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International Standards on Drug Use Prevention

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I. Introduction

There was a time when drug prevention was limited to printing leaflets to warn young people about the danger of drugs, with little or no resulting behaviour change. Now, science allows us to tell a different story. Prevention strategies based on scientific evidence working with families, schools, and communities can ensure that children and youth, especially the most marginalized and poor, grow and stay healthy and safe into adulthood and old age. For every dollar spent on prevention, at least ten can be saved in future health, social and crime costs[1].

These global International Standards summarize the currently available scientific evidence, describing interventions and policies that have been found to result in positive prevention outcomes and their characteristics. Concurrently, the global International Standards identify the major components and features of an effective national drug prevention system. It is our hope that the International Standards will guide policy makers worldwide to develop programmes, policies and systems that are a truly effective investment in the future of children, youth, families and communities. This work builds on and recognizes the work of many other organizations (e.g. EMCDDA, CCSA, CICAD, Mentor, NIDA, WHO[2]) which have previously developed standards and guidelines on various aspects of drug prevention.

1. Prevention is about the healthy and safe development of children

The primary objective of drug prevention is to help people, particularly but not exclusively young people, to avoid or delay the initiation of the use of drugs, or, if they have started already, to avoid that they develop disorders (e.g. dependence). The general aim of drug prevention, however, is much broader than this: it is the healthy and safe development of children and youth to realize their talents and potential becoming contributing members of their community and society. Effective drug prevention contributes significantly to

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[1] Spoth, R. L., Clair, S., Shin, C., & Redmond, C. (2006). Long-term effects of universal preventive interventions on methamphetamine use among adolescents. Archives of pediatrics & adolescent medicine, 160(9), 876.

[2] European Monitoring Centre for Drugs and Drug Addiction (EMCDDA), www.emcdda.europa.eu; Canadian Centre on Substance Abuse (CCSA), www.ccsa.ca/Eng/; Inter-American Drug Abuse Control Commission (CICAD) at the Organization of the American States, http://cicad.oas.org/main/default_eng.asp; Mentor Foundation (Mentor), www.mentorfoundation.org/; National Institute on Drug Abuse (NIDA), www.drugabuse.gov/; World Health Organization (WHO), www.who.int/.

the positive engagement of children, youth and adults with their families, schools, workplace and community.

Prevention science in the last 20 years has made enormous advances. As a result, practitioners in the field and policy makers have a more complete understanding about what makes individuals vulnerable to initiating the use of drugs ('risk factors') at both the individual and environmental level. More than a lack of knowledge about drugs and their consequences, the evidence points to the following among the most powerful risk factors: biological processes, personality traits, mental health disorders, family neglect and abuse, poor attachment to school and the community, favourable social norms and conducive environments, and, growing up in marginalized and deprived communities. Conversely, psychological and emotional well-being, personal and social competence, a strong attachment to caring and effective parents and to schools and communities that are well resourced and organized are all factors that contribute to individuals being less vulnerable (protective factors, recently also referred to as assets) to drug use and other negative behaviours.

It is important to emphasize that these risk factors referenced above are largely out of the control of the individual (nobody chooses to be neglected by his/her parents!) and are linked to many risky behaviours and related health disorders, such as dropping-out of school, aggressiveness, delinquency, violence, risky sexual behaviour, depression and suicide. It should not, therefore, come as a surprise that prevention science demonstrates that many drug prevention interventions and policies also prevent other risky behaviours.

Research indicates that some of the factors that make people vulnerable (or, conversely, resistant) to starting to use drugs, differ according to age. Science has identified risk and protective factors during infancy, childhood and early adolescence, particularly relating to parenting and attachment to school. At later stages of the age continuum, schools, workplaces, entertainment venues, media are all settings that may contribute to make individuals more or less vulnerable to drug use and other risky behaviours.

Needless to say, marginalized youth in poor communities with little or no family support and limited access to education in school, are especially at risk. So are children, individuals and communities torn by war or natural disasters.

In summary, drug prevention is an integral part of a larger effort to ensure children and youth are less vulnerable and more resilient.

2. Prevention of drug use and substance abuse

Prevention is one of the main components of a health-centred system to address drugs, as mandated by the existing three international Conventions[3]. This document focuses on prevention of the initiation of drug use and the prevention of transition to drug use disorders. The global International Standards do not address other kinds of prevention (e.g. the prevention of health and social consequences of drug use), drug dependence treatment and care, or law enforcement efforts.

This is not to say that these other efforts are not worthwhile. Indeed, it should be stressed that no effective prevention intervention, policy or system can be developed or implemented on its own, or in isolation. An effective local or national prevention system is embedded and integrated in the context of a larger health-centred and balanced system responding to drugs including law enforcement and supply reduction, treatment of drug dependence, and prevention of health and social consequences (e.g. HIV, overdose, etc.). The overarching and main objective of such health-centred and balanced system would be to ensure the availability of controlled drugs for medical and scientific use whilst preventing diversion and abuse.

Although the main focus of the global International Standards is the prevention of the use of drugs controlled in the three International Conventions (including also the non-medical use of prescription drugs), it draws upon and presents evidence with regard to the prevention of other psychoactive substances, such as tobacco, alcohol and inhalants.

Many useful lessons and parallels can be drawn from these complementary prevention fields, but this is far from the only reason for presenting such a comprehensive picture of the evidence. Inhalants are strongly toxic with devastating consequences, driving the urgent need for prevention efforts to address initiation of use. Moreover, in the case of children and adolescents, prevention of tobacco and alcohol initiation is a powerful tool for preventing drug use as well. The brain of children and adolescents is still developing and prevention science tells us that the earlier they start to use psychoactive substances, the more likely they are to develop substance and drug abuse disorders later in life[4].

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[3] Single Convention on Narcotic Drugs of 1961 as amended by the 1972 Protocol; Convention on Psychotropic Substances of 1971; and United Nations Convention against Illicit Traffic in Narcotic Drugs and Psychotropic Substances of 1988.

[4] Throughout the rest of the document, terminology will be utilised as follows. 'Drug use' will be used to refer to the non-medical and/or non-scientific use of drugs controlled in the three International Conventions. 'Substance abuse' will be used to refer to the 'harmful or hazardous use of psychoactive substances'. In addition to drug use, this includes tobacco use,

3. Prevention science

Thanks to prevention science, we also know a lot about what is effective in preventing substance abuse and what is not. It is important to note that science does not happen of its own accord. We owe what we know to the dedication and efforts of researchers and practitioners who rigorously evaluated these prevention programmes, and to the organizations that funded this research. The purpose of this document is to organize the findings from these years of research in a format that enhances the ability of policy makers to base their decisions on evidence and science.

This is not to say that we know it all. Through the review process many gaps in prevention science were noted. The majority of the science originates from a handful of high-income countries in North America, Europe and Oceania. There are few studies from other cultural settings or in low- and middle-income countries. Moreover, most studies are 'efficacy' studies that examine the impact of interventions in well-resourced, small, controlled settings. There are very few studies that have investigated the effectiveness of interventions in a 'real life' setting. Additionally, there are limited studies that have calculated whether interventions and policy are cost-beneficial or cost-effective (rather than just efficacious or effective). Last, but not the least, it has been observed that few studies report data disaggregated by sex.

Another challenge suggests that often studies are too few to be able to conclusively identify 'active ingredients', i.e. the component or components that are really necessary for the intervention or policy to be efficacious or effective, including with regard delivery of the strategies (who delivers them best? what qualities and training are necessary? what methods need to be employed? etc).

There is a lack of resources and opportunities to undertake rigorous evaluations in some settings, and particularly in low- and middle income countries. This is not to say that work being undertaken is ineffective. Some of the qualitative evaluations that are undertaken reflect promising indications. However, until these strategies are not given the opportunity to be tested in a rigorous scientific manner, it is just not possible to state whether they are effective or not.

Finally, as in all medical, social and behavioural sciences, publication bias is a real problem. Studies which report new positive findings are more likely to be published than studies that report negative findings. This means that our

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alcohol abuse, the misuse of inhalants and non-prescription drugs, the use of new psychoactive substances (so-called 'legal highs' or 'smart drugs').

analysis risks overestimating the efficacy and the effectiveness of drug prevention interventions and policies.

There is a strong and urgent need for research to be nurtured and supported in the field of drug prevention globally. It is critical to support prevention research efforts in low- and middle-income countries, but national drug prevention systems in all countries should invest significantly in rigorously evaluating their programmes and policies to contribute to the global knowledge base. It is hoped that future updates and editions of these Standards will be able to present a much richer picture of the available evidence.

What can be done in the meantime? Should policy makers wait for the gaps to be filled before implementing prevention initiatives? What can be done to prevent drug use and substance abuse, and ensure that children and youth grow healthy and safe NOW?

The gaps in the science should make us cautious, but not deter us from action. A prevention approach that has been demonstrated to work in one area of the world is probably a better candidate for success than one that is created locally only on the basis of good will and guesswork. This is particularly the case for interventions and policies that address vulnerabilities that are significant across cultures (e.g. temperament, parental neglect). Moreover, approaches that have failed or even resulted in negative outcomes in some countries are prime candidates for failure and iatrogenic effects elsewhere. Prevention practitioners, policy makers and community members involved in drug prevention and substance abuse prevention have a responsibility to take such lessons into consideration.

What we have is a precious indication of where the right way lies. By using this knowledge and building on it with more evaluation and research, we will be able to provide to policy makers the information they need to develop national prevention systems that are based on scientific evidence and that will support children, youth and adults in different settings to lead positive, healthy and safe lifestyles.

4. The International Standards

This document describes the interventions and policies that have been found to result in positive prevention outcomes by the scientific evidence and could serve as the foundation of an effective health-centred national drug prevention

system[5]. The International Standards also provide an indication as to how interventions and policies should be implemented drawing on the common characteristics of interventions and policies that have been found to yield positive outcomes. Finally, the document discusses how interventions and policies should exist in the context of national prevention systems supporting and sustaining their development, implementation, monitoring and evaluation on the basis of data and evidence.

The process of development of the International Standards

The document has been created and published by UNODC with the assistance of a globally representative group of 85 researchers, policy makers, practitioners, non-governmental and international organizations. Members of this Group of Experts were in part identified by UNODC because of their research and activities in the field of drug prevention. Additionally, members were nominated by Member States, as they had all been invited to join the process.

Members of the group met twice: in January 2012 to provide general guidance to UNODC on the scope of the process, and in June 2012 to review the evidence collected up to that point and a first draft of the document. The group advised UNODC regarding the development of methodology for the systematic assessment of the evidence collected. A full description of the methodology used to collect and assess the evidence is described in detail in an appendix to this document (Appendix II)[6]. The following paragraphs provide a short summary of the methodology to frame the information contained in this document.

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[5] Throughout the document and for sake of simplicity, drug prevention endeavours are referred to as either 'interventions' or 'policies'. An intervention refers to a group of activities. This could be a programme that is delivered in a specific setting in addition to the normal activities delivered in that setting (e.g. drug prevention education sessions in schools). However, the same activities could also be delivered as part of the normal functioning of the school (e.g. drug prevention education sessions as part of the normal health promotion curriculum). Normally, the evidence about most interventions has been derived from the evaluation of specific 'programmes', of which there can be many per interventions. For example, there are many programmes aiming at preventing drug use through the improvement of parenting skills (e.g. 'Strengthening Families Program', 'Triple-P', 'Incredible Years', etc.). These are different programmes delivering the same intervention. A policy refers to a regulatory approach either in a setting or in the general population. Examples include policies about substance use in schools or in the workplace or restrictions on the advertising of tobacco or alcohol. Finally, for the sake of summarizing, sometimes the Standards use the term 'strategies' to refer to both interventions and policies together (i.e. a strategy can be either an intervention or a policy).

[6] All Appendixes and Annexes are available on the website of UNODC: http://www.unodc.org/unodc/en/prevention/prevention-standards.html.

The evidence that forms the basis of this document has been contributed by the Group of Experts. Participants in the group provided key works in better researched areas, as well as research that was available on a more limited basis with regard to particular topics or geographical areas. Publications in all languages were accepted, both from academic journals and from reports of organizations. The list of all the 584 studies considered during this process is attached as Appendix I.

All received studies were screened to identify the research that reported the efficacy or effectiveness of an intervention or a policy with regard to preventing substance abuse (resulting in 225 studies). In the case of interventions targeting small children, papers reporting effects on important risk and protective factors were also included (31 studies). This is because not all interventions targeting this age group have had the opportunity to follow the participants later in life to see if the intervention had an effect on their subsequent substance abuse. Epidemiological studies discussing prevalence, incidence, vulnerabilities and resilience linked to substance abuse were not included in the process described below, but are included in the references together with studies exploring important issues on substance abuse prevention (268 studies).

Following the screening, studies were categorized according to their methodology: systematic reviews (137), randomized controlled trials (60), and other primary studies such as non-randomized control trials, longitudinal studies, etc (60). A process of selection was undertaken to reduce the number of studies to be analysed to a more manageable number. All systematic reviews were included, but primary studies (randomized control trials, non-randomized control trials, longitudinal studies, and other primary studies) were included only if they provided additional evidence on a specific intervention or policy to that provided by the reviews, particularly with regard to drug use and geographical representation. This resulted in the selection of 16 randomized control trials and 8 other primary studies.

The quality of both the reviews and the selected primary studies was then assessed. The instruments utilised for the assessment are based on those considered to constitute best practice in the medical, social and behavioural field. Studies were assessed to be “good”, “acceptable” and “not acceptable”. Only studies assessed to be “good” or “acceptable” (70 systematic reviews, 10 randomized control trials and 1 other primary study) were analysed. Moreover, only interventions and policies supported by “good” or “acceptable” studies are presented in the International Standards.

However, it is important to note that the quality of the studies is not the same as the actual possible impact of the intervention or policy. There are cases for which ‘good’ systematic reviews concluded that the studies available to them were few or with mixed results. This is indicated in the text by formulations such as ‘the intervention *might* or *can* prevent substance abuse’.

The document

Following this introduction, the document is comprised of three main sections. The first describes the interventions and policies that have been found to yield positive outcomes in preventing drug use and substance abuse. Interventions and policies are grouped by the age of the target group, representing a major developmental stage in the life of an individual: pregnancy, infancy and early childhood; middle childhood; early adolescence; adolescence and adulthood[7].

Some interventions and policies can be targeted at (or are relevant for) more than one age group. In this case, the description is not repeated. They are included under the age for which they are most relevant with a reference to the other developmental stages for which there is also available evidence.

The description of each strategy includes, to the extent possible, the following details.

- A brief description;
- The available evidence; and,
- The characteristics that appear to be linked to positive, no or negative outcomes.

Brief description

This sub-section briefly describes the intervention or the policy, its main activities and theoretical basis. Moreover, it includes an indication of whether the strategy is appropriate for the population at large (universal prevention), or for groups that are particularly at risk (selective prevention), or for individuals that are particularly at risk (indicated prevention, which also includes individuals that might have started experimenting and are therefore at particular risk of progressing to disorders).

Available evidence

The text describes what is the available evidence and the findings reported in it, by substance. Moreover, wherever available, effect sizes are included, as

[7] Every child is unique and his or her development will be also influenced by a range of socio-, economic and cultural factors. That is why, the ranges referred to by the different ages have not been defined numerically. However, as a general guide, the following could be considered: infancy and early childhood refer to pre-school children, mostly 0-5 years of age; middle childhood refers to primary school children, approximately 6-10 years of age; early adolescence refers to middle school or junior high school years, 11-14; adolescence refers to senior high school, late teen years: 15 to 18/19 years of age; adulthood refers to subsequent years. Although the range has not been used in the Standards for reasons of expediency, young adulthood (college or university years, 20-25 years of age) is also sometimes referred to, as a lot of scientific literature makes reference to it.

provided in the original studies. The geographical source of the evidence is indicated to offer policy makers an indication of whether it is already known that a strategy is effective in different geographical settings. Finally, if there is an indication of cost-effectiveness, this is also included in these paragraphs. This part of the text is based exclusively on the studies included in the assessment of the evidence and assessed as 'acceptable' or 'good', as described in Appendix II. In particular, a table summarising the characteristics and the findings of the studies has been attached as Annex V to Appendix II.

Characteristics linked to positive, no and negative outcomes

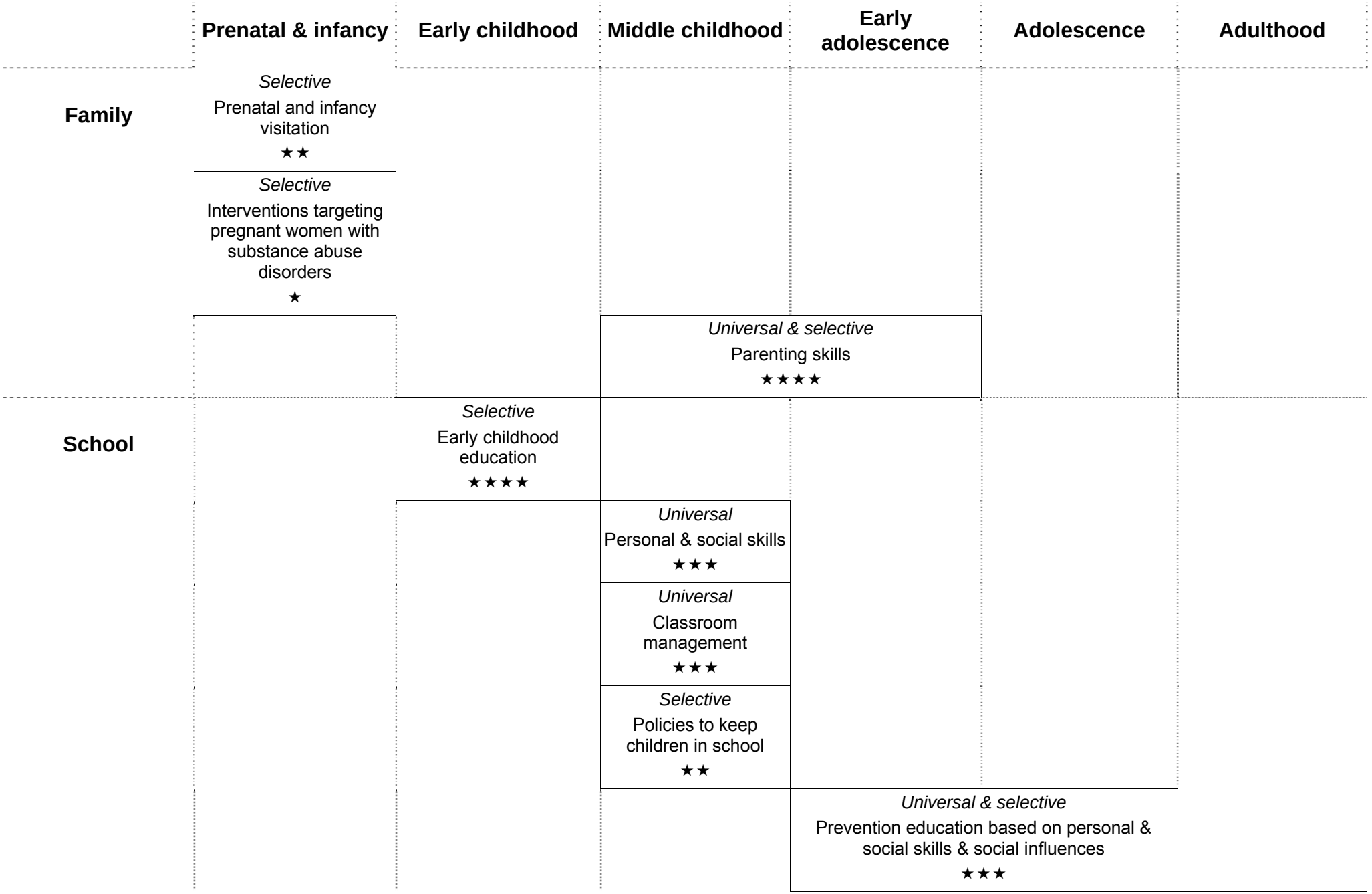
The document also provides an indication of characteristics that have been found by the Group of Experts to be linked to positive outcomes and, where available, to no or negative outcomes. These indications should not be taken to imply a relation of cause and effect. As noted above, there is not enough evidence to allow for this kind of analysis. Rather, the intention is to suggest the direction that is likely to bring more chances of success according to the collective research and practical experience of the Group of Experts.

Table 1, immediately following this section, summarizes the interventions and policies that have been found to yield positive results in preventing substance abuse by age of the target group and setting, as well as by level of risk and an indication of efficacy. Such indication combines the strength of the evidence assessed according to the methodology described above with the description of the achievable outcomes as described in Section II. It should be emphasised this is purely indicative and should not be taken to imply a prescriptive recommendation by any means.

