, evaluators of programmes that were designed to decrease risk factors should be encouraged to also track alcohol and drug use and related problems.
- Prevention intervention for high-risk youth needs to consist of more than the development of specific programmes for youth and their families. Social policies targeting specific societal risk factors, such as the development of jobs that are accessible to poor families, are also a type of prevention intervention. Policies designed to decrease school drop out rates, eliminate harassment of lesbian and gay students or combat poverty all fall into this category.

## Adolescent tobacco, alcohol and drug use: current findings (Windle and Windle, 1999)

US review

Main focus of review findings: Types of prevention

Category 2

### Population group and type of intervention

This paper reviews the findings from several different types of adolescent substance use prevention programmes, including:

- Universal school-based programmes
- Targeted programmes for adolescents at risk of developing substance abuse-related problems
- Family-based programmes
- Comprehensive community-wide programmes.

The authors' purpose is not to provide a comprehensive review of the prevention literature, but rather to present the rationale and empirical findings from several highly visible preventive interventions.

### Review findings

*Universal, school-based preventive interventions*

Project ALERT and Life Skills Training (LST) are two universal, school-based substance use prevention programmes.

- Ellickson and Bell (1990) evaluated Project ALERT's programme effects on adolescents' substance use behaviours at three post-test follow-up periods (ie three, 12, and 15 month follow-ups) and found mixed results contingent on the follow-up period, the experimental condition and the adolescents' risk status. Notably, Project ALERT showed very few significant effects for adolescent alcohol use. Nevertheless, it was effective at reducing cigarette use among some adolescents, while increasing use among others, and was effective at reducing the initiation of marijuana or cigarette use at the pre-test assessment. In a follow-up study evaluating Project ALERT's long-term effectiveness (ie at 24, 36, and 60 months after pre-test evaluation), Ellickson et al. (1993) found no significant differences among the experimental and control groups on their use of cigarettes, alcohol or marijuana.
- Botvin et al. (1990a) tested the efficacy of the LST programme by evaluating changes in adolescents' cigarette, alcohol, and marijuana use that occurred between the pre-test measurement period and at a three year follow-up, after adolescents had received the final booster sessions. Only students who received 60% of the LST curriculum (a high-fidelity group) were included in the current study. However, experimental and control groups were not significantly different on the number of times they drank alcohol or on the amount of alcohol consumed per drinking occasion.
- In a second study, the long-term effectiveness of the LST programme (ie six years after collection of baseline data, when students were seniors in high school) was evaluated (Botvin et al., 1995a). Results indicated that, in general, seniors who participated in the LST programme had a lower frequency of cigarette smoking, a lower frequency of getting drunk and less polysubstance use relative to controls; however, there were no differences between programme and control participants in alcohol and marijuana use variables. Results for the high-fidelity group (ie those who received at least 60% of the LST intervention) were more promising in that they reported significantly lower levels of cigarette, alcohol and marijuana use, and less polysubstance use relative to controls.

*Preventive interventions targeted at high-risk adolescents*

- Jump Start is an example of a targeted substance use prevention programme (Harrington and Donohew, 1997). It was developed specifically for African-American adolescents who were economically disadvantaged and who were high on sensation seeking, a personality trait that has been associated with substance use behaviours among both adolescents and adults. Two primary goals of Jump Start were to assist adolescents in reducing their drug use behaviours and to encourage and motivate them to pursue completion of their education and career goals. Results on the effectiveness of the Jump Start curriculum were mixed.

*Family-focused prevention interventions*

- The Adolescent Transitions Program (ATP) is a targeted programme for adolescents at risk of developing behaviour problems and for their parents (Dishion and

Andrews, 1995). The ATP intervention was effective in reducing the levels of negative engagement between mothers and their adolescent children during the intervention period. However, it had an effect on adolescents' problem behaviours at school and on their smoking behaviours if they were included in either of the two adolescent conditions (ie adolescent-focused or parent plus adolescent).