A second section briefly describes prevention issues where further research is particularly required. This includes interventions and policies for which no acceptable quality evidence was found, but also emerging substance abuse problems, as well as particularly vulnerable groups. Wherever possible, a brief discussion of potential strategies is provided.

The third and final section describes the possible components for an effective national prevention system building on evidence-based interventions and policies and aiming at the healthy and safe development of children and youth. This is another area where further research is urgently needed, as investigations have traditionally focused more on the effectiveness of single interventions and policies. Therefore, the drafting of this Section benefited from the expertise and the consensus of the Group of Experts.

Table 1: Summary of interventions and policies that have been found to yield positive results in preventing substance abuse



	Prenatal & infancy	Early childhood	Middle childhood	Early adolescence	Adolescence	Adulthood
Community				*Universal* School policies & culture ★★		
			Indicated Addressing individual vulnerabilities ★★			
				Universal Alcohol & tobacco policies ★★★★★		
	Universal & selective Community-based multi-component initiatives ★★★					
				Universal & selective Media campaigns ★		
				Selective Mentoring ★		
					Universal Entertainment venues ★★	
Workplace					*Universal, selective & indicated* Workplace prevention ★★★	
Health sector				*Indicated* Brief intervention ★★★★		

NOTES. Strategy with an indication of (★ limited/ ★★ adequate/ ★★★ good/ ★★★★ very good/ ★★★★★ excellent) efficacy. See previous page for a description of the information implied by this indication. Universal = strategy appropriate for the population at large; selective = strategy appropriate for groups that are particularly at risk; indicated = strategy appropriate for individuals that are particularly at risk.

II. Drug prevention interventions and policies

1. Infancy and early childhood

Children's earliest interactions occur in the family before they reach school. They may encounter risks when they experience interaction with parents or caregivers who fail to nurture; have ineffective parenting skills in a chaotic family setting; abuse substances, or suffer from mental health disorders. Sufficient evidence is available showing that the consequences of mothers' intake of alcohol, nicotine, and drugs during pregnancy negatively affect developing foetuses. Such deficiencies impede reaching significant developmental competencies and makes a child vulnerable and at risk for negative behaviours later on. By age 2 or 3 years, children can begin manifesting disruptive behaviours, temper tantrums, are disobedient or demonstrate destructive behaviours. If not properly addressed, these personality traits can become problematic later in life. The key developmental goals for early childhood are the development of safe attachment to the caregivers, age-appropriate language skills, and other executive cognitive functions such as self regulation and pro-social attitudes and skills. The acquisition of these is best supported within the context of a supportive family and community.

Interventions targeting pregnant women with substance abuse disorders

Brief Description

Pregnancy and motherhood are periods of major and sometimes stressful changes that may make women receptive to address their dependence. Evidence-based and comprehensive treatment for substance dependence tailored to the needs of the patient can be accompanied by early parenting training. As substance abuse during pregnancy is dangerous for the mother and for the future child, treatment of pregnant women should be offered as a priority and must follow rigorous clinical guidelines based on scientific evidence.

Available evidence

Two good reviews reported findings with regard to this intervention [8]. According to these studies, that providing evidence-based integrated treatment to pregnant women can have a positive impact on child development and emotional and behavioural functioning and on parenting skills. The time frame for the sustainability of these results and the origin of the evidence are not clear.

In addition to this, a good review[9] reported findings with regard to prenatal and infancy visitation for women with alcohol and drug disorders in improving the health of the mother and of the baby, but found insufficient data.

Characteristics associated with positive prevention outcomes

Available evidence indicates that the following characteristics are associated with positive prevention outcomes:

- ✓ Provide integrated treatment services to pregnant women who suffer from substance disorders, including concurrent mental health disorders;
- ✓ Include attachment-based parenting interventions.

Prenatal and infancy visitation

Brief description

In these programmes, a trained nurse or social worker visits mothers-to-be and new mothers to provide them with parenting skills and support in addressing a range of issues (health, housing, employment, legal, etc.). Often, these programmes do not target all women, but only some specific groups considered at high risk.

Available evidence

One acceptable randomized control trial reported findings with regard to this intervention. According to this study, these programmes can prevent substance abuse later in life and that they can also be cost-effective in the terms of social welfare and medical costs[10]. The evidence originates from the USA.

[8] Niccols, 2012a and Niccols 2012b.

[9] Turnbull, 2012.

[10] Kitzman 2010 and Olds 2010 reporting on the same trial.

Characteristics associated with positive prevention outcomes

The available evidence indicates that the following characteristics are associated with positive prevention outcomes:

- ✓ Delivered by trained health workers;
- ✓ Regular visits up to two years of age of the baby, at first every two weeks, then every months and less towards the end;
- ✓ Provide basic parenting skills;
- ✓ Support mothers to address a range of socio-economic issues (health, housing, employment, legal, etc.).

Early childhood education

Short description

Early education supports the social and cognitive development of pre-school children (2 to 5 years of age) from deprived communities, and is therefore a selective level intervention.

Available evidence

Two good reviews reported findings with regard to this intervention[11]. According to these studies, offering early education services to the children growing in disadvantaged communities can reduce marijuana use at age 18 and can also decrease the use of other illicit drugs and smoking. Furthermore, early education can prevent other risky behaviours and support mental health, social inclusion and academic success. All evidence originates from the USA.

Characteristics associated with positive prevention outcomes

The available evidence indicates that the following characteristics are associated with positive prevention outcomes:

- ✓ Improves the cognitive, social and language skills of children;
- ✓ Daily sessions;
- ✓ Delivered by trained teachers;
- ✓ Provide support to families on other socio-economic issues.

[11] D'Onise, 2010 and Jones 2006.

2. Middle childhood

During middle childhood increasingly more time is spent away from the family most often in school and with same age peers. Family still remains to be the key socialization agent. However, as the role of day-care, school, and peer groups start to grow. In this respect, factors such as community norms, school culture and quality of education become increasingly important for safe and healthy emotional, cognitive, and social development. The role of social skills and prosocial attitudes grows in middle childhood and they become key protective factors, impacting also the extent to which the school-aged child will cope and bond with school and peers.

Among the main developmental goals in middle childhood are the continued development of age specific language and numeracy skills, and of impulse control and self control. The development of goal directed behaviour, together with decision making and problem solving skills, starts. Mental disorders that have their onset during this time period (such as anxiety disorders, impulse control disorder and conduct disorders) may also impede the development of healthy attachment to school, cooperative play with peers, adaptive learning, and self-regulation. Children of dysfunctional families often start to affiliate at this time with deviant peers, thus putting themselves at increased risk for negative life choices, including substance abuse and involvement in illegal activities.

PLEASE NOTE. The same evidence that applies to addressing individual psychological vulnerabilities in early adolescence applies to the same intervention when targeting middle childhood and is not discussed in this section.

Parenting skills programmes

Short description

Parenting skills programmes support parents in being better parents, in very simple ways. A warm child-rearing style, where parents set rules for acceptable behaviours, closely monitor free time and friendship patterns, help to acquire skills to make informed decisions, and are role models has been shown to be one of the most powerful protective factors against substance abuse and other risky behaviours. These programmes can be delivered also for parents of early adolescents. As the reviews largely cover all ages together, and as principles are largely similar, the intervention is only discussed here. These interventions can be delivered both at the universal and at the selective level.

Available evidence

Nine good reviews and 4 acceptable reviews reported findings with regard to this intervention [12]. According to these studies, family-based universal programs prevent alcohol use in young people, the effect size being small but generally consistent and persistent into the medium and long term. There is also strong evidence that these kinds of programmes can prevent self-reported drug use at a follow up of 12 months or more.

Family focused work may be the most potentially effective for vulnerable young people and for young people exhibiting multiple risk factors in producing long term reductions in substance abuse. Finally, parent and family focused interventions also produce significant and long term improvements with regard to family functioning (including parenting skills and child behaviour), and may also improve the behaviour, and the emotional and behavioural adjustment of children under the age of 3 years. Furthermore, there is evidence on cost-effectiveness.

Parenting programmes have been implemented in Africa, Asia, the Middle East and Latin America, but only few of these are designed to prevent emotional and behavioural outcomes and/or have a strong methodological design.

Characteristics associated with positive prevention outcomes

Available evidence indicates that the following characteristics are associated with positive prevention outcomes:

- ✓ Enhance family bonding, i.e. the attachment between parents and children;
- ✓ Support parents on how to take a more active role in their children's lives, e.g., monitoring their activities and friendships, and being involved in their learning and education;
- ✓ Support parents on how to provide positive and developmentally appropriate discipline;
- ✓ Support parents on how to be a role model for their children.

Moreover, the following characteristics also appear to be associated with positive prevention outcomes:

- ✓ Organised in a way to make it easy and appealing for parents to participate (e.g. out-of-office hours, meals, child care, transportation, small prize for completing the sessions, etc.);

[12] Barlow, 2005; Bühler, 2008; Foxcroft, 2011; Furlong, 2012; Gates, 2006; Jones, 2006; Knerr, 2013; McGrath, 2006; Mejia, 2012; Miller, 2012; Petrie, 2007; Spoth, 2008; Thomas, 2007.

- ✓ Typically include a series of sessions (often around 10 sessions, more in the case of work with parents from marginalised or deprived communities or in the context of a treatment programme where one or both parents suffer from substance dependence);
- ✓ Typically include activities for the parents, the children and the whole family;
- ✓ Delivered by trained individuals, in many cases without any other formal qualification.

Characteristics associated with no or negative prevention outcomes

- × Undermine parents' authority;
- × Use only lecturing as a means of delivery;
- × Provide information to parents about drugs so that they can talk about it with their children;
- × Focus exclusively on the child;
- × Delivered by poorly trained staff.

Existing guidelines and tools for further information

- UNODC (2010), Compilation of Evidence-Based Family Skills Training Programmes, United Nations Office on Drugs and Crime, Vienna, Austria.
- UNODC (2009), Guide to implementing family skills training programmes for drug abuse prevention, United Nations Office on Drugs and Crime, Vienna, Austria.
- CCSA (2011), Strengthening Our Skills: Canadian guidelines for youth substance abuse prevention family skills programs, Canadian Centre on Substance Abuse, Ottawa, ON, Canada.

Personal and social skills education

Description

During these programmes, trained teachers engage children in interactive activities to give them the opportunity to learn and practice a range of personal and social skills. These programmes are typically delivered to all children via series of structured sessions (i.e. this is a universal level intervention). The programmes provide opportunities to learn skills to be able to cope with difficult situations in the daily life in a safe and healthy way. They support the development of general social competencies, including mental and emotional wellbeing, and address also social norms and attitudes. These programmes do not typically include content with regard to specific substances, as in most communities children at this young age have not

initiated use. This is not the case everywhere and programmes targeting children who have been exposed to substances (e.g. inhalants) at this very young age might want to refer to the substance specific guidance included for "Prevention education based on personal and social skills and social influence" under "Early adolescence".

Available evidence

Five good reviews and 8 acceptable reviews reported findings with regard to this intervention[13]. According to these studies, supporting the development of personal and social skills in a classroom setting can prevent later drug use and alcohol abuse. Such programmes also influence substance abuse related risk factors, e.g. commitment to school, academic performance, self-esteem and mental wellbeing, resistance-skills, and other social skills. Moreover, programmes focusing on improving self-control delivered to children at the age of or fewer than 10 reduce general problem behaviours. Besides the Australia, Canada, Europe and the USA, the evidence reported above originates also from Africa, Latin-America and India.

Characteristics associated with positive prevention outcomes

Available evidence indicates that the following characteristics are associated with positive prevention outcomes:

- ✓ Improves a range of personal and social skills;
- ✓ Delivered through a series of structured sessions, often providing boosters sessions over multiple years;
- ✓ Delivered by trained teachers or facilitators;
- ✓ Sessions are primarily interactive.

Characteristics associated with no or negative prevention outcomes

Available evidence indicates, that the following characteristics are associated with no or negative prevention outcomes:

- ✗ Using non-interactive methods, such as lecturing, as main delivery method;
- ✗ Providing information on specific substances, including fear arousal.

Moreover, programmes with no or negative prevention outcomes appear to be linked to the following characteristics:

[13] Bühler, 2008; Faggiano, 2005; Foxcroft, 2011; Jones, 2006; McGrath, 2006; Müller-Riemenschneider, 2008; Pan, 2009; Roe, 2005; Schröer-Günther, 2011; Skara, 2003; Soole, 2008; Spoth, 2008; Thomas, 2006.

- ✗ Focus only on the building of self-esteem and on emotional education.

Existing guidelines and tools for further information

- UNODC Guidelines on School Based Education on Drug Abuse Prevention
- CICAD Hemispheric Guidelines on School Based Prevention
- Canadian Standards for School-based Youth Substance Abuse Prevention

Classroom environment improvement programmes

Brief description

These programmes strengthen the classroom management abilities of teachers, and support children to socialize to their role as a student, whilst reducing early aggressive and disruptive behaviour. Teachers are typically supported to implement a collection of non-instructional classroom procedures in the day-to-day practices with all students for the purposes of teaching prosocial behaviour as well as preventing and reducing inappropriate behaviour. These programmes facilitate both academic and socio-emotional learning. They are universal as they target the whole class.

Available evidence

One good review reported findings with regard to this intervention [14]. According to this study, teachers' classroom management practices significantly decrease problem behaviour in the classroom, including disruptive and aggressive behaviour (strong classroom level effects size of .8) and strengthen the pro-social behaviour and the academic performance of the children. The time frame for the sustainability of these results is not clear. All evidence reported above originates from the USA and Europe.

Characteristics associated with positive prevention outcomes

Available evidence indicates that the following characteristics are associated with positive prevention outcomes:

- ✓ Often delivered during the first school years;
- ✓ Include strategies to respond to inappropriate behaviour;
- ✓ Include strategies to acknowledge appropriate behaviour;
- ✓ Include feedback on expectations;

[14] Oliver, 2011.

- ✓ Active engagement of students.

Policies to keep children in school

Brief description

School attendance, attachment to school, and the achievement of the age-appropriate language and numeracy skills are important protective factors for children of this age. A variety of policies have been tried in low- and middle-income countries to support the attendance of children and improve their educational outcomes.

Available evidence

Two good reviews[15] reported findings with regard to the following policies: building new schools, providing nutrition in schools and providing economic incentives of various natures to families. According to these studies, these policies increase the attendance of children in school, and improve their language and numeracy skills. Providing simple cash to families does not appear to result in significant outcomes, while conditional transfers do. All these evidence originates from low- and middle-income countries. The time frame for the sustainability of these results is not clear.

[15] Lucas, 2008; Petrosino, 2012.

3. Early adolescence

Adolescence is a developmental period when youth are exposed to new ideas and behaviours through increased associations with people and organizations beyond those experienced in childhood. It is a time to “try out” adult roles and responsibilities. It is also a time when the “plasticity” and malleability of the adolescent brain suggests that, like infancy, this period of development is a time when interventions can reinforce or alter earlier experiences.

The desire to assume adult roles and more independence at a time when significant changes are occurring in the adolescent brain also creates a potentially opportune time for poorly thought out decisions and involvement in potentially harmful behaviours, such as risky sexual behaviours, smoking and drinking, risky driving behaviours and drug use.

The substance abuse and deviant behaviours of peers, as well as rejection by peers, are important influences on healthy behaviour, although the influence of parents still remains significant. Healthy attitudes related to substances and safe social normative beliefs are also important protective factors against drug use. Good social skills, and resilient mental and emotional health remain a key protective factor throughout adolescence.

PLEASE NOTE. The same evidence that applies to parenting skills interventions in middle childhood apply to the same interventions and policies when developed for early adolescents and will not be discussed in this section again. Similarly, many of the interventions and policies of relevance to older adolescents can prevent substance abuse in early adolescence, but, for reasons of expediency, they are discussed only in the next session. This applies to: alcohol and tobacco policies, media campaigns, brief intervention and community-based multi-component initiatives.

Prevention education based on personal and social skills and social influence

Brief description

During skills based prevention programs, trained teachers engage students in interactive activities to give them the opportunity to learn and practice a range of personal and social skills. These programs focus on fostering substance and peer refusal abilities that allow young people to counter social pressures to use substances and in general cope with challenging life situations in a healthy way.

In addition, they provide the opportunity to discuss in an age appropriate way, the different social norms, attitudes and positive and negative expectations associated with substance abuse, including the consequences of substance abuse. They also aim to change normative beliefs on substance abuse addressing the typical prevalence and social acceptability of substance abuse

among the peers. Prevention programs based on skills enhancement and social influences may also be relevant for adolescents.

Available evidence

Thirteen good reviews, 13 acceptable reviews and 1 acceptable randomized control trial reported findings with regard to this intervention[16]. According to these studies, certain interactive school-based programs can prevent substance abuse also in the long term (reporting a strong effect size (RR .82) for cannabis use). Such interactive programs develop personal and social skills and discuss social influences (social norms, expectations, normative beliefs) related to drug use. They generally yield positive results for all substances, as well as for preventing other problem behaviours such as dropping out of school and truancy.

In this context, there are some indications that programs targeting early adolescents might yield more positive results in preventing substance abuse than programs targeting younger or older children.

Most evidence is on universal programs, but there is evidence that universal skills based education can be preventive also among high risk groups.

These programmes are typically delivered by trained facilitators, mostly teachers. However, also programs delivered through computers or the internet can reduce substance abuse.

Most evidence is from USA, Europe and Australia. Skills based prevention programs have also some evidence on transferability, but as the evidence from low- and middle income countries in Africa, Asia and Latin America is mixed, great caution should be applied at the stage of adaptation and implementation.

Characteristics associated with positive prevention outcomes

Available evidence indicates that the following characteristics are associated with positive prevention outcomes:

- ✓ Use interactive methods;
- ✓ Delivered through a series of structured sessions (typically 10-15) once a week, often providing boosters sessions over multiple years;
- ✓ Delivered by trained facilitator (including also trained peers);

[16] Bühler, 2008; Champion, 2012; Dobbins, 2008; Faggiano, 2005; Faggiano, 2008; Fletcher, 2008; Foxcroft, 2011; Gates, 2006; Jackson, 2012; Jones, 2006; Lemstra, 2010; McGrath, 2006; Moreira, 2009; Müller-Riemenschneider, 2008; Pan, 2009; Porath-Waller, 2010; Ranney, 2006; Reavley, 2010; Roe, 2005; Schröer-Günther, 2011; Skara, 2003; Soole, 2008; Spoth, 2008; Thomas, 2006; Thomas, 2008; West, 2004; Wiehe, 2005.

- ✓ Provide opportunity to practice and learn a wide array of personal and social skills, including particularly coping, decision making and resistance skills, and particularly in relation to substance abuse;
- ✓ Impact perceptions of risks associated with substance abuse, emphasizing immediate consequences;
- ✓ Dispel misconceptions regarding the normative nature and the expectations linked to substance abuse.

Characteristics associated with no or negative prevention outcomes

Available evidence indicates that the following characteristics are associated with no or negative prevention outcomes:

- × Utilise non-interactive methods, such as lecturing, as a primary delivery strategy;
- × Information-giving alone, particularly fear arousal.

Moreover, programmes with no or negative prevention outcomes appear to be linked to the following characteristics:

- × Based on unstructured dialogue sessions;
- × Focus only on the building of self-esteem and emotional education;
- × Address only ethical/ moral decision making or values;
- × Use ex-drug users as testimonials;
- × Using police officers to deliver the programme.

Existing guidelines and tools for further information

- UNODC Guidelines on School Based Education on Drug Abuse Prevention
- CICAD Hemispheric Guidelines on School Based Prevention
- Canadian Standards for School-based Youth Substance Abuse Prevention

School policies and culture

Brief description

School policies on substance abuse mandate that substances should not be used on school premises and during school functions and activities by both students and staff. Policies also create transparent and non-punitive mechanisms to address incidents of use transforming it into an educational and health promoting opportunity. Furthermore school policies and school practices may enhance student participation, positive bonding and

commitment to school. These interventions and policies are universal, but may include also selective components such as cessation support and referral. They are typically implemented jointly with other prevention interventions, such as skills based education or supporting parenting skills and parental involvement.

Available evidence

Three good reviews and 1 acceptable review reported findings with regard to these policies[17]. According to these studies, substance abuse policies in schools may prevent smoking. Moreover, altering the school environment to increase commitment to school, student participation, and positive social relationships and discourage negative behaviours may reduce drug use and other risky behaviours. In college and universities, addressing school policies and culture among older students during adolescence and adulthood can reduce alcohol abuse, especially when including brief intervention (moderate effect size (SMD .38) in reducing drinking quantities). The time frame for the sustainability of these results is not clear.

School policies have been known to include random drug testing. One acceptable randomized control trial reported findings with regard to this component and reported no significant reductions in drug and alcohol use[18].

Although most evidence originates from USA, Europe and Australia, there is also evidence originating from Latin America, Africa and Asia.

Characteristics associated with positive prevention outcomes

- ✓ Support normal school functioning, not disruption;
- ✓ Support positive school ethos, commitment to school and student participation;
- ✓ Policies developed with the involvement of all stakeholders (students, teachers, staff, parents);
- ✓ Policies clearly specify the substances that are targeted, as well as the locations (school-premises) and/or occasions (school functions) the policy applies to;
- ✓ Apply to all in the school (student, teachers, staff, visitors, etc.);
- ✓ Reduce or eliminate access to and availability of tobacco, alcohol, or other drugs;

[17] Fletcher, 2008; Moreira, 2009; Reavley, 2010; Thomas, 2008.

[18] Goldberg, 2007.

- ✓ Address infractions of policies with positive sanctions by providing or referring to counselling, treatment and other health care and psycho-social services rather than punishing;
- ✓ Enforce consistently and promptly, including positive reinforcement for policy compliance.

Characteristics associated with no or negative prevention outcomes

Available evidence indicates that the following characteristics are associated with no or negative prevention outcomes:

- ✗ Inclusion of random drug testing.

Addressing individual psychological vulnerabilities

Brief description

Some personality traits such as sensation-seeking, impulsivity, anxiety sensitivity or hopelessness, are associated with increased risk of substance abuse. These indicated prevention programmes help these adolescents that are particularly at-risk deal constructively with emotions arising from their personalities, instead of using negative coping strategies including harmful alcohol use.

Available evidence

Four acceptable randomized control trials reported findings with regard to this intervention in early adolescence and adolescence[19]. According to these studies, programmes addressing individual psychological vulnerabilities can lower the rates of drinking (reducing the odds by 29% compared to high risk students in control schools) and binge-drinking (reducing the odds by 43%) at a two-year follow-up.

One good review reported findings with regard to this intervention in middle childhood[20]. According to this study, this type of intervention can impact the individual mediating factors affecting substance abuse later in life, such as self-control.

Characteristics associated with positive prevention outcomes

The available evidence indicates that the following characteristics are associated with positive prevention outcomes:

[19] Conrod, 2008; Conrod, 2010; Conrod, 2011; Conrod 2013 and O'Leary-Barrett, 2010 reporting on the same trial.

[20] Piquero, 2010.

- ✓ Delivered by trained professionals (e.g. psychologist, teacher);
- ✓ Participants have been identified as possessing specific personality traits on the basis of validated instruments;
- ✓ Provide participants with skills on how to positively cope with the emotions arising from their personality;
- ✓ Short series of sessions (2-5).

Mentoring

Brief description

"Natural" mentoring in the relationships and interactions between children/adolescents and non-related adults such as teachers, coaches and community leaders has been found to be linked to reduced rates for substance abuse and violence. These programmes match youth, especially from marginalised circumstances (selective prevention), with adults who commit to arrange for activities and spend some of their free time with the youth on a regular basis.

Available evidence

Two good reviews and one acceptable review reported findings with regard to this intervention[21]. According to these studies, mentoring may prevent alcohol and drug use among high risk youth with results sustained one year after intervention. All evidence is from the USA.

Characteristics associated with positive prevention outcomes

- ✓ Provide adequate training and support to mentors;
- ✓ Based on a very structured programme of activities.

[21] Bühler, 2008; Thomas, 2011; Tolan, 2008.

4. Adolescence and adulthood

As adolescents grow, interventions delivered in settings other than the family and the school, such as the workplace, the health sector, entertainment venues and the community, become more relevant.

PLEASE NOTE. The same evidence that applies to interventions and policies in schools for early adolescents (i.e. class curriculum, addressing individual vulnerabilities, school policies on substance abuse) as well as to mentoring, apply to the same interventions and policies when developed for older adolescents and will not be discussed in this section again.

Brief intervention

Brief description

Brief intervention consists of one-to-one counselling sessions that can include follow up sessions or additional information to take home. They can be delivered by a variety of trained health and social workers to people who might be at risk because of their substance abuse, but who would not necessarily or seek treatment. The sessions first identify whether there is a substance abuse problem and provide immediate appropriate basic counselling and/or referral for additional treatment. The sessions are structured, and last typically from 5 to 15 minutes.

Brief intervention is typically delivered in the primary health care system or in emergency rooms, but it also has been found to yield positive results when delivered as part of school-based and workplace programs, and when delivered online or via computers.

Brief intervention sessions may also use motivational interviewing, which is a psycho-social intervention where the substance abuse of a person is discussed and the patient is supported in making decisions and setting goals about his/her substance abuse. In this case, brief intervention is normally delivered over the course of up to 4 1-hour sessions.

Available evidence

Ten good reviews, 13 acceptable reviews and 1 acceptable randomized control trial reported findings with regard to this intervention[22]. According to these studies, brief intervention and motivational interviewing can significantly reduce substance abuse also in the long term. The strength of this evidence is

[22] Ballesteros, 2004; Beich, 2003; Bertholet, 2005; Carney, 2012; Christakis, 2003; Dunn, 2001; Emmen, 2004; Fager, 2004; Gates, 2006; Humeniuk, 2012; Jensen, 2011; Jones, 2006; Kahan, 1995; Kaner, 2007; Khadjesari, 2010; McQueen, 2011; Nilsen, 2008; Riper, 2009; Smedslund, 2011; Tait, 2003; Vasilaki, 2006; Wachtel, 2010; White, 2010; Wilk, 1997.

strong, and the effect sizes for alcohol and drug use are strong immediately after intervention (standardized mean difference = 0.79), sustaining substantially over time also one year after the intervention (standardized mean difference = 0.15).

Brief intervention and motivational interviewing benefit both adolescents and adults alike, but for women the evidence on long term impact on alcohol use is inconclusive suggesting larger effects for men. Even single session brief intervention or motivational interviewing can produce significant and lasting outcomes. A longer duration of counselling does not appear to add additional gains. Brief intervention has been found to be cost-effective and transferable. Besides evidence from USA, Europe and Australia/ New Zealand and trials in Africa, ASSIST, the brief intervention package developed by WHO, has been tested also Latin America and Asia.

Characteristics associated with positive prevention outcomes

- ✓ One-to-one session identifies if there is a substance abuse problem and provides immediate basic counselling and/or referral.
- ✓ Delivered by a trained professional.

Existing guidelines and tools for further information

- The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) package for primary health care professionals and their patients.

Workplace prevention programmes

Brief description

The vast majority of substance abuse occurs among working adults. Substance abuse disorders expose employees to health risks and difficulties in their relationship with fellow employees, friends and family, as well as, more specifically to the workplace, to safety risks. Young adults are at particularly high risk, as job strain has been found to significantly increase the risk of becoming drug dependent among young adults using drugs. Employers also bear a significant cost of substance abuse. Employees with substance abuse problems have higher absenteeism rate and lower productivity, are more likely to cause accidents, and have higher health care costs and turnover rates. Moreover, employers have a duty to provide and maintain a safe and healthy workplace in accordance with the applicable law and regulations[23]. Prevention programmes in the workplace are typically multi-component, including

[23] ILO (1996). Management of alcohol- and drug-related issues in the workplace. An ILO code of practice, Geneva, International Labour Office.

prevention elements and policies, as well as counselling and referral to treatment.

Available evidence

One good and one acceptable review reported findings with regard to this intervention. According to these studies, workplace prevention programmes can prevent tobacco and alcohol use. The time frame for the sustainability of these results is not clear. Although interesting experiences have been implemented in Latin America, Asia and Africa, evidence originates from the USA, Australia and Europe.

Characteristics associated with positive prevention outcomes

- ✓ Developed with the involvement of all stakeholders (employers, management, employees);
- ✓ Guarantee confidentiality to employees;
- ✓ Include and are based on a policy on substance abuse in the workplace that has been developed by all stakeholders and is non-punitive;
- ✓ Provide brief intervention (including web-based), as well as counselling, referral to treatment and reintegration services to employees who need them.
- ✓ Include a clear communication component;
- ✓ Embedded in other health or wellness related programmes (e.g. for the prevention of cardiovascular diseases);
- ✓ Include stress management courses;
- ✓ Trains managers, employees and health workers in fulfilling their roles in the programme.
- ✓ Include alcohol and drug testing only as part of a comprehensive programme with the characteristics described in the above bullet points.

Existing guidelines and tools for further information

- ILO (2012), SOLVE training package: Integrating health promotion into workplace OSH policies, Programme on Safety and Health at Work and the Environment (SAFEWORK), International Labour Organisation, Geneva, Switzerland.
- UNODC in cooperation with ILO (*forthcoming*), Guidelines on workplace prevention programmes.
- CICAD (2009), CICAD Hemispheric Guidelines In Workplace Prevention.

Tobacco and alcohol policies

Brief description

Tobacco and alcohol use, dependence and associated disorders, are much more prevalent than drug use disorders and the global burden of disease is much higher. Their use starting in early adolescence, when the brain is still developing, considerably increases the likelihood of developing substance use disorders and addiction later in life. Moreover, youth that use drugs, often also use alcohol in excessive quantities and/or in combination with other substances. That is why efforts to prevent and reduce tobacco and alcohol use by youth, including harmful patterns of use, are relevant to an overall drug prevention strategy, besides being crucial to any public health policy.

Available evidence

Six good reviews and 6 acceptable reviews reported findings with regard to alcohol policies[24], while 5 good reviews and 4 acceptable reviews reported findings with regard to tobacco policies[25]. According to these studies, raising the price of alcohol and tobacco reduces their consumption in the general population. With regard to alcohol, the impact appears to affect both moderate and heavy drinkers and an increase of 10% has been found to be associated with a 7.7% decrease in alcohol consumption. With regard to tobacco, an increase by 10% results in 3.7% fewer smokers. Raising prices has also been found to reduce heavy drinking among college youth and tobacco consumption among adolescents and college students. Higher tobacco prices appear to impact lower-income populations as well. Finally, higher alcohol prices are associated with decreased violence.

Raising the minimum legal drinking age reduces alcohol consumption, while with regard to tobacco the available evidence is more mixed. Comprehensive interventions achieving high compliance by vendors might impact tobacco use by youth, especially girls and those who have passed the initial stages of tobacco uptake (the others more usually accessing tobacco through friends). The time frame for the sustainability of these results is not clear.

Inconclusive findings are reported with regard to increasing dram shop liability on the consumption of alcohol.

Increased exposure to alcohol advertising increases the probability of starting to drink among adolescents and can increase levels of consumption among existing drinkers. Similarly, tobacco advertising and promotion are linked to increased initiation of tobacco use. A long-term ban on the advertising of tobacco products prevents consumption.

[24] Anderson, 2009; Bühler, 2008; Campbell, 2009; Elder, 2010; Hahn, 2010; Hahn, 2012; Middleton, 2010; Popova, 2009; Rammohan, 2011; Smith, 2009; Spoth, 2008, Wagenaar & Toomey, 2002.

[25] Bühler, 2008; Callinan, 2010; Hopkins, 2001; Lovato, 2011; NCI, 2008; Ranney, 2006; Richardson, 2009; Stead, 2005; Thomas, 2008.

Although most evidence reported above originates from the USA/Canada, Europe, Australia, some evidence for tobacco policies originates also from East Asia and Southern Africa.

Characteristics associated with positive prevention outcomes

- ✓ Increase in the price of tobacco and alcohol through taxation; in the case of alcohol policies, outcomes might be not as strong as in the case of countries where the vast majority of the production and consumption is unrecorded.
- ✓ Increase in the minimum age of sale of tobacco and alcohol products.
- ✓ Prevents the sale of tobacco and alcohol to young people under the legal age through comprehensive programmes including active and ongoing law enforcement and education of retailers through a variety of strategies (personal contact, media and information materials).
- ✓ Bans advertisement of tobacco and restrict advertisement of alcohol to youth.

Community-based multi-component initiatives

Brief description

At the community level, mobilization efforts to create partnerships, task forces, coalitions, action groups, etc. bring together different actors in a community to address substance abuse. Some community partnerships are spontaneous. However, the existence of community partnerships on a large scale is normally the product of a special programme providing financial and technical support to communities to deliver and sustain evidence based prevention interventions and policies over time. Community-based initiatives are normally multi-component, taking action in different settings (e.g. schools, families, media, enforcement etc.).

Available evidence

Seven good reviews and 6 acceptable reviews reported findings with regard to this intervention. According to these studies, community-based multi-component initiatives can prevent the use of drugs, alcohol and tobacco. Although most evidence reported above originates from the USA/Canada, Europe, Australia, some few studies on community-based multi-component initiatives, particularly with regard to tobacco, originate from Asia.

Characteristics associated with positive prevention outcomes

- ✓ Support the enforcement of tobacco and alcohol policies.
- ✓ Work in a range of community settings (families and schools, workplace, entertainment venues, etc.)
- ✓ Involve universities to support the implementation of evidence-based programmes and their monitoring and evaluation.
- ✓ Adequate training and resources are provided to the communities.
- ✓ Initiatives are sustained in the medium term (e.g. longer than a year).

Existing guidelines and tools for further information

- CCSA (2010), Community-Based Standards, *Canadian Standards for Youth Substance Abuse Prevention*, Canadian Centre on Substance Abuse, Ottawa, Canada.

Media campaigns

Brief description

Media campaigns are often the first and/or only intervention delivered by policy makers concerned with preventing the use of drugs in a population, as they are visible and have the potential to reach a large number of people relatively easily.

Available evidence

Three good reviews and three acceptable reviews, reported findings with regard to this intervention[26]. According to these studies, media campaigns, in combination with other prevention components, can prevent tobacco use (reporting median reduction of 2.4%). However, no significant findings were reported for alcohol abuse, and only weak findings with regard to drug use.

Characteristics associated with positive prevention outcomes

- ✓ Precisely identify the target group of the campaign.
- ✓ Based on a solid theoretical basis.
- ✓ Design messages on the basis of strong formative research.

[26] Bühler, 2008; Ferri, 2013, (in press); Hopkins, 2001; NCI, 2008; Ranney, 2006.

- ✓ Strongly connect to other existing drug prevention programmes in the home, school, and community
- ✓ Achieve adequate exposure of the target group for an adequate period of time.
- ✓ Systematically evaluated, including throughout the campaign to adjust messages for maximal effect.
- ✓ Target parents, as this appears to have an independent effect also on the children.
- ✓ Aim at changing cultural norms about substance abuse and/or educating about the consequences of substance abuse and/or suggesting strategies to resist substance abuse.

Characteristics associated with no or negative prevention outcomes

- × Media campaigns that are badly designed or poorly resourced should be avoided as they can worsen the situation by making the target group resistant to or dismissive of other interventions and policies.

Entertainment venues

Brief description

Entertainment venues include bars, clubs, restaurants as well as outdoor or special settings where large scale events may occur. These venues can have both positive and negative impact on the health and wellbeing of citizens, as they provide social meeting spaces and support the local economy, but at the same time, they are identified as high risk settings for many risk behaviours, such as harmful alcohol use, drug use, drugged driving and aggression. Work in this setting is a rapidly emerging area of research.

Most prevention programmes utilizing entertainment venues have multiple components including different combinations of training of staff and managers on responsible beverage service (RBS) and management of intoxicated patrons; changes in laws and policies, e.g. with regard to serving alcohol to minors or to intoxicated persons, or with regard to drinking and driving; high visibility enforcement of existing laws and policies; communication to raise awareness and acceptance of the programme and to change attitudes and norms; and, offering treatment to managers and staff.

Available evidence

Two acceptable reviews reported findings with regard to this intervention[27]. According to these studies, training of staff, policy interventions and enforcement may reduce intoxication. It should be noted that evidence on the impact of these intervention on health and social consequences (e.g. car accidents or violence) was not reviewed, while it appears to be significant. The time frame for the sustainability of these results is also not clear. All evidence originates from USA/Canada, Europe and Australia.

Characteristics associated with positive prevention outcomes

- ✓ Trains staff and management on responsible serving and handling of intoxicated clients;
- ✓ Provides counselling and treatment for staff and management who need it;
- ✓ Includes a strong communication component to raise the awareness and the acceptance of the programme;
- ✓ Includes the active participation of the law enforcement, health and social sectors;
- ✓ Enforces existing laws and policies on substance abuse in the venues and in the community.

Existing guidelines and tools for further information

- UNODC, ATS prevention guide for policy makers
- CICAD report: insights for a drugged driving policy

[27] Bolier, 2011; Brennan, 2011.

III. Prevention issues requiring further research

Sports and other leisure time activities

In many countries and communities, it is popular to organize sports and other drug or substance free leisure time activities as a way to give adolescents prosocial and healthy pursuits, preventing them from engaging in risky behaviours including drug use. However, in fact, there is evidence that sports *per se* is not always associated with lower rates of substance abuse and that it has been linked to higher rates of smoking and binge drinking.

The review of literature could find 2 good and 1 acceptable review reporting that practically no studies are available assessing the impact of organising sports or other leisure time activities on substance abuse or on mediating factors among children. Promising studies are being reviewed with regard to positive experience in including a substance abuse prevention component in sports coaching. Policy makers should therefore exercise the outmost caution if choosing to implement this kind of intervention, including a strong research component to assess the impact.

Some additional indications on how sports could be used to pursue preventing objectives can be found at UNODCCP (2002), Sport - Using sport for drug abuse prevention, United Nations Office on Drug Control and Crime Prevention, Vienna, Austria and UNODC (2003), EVERYONE WINS! Helping coaches, teachers and youth leaders lead a module on fair play, United Nations Office on Drugs and Crime, Vienna, Austria.

Preventing the non-medical use of prescription drugs

The non-medical use of prescription drugs controlled under the Conventions is an increasing problem in many countries, so is the abuse of some drugs that are sold over-the-counter. In some countries, this challenge is second only to cannabis use. Although most notably visible in North America, there are reports of significant treatment demand in Europe, Africa, South Asia and Latin America. Depending on the country and the kind of substance, some more vulnerable groups (such as youth, women, older adults, health care professionals, but also street children and civilians and armed forces in post conflict situations) appear to be particularly at risk. Moreover, the health and social consequences of the non-medical use of prescription drugs can be as serious as for the use of other illicit drugs.

The review of the scientific evidence could not find acceptable or good reviews. Much of the evidence presented in the previous section refers to interventions that address vulnerabilities and resiliences that are not specific to a psychoactive substance. In this context, and as it is to be expected, a number of primary studies with regard to family and school based interventions is being assessed reporting positive outcomes also with regard to the non-medical use of prescription drugs.

Sourcing of prescription drugs occurs through double doctoring, fraud, theft, internet and via family and friends. Therefore, in addition to these interventions, it may seem reasonable to assume that all of these sources present opportunities for prevention.

There are some indications that providing authoritative advice to physicians, as well as restricting and monitoring prescriptions and creating registers will change their prescribing behaviour and will limit the access of these medications only to the patients that needs them. Given the great influence of parents on youth, and given that many individuals report sourcing the substances from family, targeting parents to raise their awareness of the need to use prescription drugs only under medical supervision, both for themselves and their children, might be a promising approach. Practical steps in the community to safely dispose of prescription drugs that are out-dated or no longer being used by the intended recipient might be promising. Finally, health-care professionals might need to be trained on an ongoing basis on how to prevent, recognize and manage the non-medical use of prescription drugs and related consequences.

Some additional indications on possible interventions and policies to prevent the non-medical use of prescription drugs can be found at UNODC (2011), The non-medical use of prescription drugs, policy direction issues, United Nations Office on Drugs and Crime, Vienna, Austria and CICAD (2012), Guide to preventing prescription drug abuse, Inter-American Drug Abuse Control Commission, Washington D.C., USA.

Interventions and policies targeting children and youth particularly at risk

The review of literature could not find acceptable or good reviews or primary studies on how to prevent substance abuse among these children and youth particularly at risk, in spite of evidence indicating that they are often exposed to drugs at a very young age. This group includes, for example, out-of-school children and youth, street children, current and ex-child soldiers, children and youth of displaced or post-conflict populations, children and youth in foster care, in orphanages and in the juvenile justice system. UNODC is testing a protocol (available on demand) to provide indicated prevention to children exposed to drugs at a very young age in Afghanistan.