### Comprehensive community prevention programmes

Project Northland is an ongoing comprehensive, multi-component community prevention programme aimed at preventing young adolescents' alcohol use (Perry et al., 1996; Williams et al., 1999). In an evaluation of Project Northland's effectiveness, Perry et al. (1996) formed four groups on the basis of their baseline (ie 6th grade) alcohol use behaviours: intervention baseline non-users (IBN); intervention baseline users (IBU); reference baseline non-users (RBN); and reference baseline users (RBU). In comparisons between IBN and RBN groups at the three year follow-up, results indicated that the IBN students, relative to the RBN students, reported significantly less alcohol use in the past month and past week and significantly less cigarette and marijuana use. The groups did not differ in their perceptions of access to alcohol. In contrast to these findings, there were no significant differences between the IBU and RBU groups on any of the substance use measures at the three year follow-up, although IBU participants reported (non-significantly) lower levels of alcohol and cigarette use.

### Gaps and inconsistencies identified in this review

- Programmes appeared to be more effective in reducing adolescents' use of cigarettes and marijuana and less effective in reducing their alcohol use behaviours. Ellickson and Bell (1990) suggested that reductions in adolescents' use of alcohol may be difficult to obtain because of societal attitudes and media messages that are more condoning of drinking behaviours.
- The findings from several studies indicated stronger programme effects for baseline non-users, and virtually no programme effects for adolescents who had an earlier onset of substance use behaviours, and who therefore may be at greater risk for later substance use problems (Ellickson and Bell, 1990; Perry et al., 1996). An important criticism of universal school-based prevention programmes has been their assumption of homogeneity of substance use risk (Gorman, 1996). The findings that universal prevention programmes are more effective for lower-risk adolescents and less effective for higher-risk adolescents, along with findings of other researchers that have indicated differing developmental pathways to substance use (Duncan et al., 1995), suggest differing levels of risk among adolescents. They also suggest a need for the identification of adolescents at higher risk for substance use-related problems and for the development of targeted prevention programmes designed to meet their special needs.
- Project ALERT (Ellickson et al., 1993) and Life Skills Training (Botvin et al., 1995a) were evaluated for their long-term effects on reducing or preventing adolescent substance use, with results indicating decay of programme effectiveness for Project ALERT, and more success for the Life Skills Training programme, but only for those participants exposed to at least 60% of the intervention. Based on such results, a number of researchers have suggested that adolescent substance use prevention programmes should be:
  - Comprehensive (ie target multiple domains of children's functioning (Pentz et al., 1989b)
  - Begin before the onset of substance use behaviours (given the earlier onset of such behaviours among a number of adolescents, this suggests programme implementation should begin with young children) (Williams et al., 1999)
  - Be of longer duration (Ellickson et al., 1993)
  - Be designed to maximise adolescents' programme exposure (Botvin et al., 1995a).

# Key points

The aim of this evidence briefing has been to assess what works to prevent and/or reduce illicit drug use among young people. This first edition has reviewed tertiary level research (ie reviews and syntheses of existing systematic reviews, meta-analyses and other types of review). The key points are organised within sections addressing evidence of effectiveness, the most pressing gaps in the evidence and the ways in which methodological issues influence research, and consequently findings, on what works. The final section (5) makes a number of recommendations on policy, research and practice.

## Evidence of effectiveness

Although there are many studies within the drug prevention field that evaluate the effectiveness of drug prevention programmes, particularly school-based preventive programmes aimed at adolescents, these tend to target the so-called 'gateway' drugs (alcohol, tobacco and marijuana). As a consequence, programme effectiveness has usually been assessed on general drug use rather than specific illicit drug use, and thus the effectiveness of drug prevention programmes on illicit drug use has not been adequately reviewed (Black et al., 1998).

All of the reviews included in this briefing have been subject to a critical appraisal process and their quality judged accordingly. The evidence of effectiveness presented below is largely extracted from the White and Pitts (1998) systematic review, which was judged to offer some of the best available evidence on drug prevention programmes.

### *School-based interventions among adolescents – evidence of effectiveness*

The White and Pitts (1998) systematic review, which specifically focused on illicit drug use, showed that the effects of interventions on illicit drug use were small and that the effects declined with time. Both meta-analyses of the one and two year follow-up periods showed weighted mean effect sizes of 0.037 and 0.018, respectively, for the shorter and longer duration. Of 11 evaluations carried out to one year, 10 showed that the direction of effect favoured drugs education. Their impact was small but they were associated with a decrease in substance use.