Prevention of the use of new psychoactive substances not controlled under the Conventions

Many countries have witnessed the recent rise of the use of new psychoactive substances that are not controlled under the Conventions (the so called 'legal highs', or 'smart drugs')[28]. None of the studies reviewed reported outcomes with regard to the prevention of such substances. However, it should be noted that, as in the case of the non-medical use of prescription drugs, most prevention based on scientific evidence is not substance specific. This is particularly true of strategies that address vulnerabilities early in life or that strengthen positive coping skills to prevent the resort to negative coping skills, including substance abuse. Therefore, it appears to be reasonable to consider that such strategies might be also effective in preventing the use of these new psychoactive substances. However, this is another area were rigorous research would be appear to be necessary.

[28] UNODC (*in press, 2013)*, World Drug Report, United Nations Office on Drugs and Crime, Vienna, Austria.

IV. Characteristics of an effective prevention system

An effective national drug prevention system delivers an integrated range of interventions and policies based on scientific evidence, in multiple settings, targeting relevant ages and levels of risk. This should come as no surprise given the complex interplay of factors that make children, youth and adults alike, vulnerable to substance abuse and other risky behaviours. It is not possible to address such vulnerabilities by simply implementing a single prevention intervention that is often isolated and limited in its timeframe and reach. Let us not forget that the overarching goal here is to support the healthy and safe development of individuals.

To deliver an integrated range of interventions and policies, a system requires strong structural foundations, which are briefly described in this section and include[29]:

- ✓ A supportive policy and legal framework;
- ✓ Scientific evidence and research
- ✓ Coordination of multiple sectors and levels (national, sub-national and municipal/ local) involved;
- ✓ Training of policy makers and practitioners and most;
- ✓ Commitment to provide adequate resources and to sustain the system in the long term.

1. Range of interventions and policies based on evidence

The previous section has provided a comprehensive review of the interventions and policies that have been found to yield positive results in preventing substance abuse. Strategies differ in three main areas: the age of the target group, the level of risk of the target group and the setting in which

[29] The reader might also want to refer to the EMCDDA (2011), European drug prevention quality standards, European Monitoring Centre on Drugs and Drug Addiction, Lisbon, Portugal, that also contain a discussion of these issues.

the strategy is delivered. An effective system delivers a range of evidence based interventions and policies in order to:

- ✓ Support children and youth throughout their development and particularly at critical transition periods where they are most vulnerable, e.g. infancy and early childhood, at the transition between childhood and adolescence.
- ✓ Target the population at large (universal prevention), but also support groups (selective prevention) and individuals (indicated prevention) that are particularly at risk.
- ✓ Address both individual and environmental factors of vulnerability and resilience.
- ✓ Reach the population through multiple settings (e.g. families, schools, communities, the workplace, etc.)

2. Supportive policy and regulatory framework

No programme, no policy can exist in a vacuum. As noted in the introduction, drug prevention is but one of the fundamental components of a health-centred system focused on ensuring that drugs are available for medical and research purposes whilst preventing diversion and drug use and that other psychoactive substances do not impact on the burden of health. In this respect, an effective national system would be:

- ✓ Embedded in comprehensive and health-centred system of drug control focused on ensuring the availability of drugs for medical and research purposes, whilst preventing diversion and drug use, thus including supply reduction, treatment, care and rehabilitation of drug dependence, and, prevention of the health and social consequences of drug use (e.g. HIV/AIDS, Hepatitis C, overdose, etc.).
- ✓ Based on the understanding of drug dependence as a chronic and relapsing disorder impacting the brain that is caused by the complex interaction of genetic, biological and psychological vulnerabilities with the environment and needs to be treated and not punished.
- ✓ Linked to a public health national strategy for the healthy and safe development of children, youth and adults, including the prevention, treatment and care substance abuse, as well as the prevention of other unhealthy or risky behaviours.

Moreover, the delivery of programmes by both governmental and non-governmental agencies can be greatly enhanced if it is mandated and supported at the national level by appropriate regulation, including:

- ✓ National standards for drug use and substance abuse prevention interventions and policies;
- ✓ National professional standards for drug and substance prevention practitioners;
- ✓ A policy requiring schools to implement substance abuse prevention education and policies in the context of health or personal/ social education and promotion, including standards on how to do so;
- ✓ A policy requiring employers to implement substance abuse workplace prevention policies or programmes, including standards on how to do so;
- ✓ A policy requiring health, social and education services to support families to nurture the physical, cognitive and emotional development of their children;
- ✓ A strong local and national surveillance and monitoring data system to inform policy makers at all levels, practitioners and researchers about emerging substance abuse patterns (different substances being used, existing substances being used in new ways (e.g., injection of crack), or new population groups being involved) and a review process to inform both prevention and treatment programming.

3. A strong basis on research and scientific evidence

An effective national drug prevention system should both be based on scientific evidence and support research efforts to contribute to the evidence base. There are two dimensions to this. On the one hand, interventions and policies should be chosen on the basis of an accurate understanding of what the situation really is. This systemic approach will include identifying the population that is most vulnerable or starting to use substances, possible reason for why they are initiating use, and which interventions and policies most closely respond to this situation. On the other hand, the effectiveness and, whenever possible the cost effectiveness of delivered interventions and policies, needs to be rigorously evaluated. Results of this rigorous evaluation will allow decision-makers to know the impact on outcomes such as decrease initiation of drug use and to inform and expand the base of knowledge related to prevention interventions. It is also important that this research and its findings be peer-reviewed, published, and discussed to the extent possible.

Evidence-based planning

With regard to the first dimension, an information system should be in place to provide the necessary understanding of the situation, as well as opportunities to use this knowledge to plan. To address this dimension, an effective national prevention system would include:

- ✓ An information system regularly collecting and monitoring information:
  - Prevalence: What percentages of people (by age, gender, and other important characteristic) are using which substance(s)? How often and how much? What are the health and social consequences?
  - Initiation of use and transition to disorders: At what age are people (especially young people) initiating to use drugs and/other substances? When are they transitioning to a substance abuse disorder?
  - Vulnerabilities: Why are people, especially young people, initiating to use drugs and/or abuse other substances? What is the situation among children with regard to factors that are known to be linked to substance abuse (e.g. poor parenting, mental health problems, poor attachment to school, violence and abuse, etc)? Why are people that have started to use transitioning to disorders (what are the factors that make them vulnerable to doing so)?
- ✓ A formal mechanism to regularly feed the data generated by the information system into a systemic planning process that will in turn consider:
  - Strategies needed: which evidence-based interventions and policies have been effective to address the identified situation?
  - Availability and coverage of existing strategies: Which of these interventions and policies are currently being implemented? What percentage of the population who need them are reached by these interventions and policies?
  - Quality of existing strategies: Are ongoing interventions and policies based on scientific evidence (this refers to both the scientific understanding of the vulnerabilities addressed and/or the systematic adaptation of existing evidence-based programmes)?
  - Effectiveness of existing strategies: Have the strategies been evaluated (see below) and, if so, what are the results? What do the data generated by the information system tell us with regard to the effectiveness of the prevention system as whole?
  - Available infrastructures and resources that could be utilised as part of the national prevention system;
  - What are the gaps between the strategies needed and the availability, coverage, quality and effectiveness of the existing systemic strategies, infrastructures and resources?

Research and planning

The second dimension pertains to the evaluation of specific prevention programmes and policies. As noted, evidence based strategies identified in the previous section are not necessarily appropriate to the target, to the level of resources, or to the cultural environment of reflected at the national level, although in many cases they will be. There may be other programmes or policies that more successfully address these issues. It is imperative that selected programmes and policies are:

- ✓ Based on a scientific understanding of the vulnerabilities addressed. In other words and as an example, it is strongly desirable that programmes and policies are created to address a risk factor or situation that has been found to be linked to increased initiation (or earlier onset or higher prevalence of substance abuse) *by scientific research and a needs assessment*, not by the feelings of an individual, however well intentioned and concerned.

- ✓ Include a scientific monitoring and evaluation component in order to assess whether these interventions result in the desired outcome. This would suggest the importance of collaboration with academic and research institutions (including, but not limited to, universities), as well as the use of an experimental or quasi experimental design. In the field of medicine, no intervention would be used unless scientific research had found it to be effective and safe. The same should go for drug prevention interventions and policies.

It should be noted that in the Standards, the intention was to provide an indication of the effectiveness, or at least the efficacy, of kinds of interventions and policies, without referring to specific evidence-based programmes. However, the evidence originates in the evaluation of specific programmes and this means that it can never be assumed that a strategy that is 'basically similar' to an evidence-based one will be as effective. For example, while there may be evidence for "prenatal and infancy visitation programmes" overall, some particular ones of that type are quite effective and other particular ones of that type have been show to be ineffective, even though they may have some of the "proven" characteristics of the type. This is another reason why evaluation becomes so crucial.

In this context, the reader is referred to the European drug prevention quality standards recently published by the EMCDDA and providing exhaustive guidance to the improvement of the quality of drug prevention programmes with regard to these, and other, phases of the programme cycle, as well as to the Canadian portfolio of standards[30].

This is not to say that, in the case of implementation of an evidence-based programme belonging to the interventions described in the previous section, evaluation would be any less important. Indeed, in the case of adaptation of

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[30] EMCDDA (2011), European drug prevention quality standards, European Monitoring Centre on Drugs and Drug Addiction, Lisbon, Portugal.

Canadian Standards for Youth Substance Abuse Prevention

existing evidence-based programmes, it is suggested that the process includes:

- ✓ A careful and systematic process of adaptation that does not touch the core components of the programme, while making it more acceptable to the new socio-economic/ cultural context. Ideally, this would take place with the support of the developers of the programme. In this context, the UNODC Guide on family skills training contains a chapter solely devoted to adaptation.

- ✓ A scientific monitoring and evaluation component in order to assess whether the programme is actually effective in the new socio-economic/ cultural context.

4. Different sectors involved at different levels

National drug prevention systems are about ensuring children, youth and adults have the opportunity to lead healthy and safe lifestyles in multiple settings. Therefore, the national sectors to be involved in the delivery of systemic prevention interventions and policies are many and necessitate clear role definition and coordination.

A national drug prevention system would therefore involve relevant national sectors (e.g. education, health, social welfare, youth, labour, law enforcement, etc.) in the planning, delivery, monitoring and evaluation of its components:

- ✓ Integrated levels of consistent implementation: national (federal), sub-national (state/regional/district), and municipal, local).

- ✓ Full spectrum of key stakeholders. This could include, but is not limited to: national and sub-national administration, municipal or local, governmental service delivery agencies, non-governmental agencies, residents and community leaders, religious communities and leaders, universities and other research institutions, and the private sector.

- ✓ Structured and well-defined roles and responsibilities for all stakeholders: there is great value in a partnership and collaboration of various stakeholders working together and taking responsibility for different elements of policy development and implementation.

- ✓ A strong lead and coordinating agency.

It should be noted that there is not one single way of organising the delivery of evidence-based prevention strategies. For example, they need not necessarily be carried out in the form programmes, but can also be integrated into the everyday work of institutions and services such as the school, youth work and health and social services. In this case, strategies are planned, managed and

coordinated centrally, while the implementation relies on local multi-professional co-ordination. Other possible examples of how different levels could interact would include:

- ✓ Policy makers at the national level coordinate the development of the national policies, set the quality standards and support the infrastructure for implementation through adequate funding for the delivery of strategies and for the training for relevant stakeholders.
- ✓ Policy makers and/or agencies at the local level deliver interventions and policies, feed data to the information system, and actively improve their knowledge and skills.
- ✓ NGOs, residents and community leaders (which could include religious communities and leaders) mobilize for changes in or acceptance of policies, influencing community norms, delivering evidence-based interventions and policies; it should be noted that community mobilization has been found to be an effective and participatory mechanism to realize evidence-based strategies.
- ✓ Universities and research institutions analyzing data to feed a better understanding of the substance abuse situation and to monitor and evaluate the national policies, evaluating specific interventions and policies.
- ✓ Private sector actively supporting prevention in the workplace and contributing to evidence-based and innovative interventions, and operators in alcohol and tobacco industries and marketing taking effective measures to prevent and reduce harm in their practices, including self-regulatory actions.

5. Strong infrastructure of the delivery system

To be delivered effectively, interventions and policies must be supported by adequate resources.

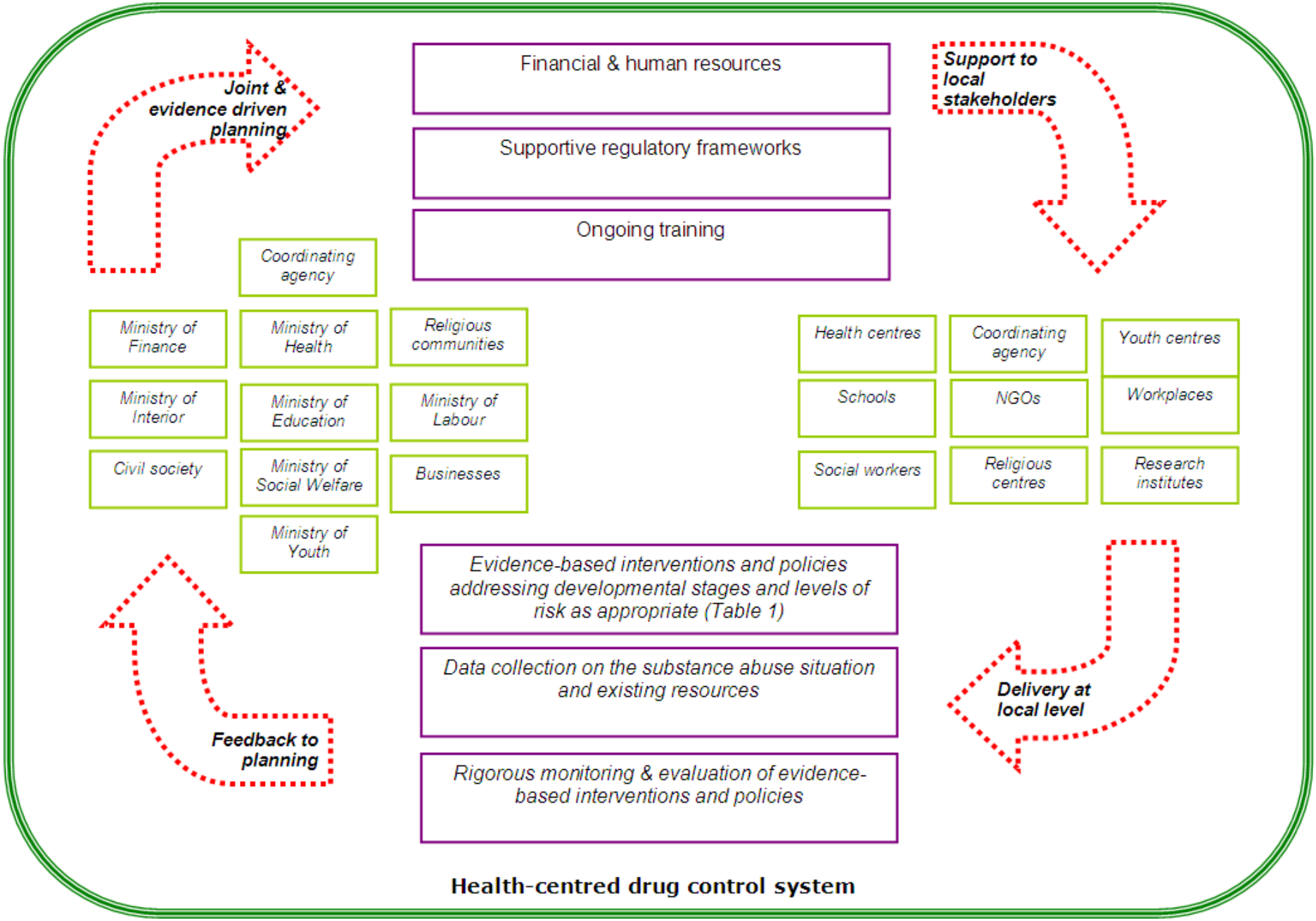
- ✓ Agencies delivering interventions and policies need to be adequately financed.
- ✓ Practitioners delivering intervention and policies need to be adequately trained on an ongoing basis.
- ✓ Policy makers at different levels planning and developing interventions and enforcing policies need to be adequately trained on an ongoing basis.
- ✓ Technical assistance should be provided on an on-going basis to support implementation and continuous quality improvements.
- ✓ Academic and research institutions need to be adequately financed.

6. Sustainability

Drug prevention is effective and cost-effective, but, as with all policies, there needs to be a visible medium- to long-term investment to realize its potential. In this respect, the following are ways in which the action of the components mentioned above should be sustained:

- ✓ A mechanism of review and adjustment of the national prevention system at regular intervals;
- ✓ Delivery of evidence-based interventions and policies planned and resourced to be active at least in the medium term;
- ✓ Regular collection of data through the information system, including feedback into the planning/ review process;
- ✓ Continuous support to research for the rigorous evaluation of interventions and policies;
- ✓ Continuous support to the training of practitioners and policy makers involved in the planning, delivery, monitoring and evaluation of drug prevention strategies.

Figure 1 – Schematic representation of a national drug prevention system



Appendix I

References

This Appendix lists all references that were received in the course of the process of development of the International Standards on Drug Use Prevention, regardless of whether they were included in the assessment and/or what their rating was (see Appendix II, the methodological appendix for more details). References are listed by the intervention or policy refer to and, within that, by their study design (e.g. systematic review, randomised controlled trial, other primary study, etc.).

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Appendix II

Description of the methodology utilised for the collection, assessment and utilization of the scientific evidence

Introduction

This document describes the systematic methodology utilized for the collection, assessment and use of the scientific evidence at the basis of the International Standards on Drug Use Prevention. The methodology was developed and implemented by UNODC with the inputs of a globally representative group of 85 scientists and policy makers in the field of drug prevention, a smaller group of which also volunteered to provide more in-depth support to its conceptualisation.

Members of this Group of Experts were identified through an inclusive process aiming at involving as many recognised individuals in the field of drug prevention as possible, and ensuring that all the sub-fields of prevention research were part of the expert group. The Member States of the United Nations where requested to nominate experts, as well as other international organisations (EMCDDA, CICAD, WHO, ILO) and recognised institutions (NIDA) and civil societies organisations (CCSA, Mentor) in the field. The list of participants is acknowledged in the main text of the Standards.

The methodology allows the Standards to be based on scientific-evidence, whilst taking into account the limits of the evidence, the resources available to the process of development of the Standards, the practical nature of the Standards that are aiming to inform policymakers, rather than fellow scientists. In particular, this methodology strives to provide a transparent picture of the strength of evidence that is available to support different interventions and policies with regard to their efficacy and effectiveness in general, as well as in different geographical, socio-economical and cultural settings, and their characteristics.

To this end, interventions and policies were included and described in the Standards on the basis of a hierarchy of study designs, and on the basis of assessing the methodological quality of these studies, as described in the following sections.

Evidence-Based Practice

Since the early 1990s there has been a growing movement in health, education, and other behavioural service fields toward the delivery of services/ practices whose impact on positive outcomes are grounded in science and research. The movement is defined by the term 'evidence-based' that is assigned to practices, programs, or interventions. There are a variety of definitions of the term 'evidence-based'. The Evidence-Based Practice Institute of the University of Washington's definition encompasses the common elements:

> "Evidence Based Practice (EBP) is the use of systematic decision-making processes or provision of services which have been shown, through available scientific evidence, to consistently improve measurable client outcomes. Instead of tradition, gut reaction or single observations as the basis for making decisions, EBP relies on data collected through experimental research and accounts for individual client characteristics and clinician expertise." (Evidence Based Practice Institute, 2012; http://depts.washington.edu/ebpi/)

Several groups have established criteria for the scientific basis for evidence-based practices or programmes[1]. In general there are great similarities across the criteria, with groupings of evidence into "best" or "excellent" down to "good" or "promising". It is in the lower range of categories of evidence where there are the greatest disparities.

[1] E.g. the National Registry of Evidence-based Programs and Practices (NREPP) of the Substance Abuse and Mental Health Services Administration (SAMSHA) in the USA, Blueprints for Violence Prevention, a project of the Center for the Study and Prevention of Violence at the University of Colorado, and, in the medical field, the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system, etc.

Efficacy and Effectiveness

The science of evaluation of social and behavioural interventions, as well as most clinical practices, sets out standards for the conduct of quality research. These standards apply to research design and statistical methodologies in order to establish a causal link between exposure to the intervention and the outcomes of interest. Such standards require: an evaluation design using randomization if possible or alternative design strategies for addressing confounding if not; clearly articulated research objectives; a theory-based logic or conceptual model that shows how the intervention and intervention components are associated with the short-, intermediate, and long-term outcomes of interest, so that participation or exposure to the intervention can be related to the outcomes of interest and not to other, external influences; and that there is a link between the components of the intervention derived from the model and the outcomes. Another aspect of a quality evaluation study includes an examination of what other factors associated with the target group or the environment in which the intervention was delivered modify or temper the relationship between exposure to the intervention and its outcomes.

Clearly, not all interventions impact all of those exposed to them. Variations in outcomes often are noted within the exposed populations and this information along with the findings from mediation analyses (analysing the role of different intervention components) serve to assist intervention developers to modify or enhance their program.

In the continuum of evaluation research, studies demonstrating that the intervention as designed has a positive impact under the controlled research conditions are called efficacy studies. Once the intervention impact has been demonstrated under these controlled circumstances, the next stage of the evaluation is to determine the extent to which the impact is sustained in 'real world' delivery settings. These next stage evaluation studies are generally referred to as effectiveness studies.

The majority of evaluations showing the positive impact of preventive interventions presented here have been conducted within controlled experimental conditions rather than in "real world" conditions and are therefore mostly efficacy studies. Environmental or policy prevention strategies have mostly been evaluated in 'real world' conditions as controlling exposure is quite challenging if possible at all, and they would thus fall mostly in to the effectiveness studies.

Outcomes of evidence-based prevention

Interventions and policies were included in the Standards if they have demonstrated efficacy or effectiveness. The outcomes of interest were the elimination or reduction of the use of illicit drugs, alcohol and tobacco in a follow-up at least one year after exposure to the intervention. At least two and a majority of primary studies should have reported positive effects in this respect, and no studies should have reported iatrogenic effects on important outcomes. Impact on mediating variables was considered only in the case of interventions and policies targeting young children (see below).

In fact, a number of interventions and policies target children well before the age of onset of substance use (infancy or primary school years). Some of these have been evaluated in long term follow up studies showing effects in terms of preventing drug or substance use in adolescence or adulthood. However, some of these interventions and policies have not been evaluated through long-term follow up studies, and thus data on their effectiveness on preventing future substance use is not yet available. Moreover, data on their impact on important outcomes that have been shown in the scientific literature to be associated with the onset of substance use is available (mediating variables).

Therefore, interventions and policies targeting young children and showing an impact on outcomes strongly linked in the scientific literature to the onset of substance use were also included in the Standards, although the strength of the evidence was classified as one step weaker. In order to be included, two primary studies needed to report a positive effect at least one year after intervention delivery in terms of at least two mediating variables. Mediating variables were identified on the basis of consensus of the Group of Experts and are listed in Annex I. No relative weight was identified and assigned to the variables.

Collection and screening of the scientific evidence

To try and reduce to the maximum extent possible the risk of publication bias, a multiple research strategy was followed. First and foremost, the members of the Group of Experts on the Prevention Standards were requested to provide all relevant evidence published in scientific journals or in official reports in any language. No inclusion/ exclusion criteria were set as to the date of the publication.

In general, the Experts were requested to provide systematic reviews and meta-analysis. Moreover, with regard to interventions or policies that are well researched, they were requested to provide what they considered key studies. Finally, with regard to intervention or policies or with regard to implementation in geographical areas that are not well researched, they were requested to provide any available study. As all the evidence was identified by a group of leading international experts, this is seen to be the first source of reliability assuring that the evidence base includes all the most important studies and that the studies are of sufficient quality.

In addition to this, other sources of quality scientific literature were consulted, as follows:

- ✓ All references included in the EMCDDA Best Practice Portal were included in the process;
- ✓ The Cochrane and the Campbell libraries were searched for reviews related to the prevention of drug use;
- ✓ References from a review of reviews that was being undertaken by Liverpool John Moores University were kindly shared with UNODC and were also included in the process
- ✓ References included in the selected studies received by the Group of Experts were also cross-checked.

A total of 584 references were received and were screened for relevance to the process. To be included in the process of assessment of the evidence, studies needed to report the impact of an intervention or a policy with regard to the prevention of drug alcohol or tobacco use after the intervention on any population (256). Originally, the criteria requested for outcomes to be assessed at least one year after the intervention. While many reviews did not clearly report on this and were included anyway, Annex V details this information for each study that was eventually accepted as part of the evidence base and, in case there is not sufficient information with regard to these issues, this is indicated in the main text.

Studies reporting impact in terms of treatment of drug, alcohol or tobacco dependence, as well as studies reporting impact only in terms of prevention of the health and social consequences of drug, alcohol or tobacco use (e.g. prevention of crashes due to intoxicated driving) were not included (60). Studies reporting impact on mediating variables (e.g. improved parenting) were included only if they were targeting children during middle childhood and younger (31). Epidemiological studies (i.e. investigating the link of certain individual or environmental factors to the onset of substance use) and/or studies exploring important general issues with regard to the prevention of drug use and substance

abuse were considered as an important part of the context of the Standards (268). Flow chart 1 summarises this phase of the process.

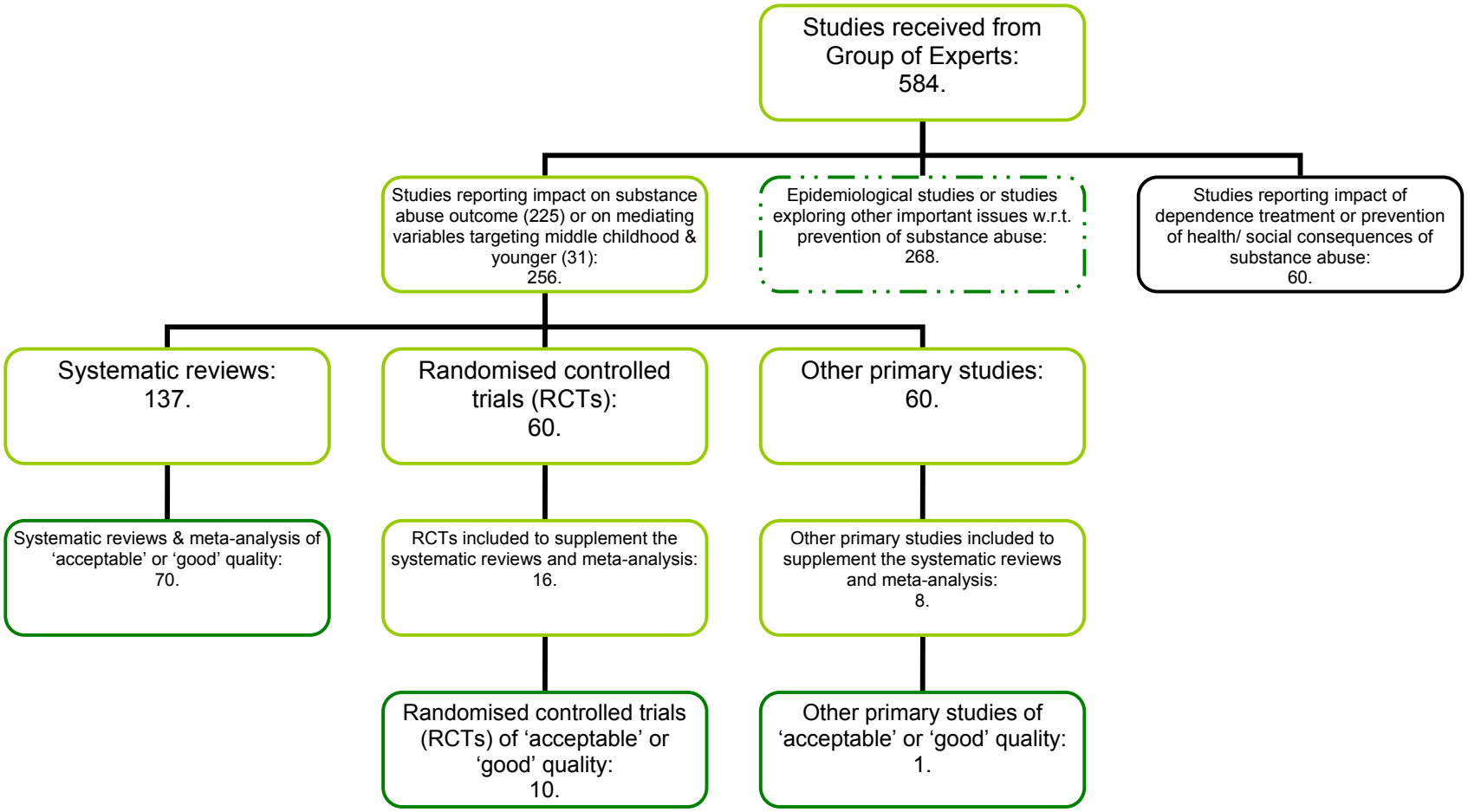
Assessment of the scientific evidence

Introduction

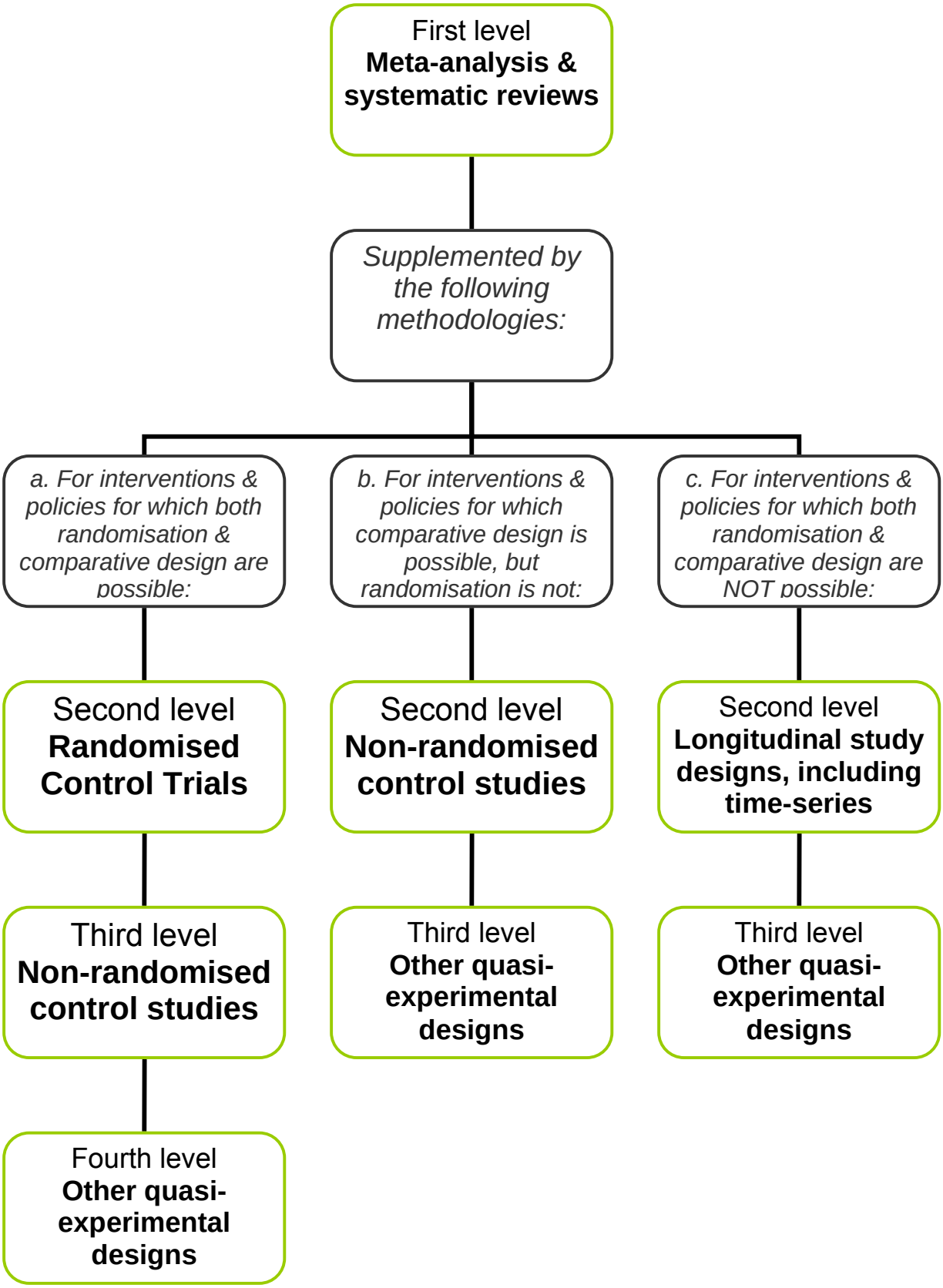
Evidence was reviewed according to a hierarchy of study designs, as represented in Flow Chart 2. The first level of the hierarchy included systematic reviews and meta-analysis, but, in case of a gap in the available evidence at this first level, this was supplemented with experimental or quasi-experimental primary studies (including randomised control trial, non-randomised control studies, time-series, etc.) at a second, third and fourth level, as described below. This process allowed the methodology to be both transparent and systematic, while substantially reducing the number of studies to be examined. The quality of all studies included in the process was assessed. The combination of the kind and the quality of studies supporting interventions and policies became the basis for the indication of the strength of evidence of effectiveness included in the main text of the Standards.

From a practical point of view, the assessment was undertaken by two staff members of UNODC. They developed and piloted the rating tools using a number of studies. The provisional ratings were compared and discussed to ensure high inter-rater reliability in applying the criteria, and the tools were revised to make it easier to use. They then proceeded to rate all studies independently. Cases of disagreement were discussed and resolved, if necessary, with the input of a third staff member. Moreover, the table detailing the assessment of each study included in the process (whether it was rated ‘good’, ‘acceptable’ or ‘not acceptable’) was shared with the Group of Experts together with the draft of the Standards.

Flowchart 1: Summary of screening on studies received



Flowchart 2: Hierarchy of study designs for the inclusion of interventions and policies in the Standards



Review of systematic reviews and meta-analysis

The first step was the assessment of the quality of systematic reviews and meta-analysis. Recognised methodologies such as those adopted by the Cochrane[2] and Campbell[3] Collaborations and the Community Guide[4] were rated as 'good', while others were rated as "good", "acceptable", or "not-acceptable", utilising an instrument adapted from the standards of the Cochrane Reviews. The instrument is attached as Annex II and reviewed the following issues:

A. Clear, transparent and sufficient inclusion criteria for study selection;

B. Transparent, broad and diverse methods for literature search;

C. Sufficient detail on included studies concerning methodology, participants, intervention characteristics and findings;

D. Documentation and quality of data analysis and interpretation.

E. The quality of the data analysis and interpretation (multiple assessors used in assessing the quality of the studies, clearly reported results, sufficiently similar results, reported and elaborated reasons for variations in results, description of missing data, assessed and reported possibility of bias, double counting of primary data avoided).

The result of the quality assessment is attached as Annex IV to this document. There were 137 systematic reviews and 70 were rated 'good' or 'acceptable'. A 'not acceptable score' was mainly due to a lack of detail in the reporting either in relation to the search strategy or concerning the included studies.

Assessment of primary studies

This first part of the process was supplemented with the results of other primary studies that were included if:

1. They covered an intervention or policy for which no 'acceptable' or 'good' review was found at all;

2. They reported impact on drug use on an intervention or policy for which only 'acceptable' or 'good' reviews reporting impact on alcohol or tobacco or mediators were found;

3. They reported impact on drug use on an intervention or policy for which 'acceptable' or 'good' reviews reporting impact on drug use were found AND they were published AFTER the data collection of the last 'acceptable' or 'good' review.

4. They study the cost-effectiveness of an intervention or policy.

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[2] http://handbook.cochrane.org/.

[3] http://www.campbellcollaboration.org/

[4] http://www.thecommunityguide.org/index.html

5. They reported impact on the implementation of an intervention or a policy in a country other than the USA, Canada, Europe, Australia and New Zealand.

This step allowed the process to radically reduce the number of primary studies to be assessed and analysed. Sixteen (16) randomized control trials and 8 other primary studies were selected at this stage. Although the Group of Expert is confident that a reliable summary of the available evidence would be generated by this methodology, an important limitation should be noted. There might be cases where a systematic review fails to support a type of intervention, but replicated RCTs of a particular programme within that type provide strong evidence for the particular intervention. In cases, where RCTs were published before or at the same time as the review, their evidence would be lost.

The quality of all primary studies included following this second screening was also assessed. The relevant instruments can be found in Annex II. With regard to the randomised controlled trials, the following criteria, based on those of the Cochrane Drug and Alcohol group (CDAG) (Amato, 2005) were used:

A. Randomization methods and baseline comparability of groups.
B. Blinding of participants, personnel and/or outcome assessors.
C. Amount, nature or handling of incomplete outcome data due to attrition (losses to follow-up) and exclusions.
D. Other sources of bias, including fidelity of intervention implementation.

With regard to non-randomised control studies, always according to the Cochrane Drug and Alcohol group (CDAG) (Amato, 2005), the instrument utilized was the same as for randomised control studies, with some items rated as ‘not applicable’. Finally, although a draft instrument for longitudinal studies (e.g. time-series analysis) had been developed, it was not utilised as no studies of this kind were included following the post-reviews selection.

Ten (10) randomized control trials and 1 other primary study were rated to be ‘good’ or acceptable. A ‘not acceptable’ rating was mostly linked to a failure to describe the procedure for random sequence generation.

Data extraction

The studies rated ‘acceptable’ or ‘good’ were then coded as to the intervention or policy they were concerned with, the setting where the intervention or policy was implemented, and the age of the target group. An attempt was made to code interventions and policies also according to the gender of the target group.

However, with the obvious exception of interventions and policies targeting pregnant women, in the vast majority of cases the gender of the target group was not specified, nor were results reported by gender. Therefore, this coding was dropped and results of interest were reported together with the other results and presented in the main text of the Standards.

The results included in each study were then summarised, including (where available) the time of follow-up, effect sizes and of characteristics linked to effectiveness. The table summarising the coding and the results of the studies is attached as Annex V.

Inclusion of interventions and policies in the Standards

An intervention or a policy was included in the Standards as an evidence-based strategy if at least one 'acceptable' systematic reviews or meta-analysis reported positive impact with regard to drugs and/or alcohol and/or tobacco use, or, in the case of interventions and policies targeting children during middle childhood and younger, relevant mediating variables. Discrepancies among studies were resolved on the basis of group consensus. In case of no available 'acceptable' or 'good' systematic review or meta-analysis, then demonstrated effectiveness needed to be supported by the results of at least two other primary studies.

Strength of the evidence

The evidence supporting interventions and policies is not all the same. In some cases, there is a lot of evidence of good quality. In others, very limited evidence. In others, there might be evidence, but not of great quality. This information is of crucial importance to policy makers and is summarised in the main text of the Standards. The hierarchy of methodologies and the rating of the quality of the studies described above determined how the strength of the evidence of effectiveness was assessed and presented to policy makers.

The best available evidence ("strong evidence") would be based on studies belonging to the first level of the hierarchy (i.e. systematic reviews and meta-analysis). An intervention or policy that was reported to be effective on the basis of systematic review(s) and/or meta-analysis assessed as 'good' would be

described as being based on ‘strong evidence’ of effectiveness. Accordingly, if the systematic review(s) and/or meta-analysis were assessed as ‘acceptable’, the evidence would be characterised as ‘good’.

In case of lack of systematic reviews and meta-analysis, the evidence would be based on primary studies with designs belonging to the second level of evidence. The design that deemed acceptable as the second level of evidence was not the same for all interventions or policies, as detailed in Flowchart 1. Consider as an example, the case of an intervention that can be evaluated through a randomised controlled trial (e.g. parenting skills training). In this case, the second level of evidence would be constituted by randomised controlled trials. However, consider, as a second example, an intervention for which it would be impossible to organise a study including a control group (e.g. a nation-wide media campaign). In this case, it was deemed reasonable to consider that the second level of study designs would be longitudinal studies (including time-series).

Therefore, it could be said that the study designs deemed as acceptable as second level of evidence differed according to the kind of study design that is in principle possible for any given intervention of policy. In this respect, interventions and policies typically fall into three groups, i.e. interventions and policies for which:

1. A randomised controlled trial is possible;

2. A randomised controlled trial is not possible, because randomisation is not feasible or ethical; however, a comparative design is possible;

3. A randomised controlled trial is not possible, because a comparative design is not feasible in the first place (for example in the case of national media campaigns or regulations/policies).

Interventions and policies were assigned to these groups on the basis of consensus of the experts in the evidence working group. The list of interventions and policies grouped accordingly is attached as Annex III to this methodology. For each of these groups, the study designs that were deemed acceptable as second and third level of evidence were identified as described in Flowchart 2.

As in the case of the systematic reviews and the meta-analysis, the study design, its level and quality were combined to provide an indication of the strength of the evidence supporting the indications of effectiveness in the main text of the Standards. Studies based on second level study designs and rated as ‘good’, would also provide good quality evidence, while those rated as ‘acceptable’, together with studies based on a third level study design and rated as ‘good’ would constitute ‘promising evidence’. All the rest was not considered in the base of evidence supporting the inclusion (or otherwise) of an intervention or policy in the Standards. Table 1 summarises the criteria for rating the evidence.