Evaluations beyond one year also pointed to the benefits of health interventions, with eight of the 10 interventions showing small but positive effects and two showing marginal and insignificant counter-effects. Over half of the evaluations of longer-term programme effectiveness showed some statistically significant impact on drug-using behaviour extending beyond the end of the programme (White and Pitts, 1998).

The available evidence therefore suggests that the best that can be achieved using currently evaluated school-based intervention strategies aimed at adolescents is a short-term delay in the onset of substance use by non-users and a short-term reduction in the amount of use by some current users (White and Pitts, 1998). That said, however, White and Pitts (1998) suggest that the observed effect sizes may underestimate the gains that can be made from drug prevention programmes as most evaluations did not check whether the programme had been delivered with fidelity.

Black et al. (1998) argue that the failure of many drug prevention programmes may be due to 'type III' errors or poorly designed interventions that have little chance of producing an effect from the outset (a type III error indicates the programme was poorly designed, the programme protocol was not adhered to, or the programme received little administrative support).

### *Effective school-based curricula*

The methodologically sound, effective programmes identified by White and Pitts (1998) were:

- Two separate evaluations of Botvin's generic Life Skills Training (LST) programme, which demonstrated some continuing success five years after the end of the programme
- Two separate evaluations of the generic Midwestern Prevention Program with two and three year follow-ups
- The generic Here's Looking at You 2000 programme when supported by community action with a three year follow-up
- An assertiveness training programme reporting programme gains after three to five years.

LST programmes which had some success over a shorter evaluation period were:

- The generic Project ALERT, effective for up to a year, with later evaluations showing decay of programme effectiveness
- Refusal skills training
- (Training in) a culturally sensitive skills programme, effective when supplemented with home-based activities
- A normative education programme.

Findings about LST should be considered in the context of a recent critical appraisal of the programme suggesting that despite overstatements about the degree of effectiveness, it is one of the few programmes of this nature for which there is research evidence of a positive impact, albeit small (Coggans et al., 2003). This is further addressed below.

### *Targeted interventions*

White and Pitts (1998) identified only seven programmes designed for delivery in non-school settings, although none of the seven were considered methodologically 'sound'. Compared to school-based interventions, the seven non-school interventions included in this review had a shorter duration of intervention and lacked long-term follow-up, and so were methodologically weaker than school interventions. White and Pitts (1998) argue that too few interventions are designed to target the specific needs of young people at differing stages in their drug-using careers and drawn from differing social and cultural backgrounds.

A few schools and college-based 'gateway' drug programmes were designed specifically to meet the needs of selected target groups. Some evaluations asked whether there were identifiable groups who benefited more or less than others from the programme under consideration. Several considered that programmes might be differentially effective for males and females, and from these it appeared that programmes were more successfully targeted at girls, although the programme benefits applied only to knowledge, attitudes and skills rather than drug use.

One programme, Project ALERT, separately examined the effectiveness of the intervention in influencing the behaviour of young people who were non-users at the time of the programme, and those who had already experimented with drugs. In the short term non-users showed more programme gains than users. These findings support the view that universal prevention programmes are more effective for lower-risk adolescents and less effective for higher-risk adolescents. This suggests the need for identification of adolescents at higher risk for substance use-related problems and development of targeted prevention programmes designed to meet special needs (Windle and Windle, 1999).

### *Conclusions*

The evidence of effectiveness outlined above indicates that the effects of drug use prevention programmes are small and are likely to decrease with time. One of the few programmes that has been extensively evaluated, and has been identified as effective particularly over a longer duration of time, is Life Skills Training (LST). LST is a universal, school-based substance use prevention programme that has been developed in the US. While extensively evaluated, the programme has also been comprehensively promoted and there are concerns regarding the generalisability of the research findings (Coggans et al., 2003). Coggans et al. (2003) found that the degree of effectiveness of LST is overstated and that it has been promoted as being more effective than it actually is. Despite this, Coggans et al. (2003) conclude that 'while it seems unlikely that LST, or other primary prevention programmes, could have a major impact on drug use and especially drug problems, it is one of the few programmes of this nature for which there is research evidence of positive impact, albeit limited positive impact'.