Interventions or policies for which the available evidence would not be even rated as 'promising' have been briefly described in the Standards in a separate section clearly indicating that at the moment there is no evidence to tell us whether these interventions and policies are effective or not. In a few cases, there is evidence that an intervention and policy is not effective or, worse, has negative effects in terms of substance use. In general, this was found to be the case with characteristics of interventions and policies or with components of certain interventions and policies. Therefore, this information has been reported in the Standards under the relevant intervention and policy.

Table 1

Assessment of evidence

Study design	Quality of study	Assessment of the evidence
First level Meta-analysis and systematic reviews	Good quality	Strong
	Acceptable quality	Good
	Not acceptable	Not included
Second level RCTs/ non-randomised control studies/ time series analysis	Good quality	Good
	Acceptable quality	Promising
	Not acceptable	Not included
Third & fourth level Other research designs	Good quality	Promising
	Acceptable quality	Not included
	Not acceptable	Not included

Transferability

Transferability refers to the evidence that an intervention or policy has been found to be effective in geographical and cultural settings different from those in which the initial assessments were made. In this context, it has to be recognised

that the vast majority of evidence originates from studies conducted in North America, specifically the USA, and a few other countries in North America (Canada), (mostly Western) Europe and Oceania (Australia, New Zealand). That is why the geographical origin of the evidence has been indicated in the main text of the Standards under “Evidence of Effectiveness” for each interventions and policy.

Characteristics of effective interventions and policies

The process described above provided a strong and transparent indication of which interventions and policies are effective in preventing drug use and on the strength of the evidence supporting this statement. In the vast majority of cases, the available evidence did not allow an in-depth analysis of which components or which characteristics of an intervention or a policy ‘are the active ingredient’ or really make the strategy effective. Where available, the results of this analysis were provided.

Further, they were supplemented by indications arising from the other studies provided by the Group of Expert, particularly those reporting the results of mediation analysis, summarised on the basis of expert group consensus. This participatory process allowed the Standards to provide an indication of how interventions and policies should and should not be implemented in order to maximize the chances of their effectiveness. It is very important to note that the resulting indications should not be taken to imply a causal effect between the characteristics of an intervention/policy and its effectiveness. However, they can be taken to provide a description of characteristics that have been found by the Group of Experts to be associated with more effective interventions and policies and, therefore, with a stronger possibility of effectiveness.

Example of application of the methodology

This section briefly describes how the methodology has been applied to one specific intervention: early childhood education.

The first level of evidence includes systematic reviews. According to Appendix I, early childhood education is covered by only one review (D'Onise et al 2010). According to Annex IV, D'Onise et al 2010 was rated as 'good'.

The second and following levels of evidence include primary studies. However, not all the primary studies listed in Appendix I would be included in the process of assessment of the evidence. As mentioned above, only the following kinds of studies would: 1. studies published after the review, 2. studies from low- and middle-income countries or 3. studies reporting results on drug outcomes where reviews don't. Of the primary studies listed in Appendix I, only the following meets these criteria: Reynolds AJ, Temple JA, Ou SR, Arteaga IA, White BA. School-based early childhood education and age-28 well-being: effects by timing, dosage, and subgroups. Science 2011; 333: 360–64. According to Annex IV, this study was assessed to be 'acceptable'.

The content of the studies assessed to be 'good' or 'acceptable' is summarised in Annex V by intervention/ policy. Under 'early childhood education', the following are listed: D'Onise et al 2010 and Jones 2006. Why is Jones 2006 there, and Reynolds et al 2011 is not?

Let us consider the case of Jones 2006. There are many reviews that look at different interventions or policies, and the results are reported separately under each relevant intervention and policy. In Appendix 1, these reviews are typically listed under 'Many settings' and/or 'Many interventions'. According to Annex IV, Jones 2006 was also rated as 'good'.

The case of the primary study Reynolds et al 2011 is different. To determine the level of evidence provided by this study, it is necessary to go back to what kind of intervention this is: is this an intervention for which a randomised controlled trial is possible in principle? Yes, it is (see Annex III). Therefore, the second level of evidence for this kind of intervention is constituted by Randomised Controlled Trials (see Flowchart 2). Reynolds et al 2011 is a matched-group controlled trial (see either Annex IV and V), therefore it is a primary study providing a third level of evidence (see Flowchart 2). Reynolds et al 2011 was assessed to be an 'acceptable' study (see Annex IV). Unfortunately, the evidence provided by an 'acceptable' study of third level is not to be included (see Table 1). That is why the findings of Reynolds et al 2011 are not reported in Annex V, even if the study had been included in the process of assessment.

Therefore, the evidence supporting 'early childhood interventions' is based on the findings of two reviews that were rated as 'good' that report: good results for drugs, mixed results for alcohol, overall positive results for tobacco, and good

results for mediating variables, both in the short and in the long term. This information is therefore summarised in the main text to say that early intervention 'can' prevent the use of drugs and other substances. The reason why it is mentioned that early intervention 'can' prevent is that the reviews reported positive findings that were not perfectly consistent with each other. In the cases where an intervention or a policy is based on studies reporting positive findings that are consistent, the main text reports that the intervention or policy 'prevents'. In contrast, wherever there are reviews reporting inconclusive or mixed findings, the text indicates that the intervention or policy 'may' prevent.

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Appendix II
Annex I

List of mediating variables

A number of interventions and policies target children well before the age of onset of substance use (infancy or primary school years). Some of these have been evaluated in long term follow up studies showing effects in terms of preventing drug or substance use in adolescence or adulthood. However, some of these interventions and policies have not been evaluated through long-term follow up studies, and thus data on their effectiveness on preventing future substance use is not yet available. Moreover, data on their impact on important outcomes that have been shown in the scientific literature to be associated with the onset of substance use is available (mediating variables). Therefore, interventions and policies targeting young children and showing an impact on outcomes strongly linked in the scientific literature to the onset of substance use were also included in the Standards, although the strength of the evidence was classified as one step weaker. The following mediating variables were identified on the basis of consensus of the Group of Experts. No relative weight was identified and assigned to the variables.

Pre-natal period

- ✓ Maternal substance use.

Early Childhood

Parents

- ✓ Warm, responsive & supportive parenting that meets financial, emotional, cognitive, and social needs - especially successful attachment and bonding to the child.
- ✓ Parental substance use, parental mental health problems.

Children (from pre-school onwards)

- ✓ Age-appropriate language and numeracy skills (cognitive skills).
- ✓ Pro-social behaviours and attitudes (social skills, lack of uncooperative behaviour, lack of early aggressive behaviour, lack of externalizing behaviour).
- ✓ Emotional and mental health (absence of attention, conduct and behavioural problems).

Middle Childhood

Parents

- ✓ Warm, responsive & supportive parenting that meets the financial, emotional, cognitive, and social needs, including monitoring of the activities of the children.
- ✓ Parental substance use, parental mental health problems, parental attitudes towards substance use.

Children

- ✓ Age-appropriate language and numeracy skills.
- ✓ Impulse control and self control, goal-directed behaviour, decision making, problem solving.
- ✓ Pro-social behaviours and attitudes, social skills, lack of uncooperative behaviour, self-efficacy and self-esteem.
- ✓ Emotional and mental health: Absence of early aggressive behaviour, anxiety, depression, externalizing behaviour.
- ✓ Academic self-efficacy, commitment to school, school attendance, school dropout.

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Appendix II
Annex II

Instruments for the assessment of evidence

As detailed in the main body of the methodological appendix (Appendix II, "Description of the methodology utilised for the collection, assessment and utilization of the scientific evidence"), not all studies reporting the results of the evaluation of a strategy in terms of the desirable outcomes were included as part of the base of evidence. Only the studies that were assessed to be 'good' or 'acceptable' were. This Annex presents the instruments that were used to undertake this assessment. As discussed more in depth in the methodological annex, they are based on the instruments currently considered as best practice in the field.

Instrument for the assessment of systematic reviews and meta-analysis

	Criteria	Score	Explanation
A	**Clear, transparent and sufficient inclusion criteria for study selection**		
A.1	Clear, transparent and sufficient criteria for population		
A.2	Clear, transparent and sufficient criteria for intervention		
A.3	Clear, transparent and sufficient criteria for comparison		
A.4	Clear, transparent and sufficient criteria for outcome		

	Criteria	Score	Explanation
A.5	Clear, transparent and sufficient criteria for study design		
B	**Transparent, broad and diverse methods for literature search**		
B.1	Is a systematic process of search clearly described (e.g. databases searched, no. of references followed up and excluded, search term specified, etc.)?		
B.2	Did the search include multiple research strategies (e.g. databases, reference lists, hand-search of journals, etc.)?		
B.3	Did the search include peer-reviewed published materials?		
B.4	Did the search include grey literature and/or unpublished studies?		
B.5	Did the search include non-english sources?		
B.6	Was publication bias addressed and estimation of it reported?		
C	**Methods used for data extraction and study coding**		
C.1	Is the data on methodology presented with sufficient detail?		
C.2	Is the data on participants presented with sufficient detail?		
C.3	Is the data on intervention characteristics presented with sufficient detail?		
C.4	Is the data on dependent variables presented with sufficient detail?		
C.5	Is the data on effect sizes presented with sufficient detail?		
D	**Data analysis and interpretation**		

	Criteria	Score	Explanation
D.1	Is the methodology of analysis of the data clearly explained?		
D.2	Has the quality of the included studies been assessed?		
D.3	(If yes to D.2), was more than one assessor used in assessing the quality?		
D.4	Are the results of the included studies clearly displayed?		
D.5	Are the reasons for any variation in the results of the studies accounted for?		
D.6	Is the process for handling missing data described?		
D.7	Have the authors avoided double counting of primary data?		
D.8	Please indicate other weaknesses, if any (e.g., presence of other types of bias)		

Instrument for the assessment of studies using a comparative design (e.g. randomized and non-randomized control studies)

	Criteria	Score	Explanation
A	**Randomization and comparability of the groups**		
A1	Is the study described as randomized? (Please record also was randomization at individual or at cluster level)		

	Criteria	Score	Explanation
A 2	Is the allocation of participants to intervention and control groups described? (if yes, please describe how, including the possible randomization rules used or matching, and record also if the process appears to be appropriate)		
A 3	Is the comparability of the groups assessed in the analysis, by assessing potential confounders or the baseline similarity of outcome variables? (record also what confounders were used)		
B	**Blinding**		
B 1	Does the study describe any method for blinding of participants and/or personnel? (If yes, please specify what)		
B 2	Does the study describe any method for blinding of outcome assessors? (If yes, please specify measures used to blind outcome assessors from knowledge of which intervention a participant received, and provide any information relating to whether the intende		
C	**Attrition (losses to follow-up)**		
C 1	Is attrition reported? (Please record the retention rate at the longest follow-up (numbers and %) and also record the length of the follow-up time)		
C 2	Were reasons for attrition reported or discussed?		

	Criteria	Score	Explanation
C 3	If the study used cluster randomization, did they report attrition for individuals and clusters?		
C 4	Are exclusions reported? (Please record the retention rate at the longest follow-up and also record the length of the follow-up time)		
C 5	Were reasons for exclusions reported or discussed?		
C 6	If the study used cluster randomization, did they report exclusions for individuals and clusters?		
C 7	Was the study free of attrition bias (consider amount, nature or handling of incomplete outcome data)? (e.g., did the reasons for attrition differ between intervention and control group?)		
D	**Other sources of bias**		
D 1	Was analysis conducted at the level of randomization?		
D 2	Was sufficient information provided on the fidelity of the interventions, and on who received what interventions (Performance bias)?		
D 3	Was the study free from other risks of bias? Please describe any other possible concerns not addressed in the other domains of the tool.		

Appendix II
Annex III

List of interventions and possible study designs

The first level of evidence in the Standards is considered to be systematic reviews. However, the study designs for the second level of evidence differ according to the kind of study design that is in principle possible for any given intervention of policy. It would be unfair to state: this policy is not supported by randomized control trials, when randomized control trials are not possible because the policy covers the general population. In this respect, interventions and policies typically fall into three groups, i.e. interventions and policies for which:

1. A randomized controlled trial is possible;

2. A randomized controlled trial is not possible, because randomization is not feasible or ethical; however, a comparative design is still possible;

3. A randomized controlled trial is not possible, because a comparative design is not feasible in the first place (for example in the case of national media campaigns or regulations/policies).

The table below characterizes the interventions and policies for which evidence has been assessed in the Standard according to these three categories.

Intervention	Possible study design
Addressing individual psychological vulnerabilities	a. comparative design and randomization possible
Brief intervention	a. comparative design and randomization possible
Classroom environment improvement programmes	b. randomization difficult or impossible, comparative design possible
Community-based multi-component	b. randomization difficult or impossible,

Intervention	Possible study design
initiatives	comparative design possible
Early childhood education	a. comparative design and randomization possible
Entertainment venues	b. randomization difficult or impossible, comparative design possible
Interventions targeting pregnant women with substance abuse disorders	a. comparative design and randomization possible
Media campaigns	c. randomization and comparative design NOT possible
Mentoring	a. comparative design and randomization possible
Parenting skills	a. comparative design and randomization possible
Personal and social skills education	a. comparative design and randomization possible
Policies to keep children in school	c. randomization and comparative design NOT possible
Prenatal and infancy visitation	a. comparative design and randomization possible
Prevention education based on personal and social skills and social influence	a. comparative design and randomization possible
School policies and culture	b. randomization difficult or impossible, comparative design possible
Sports and leisure activities	a. comparative design and randomization possible
Tobacco and alcohol policies	c. randomization and comparative design NOT possible
Workplace prevention programmes	b. randomization difficult or impossible, comparative design possible

Appendix II
Annex IV

Summary of the quality assessment

This table summarizes the assessment of the quality of the reviews and primary studies. The overall quality rating is provided, as well as a rating for major criteria (the key can be found immediately following the table). In case a study was found not to be acceptable, a short narrative description of the main reasons why this was the case is provided.

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Agostinelli 2002	Literature review	Not acceptable	♦	♦	♦	♦	Methodology not reported
Akbar 2011	Systematic review	Not acceptable	✓✓	✓✓	♦	♦	No outcomes reported
Anderson 2009	Systematic Review	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓	
Anderson 2009	Review of reviews	Not acceptable	✓	♦	✓	✓	Search strategy not reported in detail, process underlying selection of studies unclear
Aos 2004	Cost-benefit-analysis	Not acceptable	✓✓	♦	♦	✓✓	Lack of detail concerning search strategy and individual studies
Bader 2011	Systematic review	Not acceptable	✓✓	✓	♦	✓	Lack of detail concerning search strategy and data extraction
Ballesteros 2002	Meta-analysis	Not acceptable	✓✓✓	♦	✓✓✓✓	✓✓	Lack of detail concerning search strategy

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Ballesteros 2004	Meta-analysis	Good	✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Beich 2003	Meta-analysis	Acceptable	✓✓✓	✓✓	✓✓✓✓	✓✓✓	
Bertholet 2005	Systematic Review / Meta-analysis	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Bien 1993	Literature Review / Meta-Analysis	Not acceptable	♦	♦	✓✓✓	✓✓✓	Search strategy not reported
Bledsoe 2002	Meta-Analysis	Not acceptable	✓✓	✓	✓	♦	Outcome measure is too broad (not limited to substance use)
Bolier 2011	Literature review	Acceptable	✓✓	✓✓	✓✓✓	✓✓✓	
Bonell 2007	Literature review	Not acceptable	♦	♦	✓	✓	Methodology not reported, no evidence of systematic search or data extraction
Brennan 2011	Systematic review	Acceptable	✓✓	✓✓✓✓	✓✓	✓✓	
Buckley 2007	Systematic review	Not acceptable	✓✓	✓✓	♦	♦	Lack of detail concerning individual studies, weaknesses in analytic approach
Bühler 2008	Review of reviews and primary studies	Acceptable	✓✓✓✓	✓✓✓✓	✓✓✓	✓	
Calafat 2009	Literature review	Not acceptable	♦	♦	♦	♦	Methodology not reported, no evidence of systematic search or data extraction
Carey 2009	Meta-analysis	Not acceptable	✓✓✓	✓✓✓	♦	✓✓	Lack of detail concerning individual study results
Carney 2012	Meta-analysis	Acceptable	✓✓✓✓	✓✓	✓✓✓✓	✓✓	
Catalano 2012	Literature review of reviews and primary studies	Not acceptable	✓✓	♦	✓✓✓	✓✓	Methodology not reported in detail, search strategy not systematic
Chaloupka 2011	Literature review	Not acceptable	♦	♦	♦	✓	Methodology not reported in detail, expert overview rather than a systematic review
Champion 2012	Systematic review	Good	✓✓✓✓	✓✓	✓✓✓✓	✓✓✓✓	
Christakis 2003	Systematic Review	Acceptable	✓✓✓	✓✓✓	✓✓✓✓	✓✓	

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Cuijpers 2002	Systematic review of reviews and primary studies	Not acceptable	✓✓	✓	✓	✓	Search strategy not comprehensive, lack of detail concerning individual studies
D'Onise 2010	Systematic review	Good	✓✓✓	✓✓✓	✓✓✓✓	✓✓✓	
D'Onofrio 2002	Systematic Review	Not acceptable	✓✓✓✓	✓✓	✓✓	✓	Lack of detail in reporting of methods and results
Dobbins 2008	Review of reviews	Acceptable	✓✓	✓✓	✓	✓✓✓	
DuBois 2002	Meta-Analysis	Not acceptable	✓✓✓	✓✓✓✓	✓	♦	Outcome measure is too broad (not limited to substance use)
Dunn 2001	Systematic review	Acceptable	✓✓✓	✓✓	✓✓✓✓	✓✓	
Durlak 2011	Meta-Analysis	Not acceptable	✓✓✓	✓✓✓	✓✓	✓	Outcome measure is too broad (not limited to substance use)
Dusenbury 1995	Literature review and expert interviews	Not acceptable	♦	♦	♦	♦	No evidence of systematic process to search, select and review literature
Dusenbury 2000	Literature review and expert interviews	Not acceptable	✓	♦	♦	✓	Lack of detail concerning methodology and individual studies
Emmen 2004	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓	
Evans-Whipp 2004	Literature review	Not acceptable	♦	♦	✓	♦	Methodology not reported, no evidence of systematic search or data extraction
Fager 2004	Literature review	Acceptable	✓✓✓✓	✓✓	✓✓✓✓	✓✓	
Faggiano & Vigna-Taglianti 2008	Review of reviews, reports and guidelines (Entry in the International Encyclopedia of Public Health)	Not acceptable	✓	♦	♦	✓	Lack of detail concerning methodology and included studies
Flay 2000	Literature review	Not acceptable	✓	♦	♦	♦	Lack of detail concerning methodology and individual studies
Fletcher 2008	Systematic review	Good	✓✓✓✓	✓✓✓	✓✓✓✓	✓✓✓✓	
Gottfredson 2003	Meta-Analysis	Not acceptable	✓✓✓✓	✓	✓	✓	Lack of detail concerning methodology and individual studies

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Hawkins 2002	Literature review	Not acceptable	✓	♦	✓	✓	Methodology not reported, introduction to CTC model written by the developers
Hopfer 2010	Systematic review	Not acceptable	✓✓✓	✓	♦	✓	Lack of detail concerning search methodology and individual studies
Jackson 2012	Systematic review	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓✓	
Jensen 2011	Meta-Analysis	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓	
Jones 2006	Systematic review of reviews and primary studies	Good	✓✓✓✓	✓✓	✓✓✓✓	✓✓✓✓	
Kahan 1995	Systematic review	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓✓	
Khadjesari 2010	Systematic Review / Meta-analysis	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Knerr 2013	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓	✓✓✓✓	
Lemstra 2010	Systematic review	Good	✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
McBride 2003	Systematic review of reviews and recent primary studies	Not acceptable	✓✓✓✓	✓✓	♦	♦	Lack of detail concerning individual studies
McGrath 2006	Review of reviews	Acceptable	✓✓	✓✓	✓✓	✓✓✓	
Mejia 2012	Literature review and Systematic Review	Acceptable	✓✓✓	✓✓	✓✓✓✓	✓✓	
Moyer 2002	Meta-analysis	Not acceptable	✓✓✓	✓	✓	✓✓	Lack of detail concerning search strategy and individual studies
Müller-Riemenschneider 2008	Meta-analysis	Good	✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Najaka 2001	Meta-Analysis / Mediation analysis	Not acceptable	✓✓✓✓	✓✓✓	✓✓	✓✓✓	Outcome measure is too broad (not limited to substance use)
NCI 2008	Compendium of reviews	Acceptable	✓✓✓	✓✓	✓✓✓	✓✓	
Niccols 2012 (child outcomes)	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓	
Niccols 2012 (parenting outcomes)	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Nilsen 2008	Systematic review	Acceptable	✓✓✓✓	✓✓	✓✓✓✓	✓✓	