## Gaps and inconsistencies identified in the reviews

### *Lack of British reviews*

A disproportionate number of British studies were excluded from this briefing in contrast to those included from the US. The general dearth of evaluative research conducted in Britain is a consequence of a number of factors. Allott et al. (1999) suggest that one reason is that the majority of British evaluations measure process as opposed to outcome. White and Pitts (1998) remark that the difference between countries is also a reflection of the focus within Britain on targeting hard-to-reach groups who cannot be tracked readily over a number of years. There are also issues about the cultural applicability of some of the programmes whose effectiveness has been reviewed and, as Allott et al. (1999) have argued, the language used in American resources is often inappropriate for young people in Britain.

### *Methodological issues in drugs research*

The majority of papers reviewed and included within this evidence briefing repeatedly refer to the methodological problems that are prevalent in drug prevention research. White and Pitts (1998) point to the lack of methodological rigour contained within many of the studies they identified; out of 55 school-based evaluations, only 18 met the criteria for methodologically 'sound' studies. Common methodological problems identified in drug prevention research include choice of outcome measures, appropriate controls, low participation rates, issues of self-selection and excessive attrition (Allott et al., 1999).

Research on high-risk prevention intervention where little research is available is particularly fraught with methodological problems. The most common difficulties in this area include: the failure to utilise any comparison group, either because of programme staff objections (eg Bruce and Emshoff, 1992) or an insufficient number of participants to fill two comparison group conditions (eg Springer et al., 1992; Stein et al., 1992). As drug-taking is an illegal activity it is difficult to identify and recruit study participants. As researchers have not solved these evaluation problems, they have instead collected data, usually only post-intervention, from opportunistic samples, without comparison data (White and Pitts, 1998).

An additional problem relates to locating participants for follow-up data collection. A further methodological weakness is the over-reliance on self-reports of drug behaviour (White and Pitts, 1998). Of 18 evaluations identified by White and Pitts (1998) that produced evidence of programme effectiveness, only two used hard evidence to demonstrate an impact on drug use (eg saliva or blood tests).

As a consequence of these methodological limitations there is a limit to the conclusions that can be drawn. A need for drug prevention approaches to be more rigorously evaluated alongside the development of alternative strategies for evaluation is therefore needed (White and Pitts, 1998).

### *School-based interventions focusing on primary schoolchildren*

Both Belcher and Shinitzky (1998) and Hall and Zigler (1997) point to the lack of evaluated curricula that target elementary (primary) school students and regard it as an area that has not been studied with the same fervour as curricula designed for adolescents. The paper by Lloyd et al. (2000) indicates that while a number of studies have shown an impact of drug education on attitudes, knowledge, resistance skills and intentions of pre-adolescent children (Ambtman et al., 1990; Church et al., 1990; Corbin et al., 1993; Jones et al., 1995; Wiener et al., 1993), very few have adopted a sufficiently long-term design to examine the impact of such programmes on behaviour. Appearing to concur with Allott et al. (1999), Lloyd et al. (2000) also assert that most British studies have focused on process rather than outcomes. A similar situation occurs in the US where few studies have been undertaken which have focused on drug prevention with primary school-age children, with the exception of DARE which is usually delivered in the penultimate or final year of elementary school (ie children aged 10-12). A key conclusion of Lloyd et al. (2000) is that, despite numerous pleas for further work and research targeting primary schoolchildren, there is a surprising lack of well-conducted evaluations in this field and there is a need for more long-term studies of primary school drug education.

## Features of effective programmes

In drug prevention research there is little knowledge as to what constitutes an effective or ineffective intervention. In White and Pitts' (1998) systematic review the effective interventions were a mix of focused and generic training. The available evidence suggests that both broadly based

and more specifically focused interventions can have an effect. Below are some of the elements that are regarded as potentially having an effect on drug prevention programmes.

### *Booster sessions*

Of the 10 effective, soundly evaluated programmes included in the White and Pitts (1998) review, eight included booster sessions, or had additional elements that served a similar purpose (eg a community or mass media component). A majority of the effective programmes were intense, with a large amount of curriculum time devoted to the programme (eight had 10 or more sessions) (White and Pitts, 1998). Intensity did not guarantee effectiveness, since six of the soundly evaluated programmes were intense but ineffective (White and Pitts, 1998). Further research is therefore required to determine the possible effects of booster sessions (White and Pitts, 1998) and determine how many years of intervention constitute adequate follow-up (Dusenbury et al., 1997).

### *Multi-component programmes*

Although the majority of interventions combined a number of different elements, the effectiveness of these different elements was rarely scrutinised, as an entire programme was usually compared with a no-treatment/control group. Little is known about the extent to which different intervention components contribute to substance abuse prevention. Allott et al. (1999) agree and remark how the current evidence base does not allow us to identify the effective components of multi-component programmes, as most study designs reviewed did not allow for separate estimates of school curricula and any added components, for example. The few studies that would have allowed for such estimates were either too small, or found no differential effects. The reason for so few studies may be because they can be very large and expensive. The few studies that have tried to address this issue (Evans et al., 1978; Flynn et al., 1992; Hurd et al., 1980; Pentz et al., 1989b; Perry et al., 1992; Rohrbach et al., 1994) indicate that the inclusion of additional intervention components may produce stronger prevention effects than the school-based intervention alone, although the evidence for this is weak (Botvin, 1999b).

## Drug education providers

### *Interactive versus non-interactive*

Black et al. (1998) summarised the findings of Tobler and Stratton's 1997 review of 120 adolescent drug prevention programmes that had a peer-led focus. The conclusions drawn were that interactive educative programmes were 'statistically superior' (Black et al., 1998) to non-interactive interventions in preventing drug misuse.

### *Police-led drug education*

Information-based programmes and Project DARE are two drug education approaches that have been led by police officers. According to a major meta-analysis of studies evaluating the DARE programme, it has produced only minimal effects on substance use behaviour (Ennett et al., 1994b, in Botvin, 1999b). Similar results have been recorded in Britain (Noble, 1997; Whelan and Culver, 1997, in Allott et al., 1999).

### *Teacher-led drug education*

The majority of teacher-led programmes used in Britain fall into three groups: curricular programmes, Theatre in Health Education (THE) and resource packs. Curricular programmes that have been delivered in Britain include Project CHARLIE (Chemical Abuse Resolution Lies in Education), developed in the US during the late 1970s and evaluated by McGurk and Hurry (1995) – the results of which were equivocal. The Drug Studies Resource Pack, developed by the Lambeth Drug Prevention Team is an example of a resource pack available to British teachers; many drug-specific resource packs for teachers exist and have been listed elsewhere (DfE, 1995b). Blackman (1996) evaluated the Lambeth Drug Prevention Team's Drug Studies Resource Pack, focusing on the process of implementing the resource and its effects on pupils. The findings suggested that the pack was extremely effective in raising awareness of drug issues but this is an area that requires further research. Little evaluative research on THE has yet been undertaken, although Fine and Durrant (1996) conducted a qualitative evaluation of a THE drug education programme delivered in eight schools in Derbyshire and Nottinghamshire. These results suggest that THE appears more effective in the area of attitude change than mere knowledge gains, and again more research is needed.

### *Peer-led drug education*

Generally, school-based, peer-led programmes train individuals identified as credible and influential, who

then educate their peers. Parkin and McKeganey (2000) suggest that the strongest indication that peer approaches can have an impact is in terms of the impact on peer educators themselves. The evidence in relation to the presumed impact upon the various target groups of such approaches is considerably more problematic. Parkin and McKeganey (2000) argue that on the basis of the limited evidence available one would conclude that such approaches may be more effective at changing knowledge and attitudes than changing behaviour, although as they acknowledge there are methodological difficulties in coming even to this judgement.

### *Parent-led drug education*

There has been no evaluative research focusing on British parent-oriented programmes. Parent programmes have been plagued by low participation rates (Allott et al., 1999). Cohen and Linton (1995, in Allott et al., 1999) report lower attendance rates among parents with higher rates of alcohol and tobacco use, and suggest that drug prevention programmes may stigmatise parents and discourage high-risk families from attending.

# Recommendations

Based on the findings of this evidence briefing, the following recommendations are made.

## Policy

The majority of drug prevention programmes have focused on universal school-based approaches, mainly primary prevention in school-aged children. The conclusions that can be drawn about the effectiveness of these programmes are limited as they relate to low rates of drug use and also to a combination of drugs (tobacco, alcohol, cannabis) and not just illicit drugs. Policy makers and commissioners of research need to commission more research into the links between vulnerable/at-risk groups and illicit drug use. This requires a shift in focus away from universal school-based drug prevention approaches to the development of more targeted approaches.