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Pan 2009	Meta-analysis	Acceptable	✓✓✓	✓✓	✓✓✓	✓✓✓	
Peters 2009	Review of reviews	Not acceptable	✓	✓✓	✓	♦	Lack of detail concerning individual studies
Petrie 2007	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Poikolainen 1999	Meta-analysis	Not acceptable	✓✓✓	♦	✓✓✓✓	✓✓	Lack of detail concerning search strategy
Popova 2009	Systematic review	Acceptable	✓✓	✓✓✓	✓✓	✓✓	
Porath-Waller 2010	Meta-analysis	Acceptable	✓✓✓✓	✓✓	✓✓	✓✓	
Ranney 2006	Systematic review of reviews and primary studies	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓✓✓	
Reavley 2010	Review of reviews and primary studies	Acceptable	✓✓	✓✓	✓✓	✓✓	
Richardson 2009	Systematic review of reviews and primary studies	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓✓	
Riper 2009	Meta-analysis	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Roe 2005	Systematic review	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓✓	
Roussos 2000	Literature review	Not acceptable	✓✓	✓✓	♦	♦	Lack of detail concerning individual studies
Schröer-Günther 2011	Systematic review	Good	✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓	
Scott-Sheldon 2012	Meta-analysis	Not acceptable	✓✓✓✓	✓✓	✓✓	✓	Lack of detail concerning individual studies
Skara 2003	Systematic review	Acceptable	✓✓✓✓	✓✓✓	✓✓✓✓	✓✓	
Smith 2009	Systematic review	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓✓	
Soole 2008	Systematic review / Meta-analysis	Acceptable	✓✓	✓✓	✓✓	✓✓✓	
Spoth 2008	Literature review / Review of reviews and primary studies	Acceptable	✓✓✓	✓✓✓	✓✓	✓✓✓	
Strang 2012	Review of reviews and primary studies	Not acceptable	✓✓	✓✓	♦	♦	Lack of detail concerning methodology and included studies

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Sullivan 2004	Literature review	Not acceptable	✓	✓✓	♦	✓	No evidence of systematic data extraction, lack of detail concerning included studies
Tait 2003	Systematic review	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓	
Thomas 2008	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓	✓✓✓	
Tobler 1992	Meta-Analysis with Moderator Analysis	Not acceptable	✓✓	✓	✓	✓	Methodology not reported
Tobler 1999	Meta-Analysis	Not acceptable	✓✓✓	✓✓	✓✓	✓	Lack of detail concerning individual studies
Tobler 2000	Meta-Analysis	Not acceptable	✓✓✓✓	✓	✓✓	✓	Lack of detail concerning search strategy and individual studies
Toumbourou 2007	Review of reviews	Not acceptable	✓✓✓	✓✓	✓	♦	Expert overview rather than a systematic review, lack of detail concerning individual studies
Vasilaki 2006	Meta-analysis	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓✓✓	
Velleman 2005	Review of reviews and primary studies	Not acceptable	♦	♦	♦	♦	Methodology not reported, process underlying study selection unclear
Wachtel 2010	Systematic review	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓✓	
Wagenaar 2002	Systematic review	Acceptable	✓✓	✓✓	✓✓✓	✓✓✓	
Wagenaar 2009	Meta-analysis	Not acceptable	✓✓	✓✓	♦	✓✓	Lack of detail concerning individual studies
Wakefield 2010	Review of reviews and primary studies	Not acceptable	♦	✓✓	✓	♦	Expert overview rather than a systematic review, lack of detail concerning individual studies
Webb 2009	Systematic review	Acceptable	✓✓	✓✓	✓✓✓	✓✓✓	
Webster-Stratton 2001	Literature review	Not acceptable	✓✓✓	♦	✓✓	✓✓	Search strategy not described
West 2004	Meta-analysis	Acceptable	✓✓✓	✓✓	✓✓	✓✓	
White 2010	Systematic review	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓	
Wiehe 2005	Systematic review	Good	✓✓✓	✓✓✓	✓✓✓✓	✓✓✓	
Wilk 1997	Meta-analysis	Acceptable	✓✓✓✓	✓✓	✓✓✓✓	✓✓✓	

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Wilkinson 2009	Literature review	Not acceptable	♦	♦	♦	♦	Methodology not reported
Wilson 2001	Meta-Analysis	Not acceptable	✓✓✓	✓	✓	✓✓	Lack of detail concerning search strategy and individual studies

First Author, Year of Publication	Study design	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Conrod 2006	RCT	Not acceptable	♦	✓✓	✓✓✓	✓✓✓✓	Random sequence generation not described
Conrod 2008	RCT	Acceptable	✓✓	✓✓✓✓	✓✓✓	✓✓✓	
Conrod 2010	RCT	Acceptable	✓✓✓✓	✓✓✓✓	✓✓	✓✓✓✓	
Conrod 2011	RCT	Acceptable	✓✓✓✓	✓✓✓✓	✓✓✓	✓✓✓	
Conrod 2013*	Cluster-RCT	Acceptable	✓✓✓	✓✓	✓✓	✓✓✓✓	
O'Leary-Barrett 2010*	Cluster-RCT	Acceptable	✓	✓✓	✓✓✓✓	✓✓✓	
Faggiano 2008	Cluster-RCT	Acceptable	✓✓✓	✓✓	✓✓✓✓	✓✓✓✓	
Goldberg 2007	RCT	Acceptable	✓	✓✓	✓✓	✓✓	
Humeniuk 2012	RCT	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓✓	
Kitzman 2010*	RCT	Acceptable	✓✓	✓✓✓✓	✓✓	✓✓✓	
Olds 2010*	RCT	Acceptable	✓✓	✓✓✓✓	✓✓	✓✓	
Longshore 2007	RCT	Not acceptable	♦	✓✓	✓✓	✓✓	Random sequence generation not described
McDonald 2012	RCT	Not acceptable	♦	✓✓	✓	✓	Lack of detail in reporting, data collection not completed
Reynolds 2011	Matched-group controlled trial	Acceptable	✓✓✓✓	✓✓	✓✓	✓✓✓✓	
van de Wiel 2003	RCT	Not acceptable	♦	✓✓	✓✓	✓✓	Random sequence generation not described
van Lier 2004*	RCT	Not acceptable	♦	✓✓	✓✓	✓✓	Random sequence generation not described
van Lier 2005*	RCT	Not acceptable	♦	✓✓	✓✓✓	✓✓✓	Random sequence generation not described

First Author, Year of Publication	Study design	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
van Lier 2009*	RCT	Not acceptable	⬩	✓✓	✓✓	✓✓✓	Random sequence generation not described

Notes:

Review Criterion A: Clear, transparent and sufficient inclusion criteria for study selection

Review Criterion B: Transparent, broad and diverse methods for literature search

Review Criterion C: Sufficient detail on included studies concerning methodology, participants, intervention characteristics and findings

Review Criterion D: Documentation and quality of data analysis and interpretation

Primary study Criterion A: Randomization methods and baseline comparability of groups

Primary study Criterion B: Blinding of participants, personnel and/or outcome assessors

Primary study Criterion C: Amount, nature or handling of incomplete outcome data due to attrition (losses to follow-up) and exclusions

Primary study Criterion D: Other sources of bias, including fidelity of intervention implementation

✓✓✓✓ Both reviewers rated this aspect as 'good'

✓✓✓ One reviewer rated this aspect as 'good' and the other reviewer as 'acceptable'

✓✓ Both reviewers rated this aspect as 'acceptable', or one reviewer considered it 'good' and the other reviewer as 'not acceptable'

✓ One reviewer rated this aspect as 'acceptable' and the other reviewer as 'not acceptable'

· Both reviewers rated this aspect as 'not acceptable'

Cochrane review, Campbell reviews and Community Guide reviews were not quality assessed and are therefore not included in this table.

* indicates multiple publications on the same trials: Conrod 2013 and O'Leary-Barrett 2010 report on one trial but on different follow-up times; Kitzman 2010 and Olds 2010 report on different outcomes from one trial; and van Lier 2004, 2005, and 2009 report on different measures/follow-up times regarding one trial.

Appendix II
Annex IV

Summary of the quality assessment

This table summarizes the assessment of the quality of the reviews and primary studies. The overall quality rating is provided, as well as a rating for major criteria (the key can be found immediately following the table). In case a study was found not to be acceptable, a short narrative description of the main reasons why this was the case is provided.

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Agostinelli 2002	Literature review	Not acceptable	♦	♦	♦	♦	Methodology not reported
Akbar 2011	Systematic review	Not acceptable	✓✓	✓✓	♦	♦	No outcomes reported
Anderson 2009	Systematic Review	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓	
Anderson 2009	Review of reviews	Not acceptable	✓	♦	✓	✓	Search strategy not reported in detail, process underlying selection of studies unclear
Aos 2004	Cost-benefit-analysis	Not acceptable	✓✓	♦	♦	✓✓	Lack of detail concerning search strategy and individual studies
Bader 2011	Systematic review	Not acceptable	✓✓	✓	♦	✓	Lack of detail concerning search strategy and data extraction
Ballesteros 2002	Meta-analysis	Not acceptable	✓✓✓	♦	✓✓✓✓	✓✓	Lack of detail concerning search strategy

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Ballesteros 2004	Meta-analysis	Good	✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Beich 2003	Meta-analysis	Acceptable	✓✓✓	✓✓	✓✓✓✓	✓✓✓	
Bertholet 2005	Systematic Review / Meta-analysis	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Bien 1993	Literature Review / Meta-Analysis	Not acceptable	♦	♦	✓✓✓	✓✓✓	Search strategy not reported
Bledsoe 2002	Meta-Analysis	Not acceptable	✓✓	✓	✓	♦	Outcome measure is too broad (not limited to substance use)
Bolier 2011	Literature review	Acceptable	✓✓	✓✓	✓✓✓	✓✓✓	
Bonell 2007	Literature review	Not acceptable	♦	♦	✓	✓	Methodology not reported, no evidence of systematic search or data extraction
Brennan 2011	Systematic review	Acceptable	✓✓	✓✓✓✓	✓✓	✓✓	
Buckley 2007	Systematic review	Not acceptable	✓✓	✓✓	♦	♦	Lack of detail concerning individual studies, weaknesses in analytic approach
Bühler 2008	Review of reviews and primary studies	Acceptable	✓✓✓✓	✓✓✓✓	✓✓✓	✓	
Calafat 2009	Literature review	Not acceptable	♦	♦	♦	♦	Methodology not reported, no evidence of systematic search or data extraction
Carey 2009	Meta-analysis	Not acceptable	✓✓✓	✓✓✓	♦	✓✓	Lack of detail concerning individual study results
Carney 2012	Meta-analysis	Acceptable	✓✓✓✓	✓✓	✓✓✓✓	✓✓	
Catalano 2012	Literature review of reviews and primary studies	Not acceptable	✓✓	♦	✓✓✓	✓✓	Methodology not reported in detail, search strategy not systematic
Chaloupka 2011	Literature review	Not acceptable	♦	♦	♦	✓	Methodology not reported in detail, expert overview rather than a systematic review
Champion 2012	Systematic review	Good	✓✓✓✓	✓✓	✓✓✓✓	✓✓✓✓	
Christakis 2003	Systematic Review	Acceptable	✓✓✓	✓✓✓	✓✓✓✓	✓✓	

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Cuijpers 2002	Systematic review of reviews and primary studies	Not acceptable	✓✓	✓	✓	✓	Search strategy not comprehensive, lack of detail concerning individual studies
D'Onise 2010	Systematic review	Good	✓✓✓	✓✓✓	✓✓✓✓	✓✓✓	
D'Onofrio 2002	Systematic Review	Not acceptable	✓✓✓✓	✓✓	✓✓	✓	Lack of detail in reporting of methods and results
Dobbins 2008	Review of reviews	Acceptable	✓✓	✓✓	✓	✓✓✓	
DuBois 2002	Meta-Analysis	Not acceptable	✓✓✓	✓✓✓✓	✓	♦	Outcome measure is too broad (not limited to substance use)
Dunn 2001	Systematic review	Acceptable	✓✓✓	✓✓	✓✓✓✓	✓✓	
Durlak 2011	Meta-Analysis	Not acceptable	✓✓✓	✓✓✓	✓✓	✓	Outcome measure is too broad (not limited to substance use)
Dusenbury 1995	Literature review and expert interviews	Not acceptable	♦	♦	♦	♦	No evidence of systematic process to search, select and review literature
Dusenbury 2000	Literature review and expert interviews	Not acceptable	✓	♦	♦	✓	Lack of detail concerning methodology and individual studies
Emmen 2004	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓	
Evans-Whipp 2004	Literature review	Not acceptable	♦	♦	✓	♦	Methodology not reported, no evidence of systematic search or data extraction
Fager 2004	Literature review	Acceptable	✓✓✓✓	✓✓	✓✓✓✓	✓✓	
Faggiano & Vigna-Taglianti 2008	Review of reviews, reports and guidelines (Entry in the International Encyclopedia of Public Health)	Not acceptable	✓	♦	♦	✓	Lack of detail concerning methodology and included studies
Flay 2000	Literature review	Not acceptable	✓	♦	♦	♦	Lack of detail concerning methodology and individual studies
Fletcher 2008	Systematic review	Good	✓✓✓✓	✓✓✓	✓✓✓✓	✓✓✓✓	
Gottfredson 2003	Meta-Analysis	Not acceptable	✓✓✓✓	✓	✓	✓	Lack of detail concerning methodology and individual studies

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Hawkins 2002	Literature review	Not acceptable	✓	♦	✓	✓	Methodology not reported, introduction to CTC model written by the developers
Hopfer 2010	Systematic review	Not acceptable	✓✓✓	✓	♦	✓	Lack of detail concerning search methodology and individual studies
Jackson 2012	Systematic review	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓✓	
Jensen 2011	Meta-Analysis	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓	
Jones 2006	Systematic review of reviews and primary studies	Good	✓✓✓✓	✓✓	✓✓✓✓	✓✓✓✓	
Kahan 1995	Systematic review	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓✓	
Khadjesari 2010	Systematic Review / Meta-analysis	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Knerr 2013	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓	✓✓✓✓	
Lemstra 2010	Systematic review	Good	✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
McBride 2003	Systematic review of reviews and recent primary studies	Not acceptable	✓✓✓✓	✓✓	♦	♦	Lack of detail concerning individual studies
McGrath 2006	Review of reviews	Acceptable	✓✓	✓✓	✓✓	✓✓✓	
Mejia 2012	Literature review and Systematic Review	Acceptable	✓✓✓	✓✓	✓✓✓✓	✓✓	
Moyer 2002	Meta-analysis	Not acceptable	✓✓✓	✓	✓	✓✓	Lack of detail concerning search strategy and individual studies
Müller-Riemenschneider 2008	Meta-analysis	Good	✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Najaka 2001	Meta-Analysis / Mediation analysis	Not acceptable	✓✓✓✓	✓✓✓	✓✓	✓✓✓	Outcome measure is too broad (not limited to substance use)
NCI 2008	Compendium of reviews	Acceptable	✓✓✓	✓✓	✓✓✓	✓✓	
Niccols 2012 (child outcomes)	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓	
Niccols 2012 (parenting outcomes)	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Nilsen 2008	Systematic review	Acceptable	✓✓✓✓	✓✓	✓✓✓✓	✓✓	

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Pan 2009	Meta-analysis	Acceptable	✓✓✓	✓✓	✓✓✓	✓✓✓	
Peters 2009	Review of reviews	Not acceptable	✓	✓✓	✓	♦	Lack of detail concerning individual studies
Petrie 2007	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Poikolainen 1999	Meta-analysis	Not acceptable	✓✓✓	♦	✓✓✓✓	✓✓	Lack of detail concerning search strategy
Popova 2009	Systematic review	Acceptable	✓✓	✓✓✓	✓✓	✓✓	
Porath-Waller 2010	Meta-analysis	Acceptable	✓✓✓✓	✓✓	✓✓	✓✓	
Ranney 2006	Systematic review of reviews and primary studies	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓✓✓	
Reavley 2010	Review of reviews and primary studies	Acceptable	✓✓	✓✓	✓✓	✓✓	
Richardson 2009	Systematic review of reviews and primary studies	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓✓	
Riper 2009	Meta-analysis	Good	✓✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓✓	
Roe 2005	Systematic review	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓✓	
Roussos 2000	Literature review	Not acceptable	✓✓	✓✓	♦	♦	Lack of detail concerning individual studies
Schröer-Günther 2011	Systematic review	Good	✓✓✓	✓✓✓✓	✓✓✓✓	✓✓✓	
Scott-Sheldon 2012	Meta-analysis	Not acceptable	✓✓✓✓	✓✓	✓✓	✓	Lack of detail concerning individual studies
Skara 2003	Systematic review	Acceptable	✓✓✓✓	✓✓✓	✓✓✓✓	✓✓	
Smith 2009	Systematic review	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓✓	
Soole 2008	Systematic review / Meta-analysis	Acceptable	✓✓	✓✓	✓✓	✓✓✓	
Spoth 2008	Literature review / Review of reviews and primary studies	Acceptable	✓✓✓	✓✓✓	✓✓	✓✓✓	
Strang 2012	Review of reviews and primary studies	Not acceptable	✓✓	✓✓	♦	♦	Lack of detail concerning methodology and included studies

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Sullivan 2004	Literature review	Not acceptable	✓	✓✓	♦	✓	No evidence of systematic data extraction, lack of detail concerning included studies
Tait 2003	Systematic review	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓	
Thomas 2008	Systematic review	Good	✓✓✓✓	✓✓✓✓	✓✓✓	✓✓✓	
Tobler 1992	Meta-Analysis with Moderator Analysis	Not acceptable	✓✓	✓	✓	✓	Methodology not reported
Tobler 1999	Meta-Analysis	Not acceptable	✓✓✓	✓✓	✓✓	✓	Lack of detail concerning individual studies
Tobler 2000	Meta-Analysis	Not acceptable	✓✓✓✓	✓	✓✓	✓	Lack of detail concerning search strategy and individual studies
Toumbourou 2007	Review of reviews	Not acceptable	✓✓✓	✓✓	✓	♦	Expert overview rather than a systematic review, lack of detail concerning individual studies
Vasilaki 2006	Meta-analysis	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓✓✓	
Velleman 2005	Review of reviews and primary studies	Not acceptable	♦	♦	♦	♦	Methodology not reported, process underlying study selection unclear
Wachtel 2010	Systematic review	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓✓	
Wagenaar 2002	Systematic review	Acceptable	✓✓	✓✓	✓✓✓	✓✓✓	
Wagenaar 2009	Meta-analysis	Not acceptable	✓✓	✓✓	♦	✓✓	Lack of detail concerning individual studies
Wakefield 2010	Review of reviews and primary studies	Not acceptable	♦	✓✓	✓	♦	Expert overview rather than a systematic review, lack of detail concerning individual studies
Webb 2009	Systematic review	Acceptable	✓✓	✓✓	✓✓✓	✓✓✓	
Webster-Stratton 2001	Literature review	Not acceptable	✓✓✓	♦	✓✓	✓✓	Search strategy not described
West 2004	Meta-analysis	Acceptable	✓✓✓	✓✓	✓✓	✓✓	
White 2010	Systematic review	Acceptable	✓✓	✓✓	✓✓✓✓	✓✓	
Wiehe 2005	Systematic review	Good	✓✓✓	✓✓✓	✓✓✓✓	✓✓✓	
Wilk 1997	Meta-analysis	Acceptable	✓✓✓✓	✓✓	✓✓✓✓	✓✓✓	

First Author, Year of Publication	Type of review	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Wilkinson 2009	Literature review	Not acceptable	♦	♦	♦	♦	Methodology not reported
Wilson 2001	Meta-Analysis	Not acceptable	✓✓✓	✓	✓	✓✓	Lack of detail concerning search strategy and individual studies

First Author, Year of Publication	Study design	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
Conrod 2006	RCT	Not acceptable	♦	✓✓	✓✓✓	✓✓✓✓	Random sequence generation not described
Conrod 2008	RCT	Acceptable	✓✓	✓✓✓✓	✓✓✓	✓✓✓	
Conrod 2010	RCT	Acceptable	✓✓✓✓	✓✓✓✓	✓✓	✓✓✓✓	
Conrod 2011	RCT	Acceptable	✓✓✓✓	✓✓✓✓	✓✓✓	✓✓✓	
Conrod 2013*	Cluster-RCT	Acceptable	✓✓✓	✓✓	✓✓	✓✓✓✓	
O'Leary-Barrett 2010*	Cluster-RCT	Acceptable	✓	✓✓	✓✓✓✓	✓✓✓	
Faggiano 2008	Cluster-RCT	Acceptable	✓✓✓	✓✓	✓✓✓✓	✓✓✓✓	
Goldberg 2007	RCT	Acceptable	✓	✓✓	✓✓	✓✓	
Humeniuk 2012	RCT	Acceptable	✓✓✓✓	✓✓	✓✓✓	✓✓✓	
Kitzman 2010*	RCT	Acceptable	✓✓	✓✓✓✓	✓✓	✓✓✓	
Olds 2010*	RCT	Acceptable	✓✓	✓✓✓✓	✓✓	✓✓	
Longshore 2007	RCT	Not acceptable	♦	✓✓	✓✓	✓✓	Random sequence generation not described
McDonald 2012	RCT	Not acceptable	♦	✓✓	✓	✓	Lack of detail in reporting, data collection not completed
Reynolds 2011	Matched-group controlled trial	Acceptable	✓✓✓✓	✓✓	✓✓	✓✓✓✓	
van de Wiel 2003	RCT	Not acceptable	♦	✓✓	✓✓	✓✓	Random sequence generation not described
van Lier 2004*	RCT	Not acceptable	♦	✓✓	✓✓	✓✓	Random sequence generation not described
van Lier 2005*	RCT	Not acceptable	♦	✓✓	✓✓✓	✓✓✓	Random sequence generation not described

First Author, Year of Publication	Study design	Quality rating (overall)	A	B	C	D	Justification if 'not acceptable'
van Lier 2009*	RCT	Not acceptable	⬩	✓✓	✓✓	✓✓✓	Random sequence generation not described

Notes:

Review Criterion A: Clear, transparent and sufficient inclusion criteria for study selection

Review Criterion B: Transparent, broad and diverse methods for literature search

Review Criterion C: Sufficient detail on included studies concerning methodology, participants, intervention characteristics and findings

Review Criterion D: Documentation and quality of data analysis and interpretation

Primary study Criterion A: Randomization methods and baseline comparability of groups

Primary study Criterion B: Blinding of participants, personnel and/or outcome assessors

Primary study Criterion C: Amount, nature or handling of incomplete outcome data due to attrition (losses to follow-up) and exclusions

Primary study Criterion D: Other sources of bias, including fidelity of intervention implementation

✓✓✓✓ Both reviewers rated this aspect as 'good'

✓✓✓ One reviewer rated this aspect as 'good' and the other reviewer as 'acceptable'

✓✓ Both reviewers rated this aspect as 'acceptable', or one reviewer considered it 'good' and the other reviewer as 'not acceptable'

✓ One reviewer rated this aspect as 'acceptable' and the other reviewer as 'not acceptable'

· Both reviewers rated this aspect as 'not acceptable'

Cochrane review, Campbell reviews and Community Guide reviews were not quality assessed and are therefore not included in this table.