Policy needs to address the sensitivities and contentiousness of delivering drug prevention programmes to primary school pupils. There needs to be clear and standardised guidelines for researchers and practitioners in primary school education on the application of drug prevention programmes among primary schoolchildren, and agreed age limits for the implementation of drug prevention programmes.

## Research

There is a need to establish a central/regional logging system for drugs research to prevent over-researching of respondents and duplication of research. All commissioned research should have funding set aside for the evaluation of drug prevention programmes and should be carried out independently from those responsible for developing the programme.

There is a need to consider how the illegality of drugs inhibits preventive work and to develop avenues for effective drug prevention work. This requires the development of alternative evaluative strategies, particularly with regard to researching vulnerable/at-risk groups. Such work also needs to recognise the potential to stigmatise vulnerable/at-risk groups.

More and better quality research is needed to establish which interventions work with different sub-groups, ie what works with high-risk groups, what works with existing drug users.

There is a need for more descriptive, process studies to understand the trends of drug use among vulnerable/ at-risk groups, and also the pathways that contribute to drug use among vulnerable groups.

Long-term follow-ups of drug prevention programmes are required to determine whether they have sustained effects across the age continuum; this is needed to show whether a small delay in age of onset of substance use translates into either a future delay in regular use of substances, or non-progression to regular use (White and Pitts, 1998).

Guidelines should be established to provide minimum acceptable standards for evaluation, including minimum follow-up period, what constitutes an adequate sample size and how standardised measures of substance use behaviour might be determined. The presentation of data should also be standardised to include, where possible, percentage change and effect sizes. In addition, issues of assignment need to be addressed, ie in the case of school-based work should the whole school be assigned to the condition (study) rather than classes to avoid contamination.

There is a need to develop evaluative strategies for complex community interventions to determine whether individual components are more effective than others.

## Practice

Commissioners of research should be familiar with the HDA evidence briefings on drug prevention research, particularly with regard to the commissioning of research.

Standardised baseline data should be collected routinely, via the small area statistics database that is currently being developed by the Neighbourhood Renewal Unit.

Following the establishment of a central logging system for drugs research, proposals for future research should consult this central database to avoid duplication. Research proposals should also be vetted by academic experts in the field of drugs for their relevance and design. Ideally this vetting procedure should be carried out by a central coordinating body that would liaise with accredited academic partners.

## Drug prevention work in schools

The majority of preventive interventions are universal school-based programmes. However, as the National Advisory Committee on Drugs (NACD) has commented: 'The relatively greater emphasis on schools, homes and communities and the media reflects something about the volume of activity in these areas without any claim that these produce the most important results' (NACD, 2001).

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# GLOSSARY

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|---|---|
| AAS | Anabolic Androgenic Steroids |
| ACMD | Advisory Council for the Misuse of Drugs |
| AOD | Alcohol and Other Drug |
| ATP | Adolescents Transitions Program |
| ATLAS | Adolescents Training and Learning to Avoid Steroids |
| BCS | British Crime Survey |
| BMA | British Medical Association |
| CAT | Critical Appraisal Tool |
| CHARLIE | Chemical Abuse Resolution Lies in Education |
| CINAHL | Cumulative Index to Nursing and Allied Health (Database) |
| DARE | Database of Abstracts of Reviews of Effectiveness (Database) |
| DARE | Drug Abuse Resistance Education |
| DEPIS | Drug Education and Prevention Information Service |
| DH | Department of Health |
| EMBASE | Excerpta Medica (Database) |
| EPPI-Centre | Evidence for Policy and Practice Information and Co-ordinating Centre (Database) |
| GAO | General Accounting Office |
| HAS | Health Advisory Service |
| HDA | Health Development Agency |
| HEA | Health Education Authority |
| HMSO | Her Majesty's Stationery Office |
| KACM | Keep a Clear Mind |
| LEA | Local Education Authority |
| LEC | Life Education Centre |
| LST | Life Skills Training |
| MeSH | Medical Subject Headings |
| MPP | Midwestern Prevention Project (aka STAR) |
| NACD | National Advisory Committee on Drugs |
| NatCen | National Centre for Social Research |
| NFER | National Foundation for Educational Research |
| PRIDE | Parents' Role in Drug and Safety Education |
| SHAHRP | School Health and Alcohol Harm Reduction Project |
| STAR | Students Taught Awareness and Resistance |
| THE | Theatre in Health Education |
| VSA | Volatile Substance Abuse |
| WHO | World Health Organization |
| YAP | Youth Awareness Project |

# APPENDIX A

## Potential risk and protective factors

| Class | Risk factors | Protective factors |
|---|---|---|
| Environmental/contextual | High drug availability<br>Low socio-economic status<br>Drug-using peers<br>Delinquent peers | Prosocial adult friends<br>Prosocial peers<br>High socio-economic status |
| Family | Parental substance abuse and deviance<br>Low parental monitoring<br>Parental rejection<br>Poor disciplinary procedures<br>Family conflict/divorce<br>Familial/environmental<br>Predisposition/addicted parents<br>Low parental expectations<br>Family disruption including employment | Absence of early loss or separation<br>Cohesive family unit<br>Parent-child attachment<br>High parental supervision and monitoring |
| Individual biography | Early onset of deviant behaviour, smoking and drinking<br>Early sexual involvement<br>Early onset of illicit drug use<br>Rapid escalation in substance use<br>Positive expectations and knowledge about substance use<br>History of behaviour problems | Late onset of deviant or substance-using behaviours<br>Negative expectations and cognitions about substance use<br>Religious involvement |
| Personality | Strain/stress<br>Depression<br>Aggression<br>Impulsivity/hyperactivity<br>Antisocial personality<br>Sensation seeking<br>Mental health problems | High self-esteem<br>Low impulsivity<br>Easy temperament |
| Educational | Poor school performance<br>Low educational aspirations<br>Poor school commitment<br>Absence, truancy and drop-out<br>Little formal support | Good teacher relations<br>High educational aspirations<br>High parental educational expectations<br>High educational attainment<br>Good formal support in education |

Source: Department of Health, 2001

# APPENDIX B

## Advantages/disadvantages of universal and targeted programmes

| Advantages and disadvantages of universal programmes | |
|---|---|
| Advantages | Disadvantages |
| • Avoids labelling/stigmatising individuals<br>• Provides a setting/prepares way for targeted programmes<br>• Provides possibility for focusing on community-wide/contextual factors<br>• Behaviourally appropriate (eg high-risk children are not expected to change their behaviour when they are living among children who have high levels of the same behaviour) | • Might be unappealing to public/decision-makers<br>• Small benefit to the individual<br>• Might have greatest effect on those at lowest risk<br>• Community initiatives might be undermined<br>• Might be perceived by low-risk population as being of little benefit<br>• Difficult to detect an overall effect |

Source: Department of Health, 2001

| Advantages and disadvantages of targeted programmes | |
|---|---|
| Advantages | Disadvantages |
| • Potential to address problems early on<br>• Potentially efficient in directing resources appropriately<br>• Early mobilisation of inter-disciplinary resources | • Potential to label and stigmatise<br>• Power to predict future disorder usually very weak<br>• High-risk groups contribute many fewer cases compared to a low-risk group<br>• Tends to ignore the social context as a focus of the interventions<br>• Behaviourally inappropriate (eg the whole population had the high levels of the behaviour that is the focus of the intervention) |

Source: Department of Health, 2001

# APPENDIX C

## 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 types:
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

Looked-after children
Homeless young people
Young offenders
Persistent truants
School excludees
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
Life skills 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 approaches
Evaluation studies
Single case studies
Qualitative research (narrative, focus groups, discourse analysis etc)
Working group reports
Expert group reports

# APPENDIX D

## Critical Appraisal Tool (CAT)

### Health Development Agency

### Critical appraisal tool for evidence base

Author(s): _____

Title: _____

Full bibliographic details (inc ISSN/ISBN) _____

_____

_____

| List the topic areas with which the review is concerned |
|---|
| |

| Is the paper best described as (tick as appropriate): |
|---|
| • Systematic review? |
| • Meta-analysis? |
| • Synthesis? |
| • Literature review? |
| • Other review (please specify) |

| Does it address (tick as appropriate)? |
|---|
| • 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 |
| When reviewing articles consider whether details are given of: | | | |
| • 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 |
| • Whether the criteria used to assess the quality of the primary studies were stated (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:

- 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? | Yes | No | Unsure |
| • 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 E

## Articles identified by the appraisal procedure

**The following list details all articles identified as relevant by the appraisal procedure (n = 21, see Table 1). Those marked with an asterisk* contributed to the background/recommendations detailed in this briefing; they did not form part of the evidence base.**


*Aguirre-Molina, M. and Gorman, D. M. (1996). Community-based approaches for the prevention of alcohol, tobacco, and other drug use. *Annual Review of Public Health* 17: 337-58.

Allott, R., Paxton, R. and Leonard, R. (1999). Drug education: a review of British Government policy and evidence of effectiveness. *Health Education Research Theory and Practice* 14 (4): 491-505.

Belcher, H. M. and Shinitzky, H. E. (1998). Substance abuse in children. *Archives of Pediatrics and Adolescent Medicine* 152 (October): 952-60.

Black, D. R., Tobler, N. S. and Sciacca, J. P. (1998). Peer helping/involvement: an efficacious way to meet the challenge of reducing alcohol, tobacco and other drug use among youth? *Journal of School Health* 68 (3): 87-93.

Botvin, G. J. (1999a). Adolescent drug abuse prevention: Current findings and future directions. In: Glantz, M. D. and Hartel, C. R. (eds) *Drug abuse: origins and interventions*. Washington DC: American Psychological Association.

Botvin, G. J. (1999b). Prevention in schools. In: Ammerman, R. T. and Ott, P. (eds) *Prevention and societal impact of drug and alcohol abuse*. Mahwah, NJ: Lawrence Erlbaum Association.

Botvin, G. J. (2000). Preventing drug abuse in schools: Social and competence enhancement approaches targeting individual-level etiologic factors. *Addictive Behaviors* 25 (6): 887-97.

*Brown, J. H. and Kreft, I. G. (1998). Zero effects of drug prevention programs: issues and solutions. *Evaluation Review* 22 (1): 3-14.

Coggans, N., Cheyne, B. and McKellar, S. (2003). *The Life Skills Training Drug Education Programme: a review of research*. Scottish Executive Effective Interventions Unit, Scottish Executive Drug Misuse Research Programme. Scotland: University of Strathclyde.

Dusenbury, L., Falco, M. and Lake, A. (1997). A review of the evaluation of 47 drug abuse prevention curricula available nationally. *Journal of School Health* 67 (4): 127-32.

Flay, B. R. (2000). Approaches to substance use prevention utilising school curriculum plus social environment change. *Addictive Behaviors* 25 (6): 861-85.

*Gilvarry, E. (2000). Substance abuse in young people. *Journal of Child Psychology and Psychiatry and Allied Disciplines* 41 (1): 55-80.

*Hall, N. W. and Zigler, E. (1997). Drug-abuse prevention efforts for young children: a review and critique of existing programs. *American Journal of Orthopsychiatry* 67 (1): 134-43.

Lloyd, C., Joyce, R., Hurry, J. and Ashton, M. (2000). The effectiveness of primary school drug education. *Drugs: Education, Prevention and Policy* 7:109-26.

Mellanby, A., Rees, J. and Tripp, J. (2000). Peer-led and adult-led school health education: a critical review of available comparative research. *Health Education Research* 15 (5): 533-45.

Parkin, S. and McKeganey, N. (2000). The rise and rise of peer education approaches. *Drugs: Education, Prevention and Policy* 7 (3): 293-310.

*Pearson, G. (1996). Drugs and deprivation. *Journal of the Royal Society of Health* 116 (2): 113-6.

*Petraitis, J., Flay, B., Miller, T. et al. (1998). Illicit substance use among adolescents: a matrix of prospective predictors. *Substance Use and Misuse* 33 (13): 2561-2604.

Smyth, N. J. and Saulnier, C. F. (1996). Substance abuse prevention among high-risk youth. *Journal of Prevention and Intervention in the Community* 14 (1/2): 61-79.

White, D. and Pitts, M. (1998). Educating young people about drugs: a systematic review. *Addiction* 93 (10): 1475-87.

Windle, M. and Windle, R. C. (1999). Adolescent tobacco, alcohol and drug use: current findings. *Adolescent Medicine: State of the Art Reviews* 10 (1): 153-63.

# Notes