* indicates multiple publications on the same trials: Conrod 2013 and O'Leary-Barrett 2010 report on one trial but on different follow-up times; Kitzman 2010 and Olds 2010 report on different outcomes from one trial; and van Lier 2004, 2005, and 2009 report on different measures/follow-up times regarding one trial.

Appendix II
Annex V

Summary results of 'good' and 'acceptable' studies

As detailed in the methodological appendix, the evidence on which the Standards are based is constituted by the systematic reviews and the primary studies that were assessed to be 'good' or 'acceptable'. For each intervention or policy (in alphabetical order), this table reports the relevant studies. In some cases, studies evaluated the impact of different interventions and policies. In these cases, the studies have been reported more than once, under each intervention or policy. The table also summarizes the findings of each study with regard to the prevention of drug use, alcohol use, tobacco use, mediating factors, and recommendations for intervention delivery.

First author, Year of publication **Title** **Type of review or Study design** **Quality rating**	**Intervention/Policy type** **Age** **Setting** **Country**	**REVIEWS: Number and type of included studies, Follow-up (12 months or more)** **PRIMARY STUDIES: Sample size and retention rates, Time to follow-up**	**Findings (substance use, mediators, other risky behaviours, moderators and recommendations for intervention delivery)**
Addressing individual psychological vulnerabilities			
Piquero 2010 Title: Self-control interventions for children under age 10 for improving self-control and delinquency and problem behaviors	Addressing individual psychological vulnerabilities Pre-natal and early childhood Middle childhood Family	34 RCTs Follow-up not reported	Drug use: The study did not report any drug use outcomes. Mediators: The results indicate that self-control improvement programs are an effective

Campbell review	School Community USA (31), Canada (2), Israel (1)		intervention for improving self-control and reducing delinquency and problem behaviors. Mean effect sizes were reported by information source. For self-control, mean effect sizes lay between 0.28 (teacher report, 95% CI from 0.07 to 0.48, p<.01) and 0.61 (self-report, 95% CI from 0.20 to 1.02, p<.05). For delinquency and problem behaviour, parent and direct observer reports found no significant effects whereas teacher reports suggested a mean effect size of 0.30 (95% CI from 0.13 to 0.46, p<.001).
Conrod 2008 Title: Personality-targeted interventions delay the growth of adolescent drinking and binge drinking RCT Quality: Acceptable	Addressing individual psychological vulnerabilities Adolescence School UK	Intervention group: 199 (baseline), 151 (last follow-up) (76%) Control group: 169 (baseline), 132 (last follow-up) (78%) Follow-up at 6 months and 12 months post-intervention	Alcohol use: The authors conclude that brief, personality-targeted interventions may prove effective in preventing the onset of adult alcohol use disorders, by helping high-risk youth delay the growth of their drinking to a later developmental stage. Multi-group analysis of a latent growth curve model showed a group difference in the growth of alcohol use between baseline and 6-months follow-up, with the control group showing a greater increase in drinking than the intervention group for this period. Interventions were particularly effective in preventing the growth of binge drinking in those students with a sensation seeking (SS) personality. SS drinkers in the intervention group were 45% and 50% less likely to binge drink at 6 (OR = .45) and 12 months (OR = .50) respectively, than SS drinkers in the control group (p = .001, phi= .49, Number Needed to Treat = 2.0).
Conrod 2010 Title: Brief, Personality-Targeted Coping Skills Interventions and Survival as a Non–Drug User Over a 2-Year Period During Adolescence	Addressing individual psychological vulnerabilities Adolescence School	Intervention group: 395 (baseline), 215 (last follow-up) (54%) Control group: 337 (baseline), 171 (last follow-up) (51%) Follow-up at 6, 12, 18, and 24 months post-intervention	Drug use: The authors conclude that brief, personality-targeted interventions can prevent the onset and escalation of substance misuse in high-risk adolescents. Intent-to-treat repeated-measures analyses on continuous

RCT Quality: Acceptable	UK		measures of drug use revealed time intervention effects on the number of drugs used (P< .01) and drug use frequency (P <.05), whereby the control group showed significant growth in the number of drugs used as well as more frequent drug use over the 2-year period relative to the intervention group. The intervention was associated with reduced odds of taking up the use of cocaine (Beta =−1.4; robust SE=0.4; P< .001; odds ratio=0.2; 95% confidence interval, 0.1-0.5), and other drugs (Beta =−0.7; robust SE=0.3; P=.03; odds ratio=0.5; 95% CI [0.3-0.9]) over the 24-month period. The number-needed-to-treat (NNT) indices of effect size indicated that for every 10 interventions provided, 1 case of cocaine use was prevented over the 24-month period. The NNT for other drug use over the 24-month period was 16. Reduced odds of taking up the use of marijuana were also found, although this effect was non-significant (Beta =−0.3; robust SE=0.2; P=.12; odds ratio= 0.7; 95% CI [0.5-1.1]). Delivery: The authors argue that the success of this program is likely due to its selective nature in that only high-risk youth with known personality risk factors for early-onset substance use were targeted. This selective approach allowed them to deliver interventions that were brief, personally relevant, and focused on risk factors directly related to the individual's risk for substance use.
Conrod 2011 Title: Long-Term Effects of a Personality-Targeted Intervention to Reduce Alcohol Use in Adolescents RCT	Addressing individual psychological vulnerabilities Adolescence School UK	Intervention group: 196 (baseline), 124 (last follow-up) (63%) Control group: 168 (baseline), 94 (last follow-up) (56%) Follow-up at 6, 12, and 24 months	Alcohol use: The authors conclude that personality-targeted interventions reduce drinking behavior in adolescents in the short term. Relative to the control group, the intervention group showed significantly reduced drinking and binge drinking levels at 6 months post-intervention.

Quality: Acceptable			Intent-to-treat repeated measures analyses revealed a Time × Intervention effect on drinking quantity/frequency and binge drinking frequency, which meant that the intervention effect disappeared gradually over time. However, with regard to problem drinking symptoms (e.g., negative consequences of alcohol use), the study found a significant overall intervention effect in reducing problem drinking symptoms for the full 24-month follow-up period (Cohen's d = 0.33).
Conrod 2013; O'Leary-Barrett 2010 Title: Effectiveness of a Selective, Personality-Targeted Prevention Program for Adolescent Alcohol Use and Misuse: A Cluster Randomized Controlled Trial (Conrod 2013); Personality-Targeted Interventions Delay Uptake of Drinking and Decrease Risk of Alcohol-Related Problems When Delivered by Teachers (O'Leary-Barrett 2010) Cluster-RCT Quality: Acceptable	Addressing individual psychological vulnerabilities Early adolescence Adolescence School UK	Intervention group: 696 pupils (baseline), 624 (at 6 months) (90%) Control group: 463 (baseline), 384 (at 6 months) (83%) Follow-up at 6, 12, 18, and 24 months after the intervention (note, only the retention rates for the 6-month follow-up are shown above)	Alcohol use: According to the authors, the results of this randomized trial indicate long-term benefits of personality-targeted interventions on drinking outcomes for high risk students. Targeted effects of the program were observed on all drinking outcomes and for the duration of the follow- up period, with high risk youth in intervention schools reporting 29% reduced odds of drinking, 43% reduced odds of binge drinking, and 29% reduced odds of problem drinking relative to high risk students in control schools. The intervention was also found to delay the natural progression to more risky drinking behavior, such as frequency of binge drinking, greater quantity of drinking, and severity of problem drinking in these students. The findings also suggest indirect effects of the selective alcohol prevention program in low risk students, specifically on long-term drinking rates (Beta= -0.259, SE=0.132, P=.049) and growth of binge drinking (Beta = -0.244, SE=0.073, P=.001), and some signs of a marginal herd effect on problem drinking symptoms in the longer term. Delivery: These findings not only provide replication of the efficacy of this

			intervention program for high risk youth but also contribute to the evidence in support of its long-term effectiveness when administered by appropriately trained school staff.
Alcohol policies			
Anderson 2009 Title: Impact of Alcohol Advertising and Media Exposure on Adolescent Alcohol Use: A Systematic Review of Longitudinal Studies Systematic Review Quality: Acceptable	Alcohol policies Early adolescence Adolescence Community Media USA, Belgium, Germany, New Zealand	13 longitudinal studies In 10 studies, participants were followed up at 12 months or more.	Alcohol use: Twelve of the thirteen studies found evidence that exposure to alcohol advertising and promotion predicts both the onset of drinking amongst non-drinkers and increased levels of consumption among existing drinkers.
Bühler 2008 Title: Prevention of substance abuse (EMCDDA Insights Nr 7) Review of reviews and primary studies Quality: Acceptable	Alcohol policies Age not specified Community Most included reviews originated from the USA.	4 reviews Follow-up not consistently reported	Alcohol use: - Raising the minimum legal drinking age reduces alcohol consumption. - Raising the minimum legal drinking age reduces the negative consequences of alcohol consumption (alcohol-related accidents; other health and social problems). - Lower blood/alcohol limits for young and/or inexperienced drivers have a positive effect on alcohol-related accidents. - Higher 'total alcohol prices' (inclusive of indirect costs) have effects on alcohol consumption and alcohol-induced deviance. They reduce consumption by both moderate and heavy drinkers. - Price elasticity for alcohol: 10 % price increase results in a 3 % to 6.5 % decline in alcohol consumption
Campbell 2009 Title: The Effectiveness of Limiting Alcohol Outlet Density As a Means of Reducing Excessive Alcohol Consumption and Alcohol-Related Harms Community Guide review	Alcohol policies Early adolescence Adolescence Adulthood Community USA, Canada, UK, Norway,	Alcohol outlet density change: 10 interrupted time–series studies; Privatization: 17 studies using autoregressive integrated moving average (ARIMA) time–series study design (all except two studies reported results for comparison populations); Alcohol bans: 9 studies; Licensing-Policy Changes:	Alcohol use: This review considered studies that directly evaluated outlet density (or changes in outlet density) and those that evaluated the effects of policy changes that had a substantial impact on outlet density, including studies of privatization, remonopolization, bans on alcohol sales and the removal of bans,

	Sweden, Finland, Iceland, New Zealand	4 studies Follow-up periods not reported consistently / not applicable	and changes in density from known policy interventions and from unknown causes. Most of the studies included in this review found that greater outlet density is associated with increased alcohol consumption. With regard to alcohol outlet density change, all five studies that assessed the association between outlet density and population-level alcohol consumption found that they were positively associated; increased density was associated with increased consumption, and vice versa. With regard to privatization, the reviewed studies indicate that privatization increases the sales of privatized beverages but has little effect on the sales of non-privatized alcoholic beverages. The median relative increase in alcohol sales subsequent to privatization was 42.0%, with an interquartile interval of 0.7% to 136.7%. That is, among the studies reviewed, compared with consumption prior to privatization, the median effect was an increase of 42.0% in consumption of the privatized alcoholic beverage. Studies of three events of privatization yielded inconsistent findings. Five publications assessed the effects of privatization on the concomitant sales of alcoholic beverages that were not privatized during the same period. Overall, these studies reported that there was a minimal decline: a median of 2.1% (interquartile interval [IQI]: -4.8% to 2.7%) in the sales on nonprivatized beverages. With regard to licensing-policy changes, more permissive licensing procedures appeared to increase the number of on- and off-premises alcohol outlets, which in turn led to increases in alcohol consumption. Two studies specifically reported increases in alcohol consumption among heavy drinkers, and one study reported an increase in

			drinking among survey subjects who reported not drinking during a specified period at the baseline assessment. Other risky behaviours: Most of the studies included in this review found that greater outlet density is associated with increased alcohol-related harms, including medical harms, injury, crime, and violence. With regard to alcohol outlet density change, the studies reviewed suggested that the association between outlet density and interpersonal violence may at least partially be due to social aggregation in and around alcohol outlets, and that the density of outlets in a given locale can also influence the probability of assaults involving residents of neighboring communities. The two studies assessing the relationship between alcohol outlet density and motor-vehicle crashes produced mixed results. With regard to privatization, the one study that evaluated the reintroduction of government monopoly control of sale of an alcoholic beverage (medium-strength beer) found that remonopolization led to a significant decrease in motor-vehicle crashes for most age groups and a significant decrease among youth for several, but not all, alcohol-related harms. With regard to alcohol bans, the effectiveness of bans in reducing alcohol-related harms appears to be highly dependent on the availability of alcohol in the surrounding area. In isolated communities, bans can substantially reduce alcohol-related harms. However, where alcohol is available in areas nearby those with bans, travel between these areas may lead to serious harms. With regard to licensing-policy changes, the single study that evaluated alcohol-related harms (alcohol-related motor-vehicle crashes) found that they increased substantially after allowing the sale of

			liquor by the drink.
Elder 2010 Title: The Effectiveness of Tax Policy Interventions for Reducing Excessive Alcohol Consumption and Related Harms Community Guide review	Alcohol policies Early adolescence Adolescence Adulthood Community Included studies had to be conducted in a high-income economy; all but two of the studies on individual consumption were conducted in the U.S. The other two took place in Switzerland.	73 evaluation studies; 50 assessed overall alcohol consumption and 38 (76%) of these reported price elasticities; 16 studies in the review used survey data to evaluate the effects of alcohol prices or taxes on individual alcohol consumption patterns. Follow-up unclear.	Alcohol use: For societal levels of alcohol consumption, the majority of estimates of price elasticity fell within the range of approximately 0.30 to 1.00, indicating that a 10% increase in alcohol prices would be expected to result in a 3% to 10% decrease in alcohol consumption. These results indicate that alcohol consumption is responsive to price, and suggest that the impact of a potential tax increase is likely to be proportional to its size. Detailed estimates on the price elasticity of alcohol consumption (i.e., the expected percentage change in alcohol consumption when the price increases by 1%): - Beer consumption: -0.50 (interquartile interval [IQI]: -0.91 to -0.36; 18 studies); - Wine consumption: -0.64 (IQI: -1.03 to -0.38; 22 studies); - Spirits consumption: -0.79 (IQI: -0.90 to -0.24; 21 studies); - Total alcohol (ethanol) consumption: -0.77 (IQI: -2.00 to -0.50; 11 studies). Price and consumption by high school or college age youth: Six studies found consistent evidence that higher alcohol prices were associated with less youth drinking [three of these studies reported price elasticities: 0.29 for drinking among high school students; 0.53 for heavy drinking among those aged 16–21 years; and 0.95 and 3.54, respectively, for binge drinking among men and women aged 18–21 years]; 3 studies found mixed results. The nine studies that assessed the relationship between price or taxes and alcohol consumption patterns in adults or in the general population also generally found that increasing the prices or taxes on alcoholic beverages was associated with a lower prevalence of excessive alcohol consumption and related harms.

			Other risky behaviours: Three additional studies found that higher alcohol taxes are associated with decreased violence. When the differences among tax and price elasticities are taken into account, the strength of the relationships reported in these studies were comparable to those found for alcohol consumption outcomes.
Hahn 2010 Title: Effectiveness of Policies Restricting Hours of Alcohol Sales in Preventing Excessive Alcohol Consumption and Related Harms Community Guide review	Alcohol policies Adolescence Adulthood Community Australia, UK, Canada, Iceland	16 studies with a variety of study designs (more than half had a pre-post design without a comparison or control group) At least 7 studies had a follow-up period of 12 months or more post-intervention	Alcohol use: The studies included in this review assessed the effects of increasing hours of sale in on-premises settings (in which alcoholic beverages are consumed where purchased). Studies of Changes of >2 Hours in Hours of Sale: Among the ten studies in this body of evidence, two studies found that an increase of 2 hours in the hours of sale led to decreased alcohol-related harms (i.e., injury and serious violent crime), and six studies found an increase in alcohol-related harms relative to the period before the increase in hours of sale took place . One study found no effect. One study found a nonsignificant increase in alcohol consumption associated with the increase in hours. Studies of Changes of <2 Hours in Hours of Sale: This small body of evidence indicated no consistent effects of changes of <2 hours on alcohol-related outcomes. Four events of increases in hours of sale were studied. Only one study of increased hours of sale reported substantial increases in wholesale alcohol purchases, assaults, and motor vehicle crashes. Two studies did not provide numeric results but reported small and inconsistent changes in alcohol-related outcomes including alcohol consumption, multiple alcohol-related causes of mortality, and motor vehicle crashes. Two studies of

			increased hours of sale also reported small and inconsistent changes in alcohol sales and consumption. The authors conclude that there was sufficient evidence in ten qualifying studies to conclude that increasing hours of sale by 2 or more hours increases alcohol-related harms. Thus, disallowing extensions of hours of alcohol sales by 2 or more should be expected to prevent alcohol-related harms, while policies decreasing hours of sale by 2 hours or more at on-premises alcohol outlets may be an effective strategy for preventing alcohol-related harms. The evidence from six qualifying studies was insufficient to determine whether increasing hours of sale by less than 2 hours increases excessive alcohol consumption and related harms. No qualifying study assessed the effects of reducing hours of sale. Other risky behaviours: Please see information on alcohol use.
Hahn 2012 Title: Effects of Alcohol Retail Privatization on Excessive Alcohol Consumption and Related Harms Community Guide review	Alcohol policies Adolescence Adulthood Community USA, Canada, Finland	18 studies (17 studies on privatization, 1 study on remonopolization) (variety of study designs) Follow-up periods not consistently reported	Alcohol use: The authors conclude that there is strong evidence that privatization of retail alcohol sales leads to increases in excessive alcohol consumption. A total of 17 studies assessed the impact of privatizing retail alcohol sales on the per capita alcohol consumption, a well-established proxy for excessive alcohol consumption. Effects of privatization on consumption of privatized beverages: Across the 17 studies, there was a 44.4% median increase in the per capita sales of privatized beverages in locations that privatized retail alcohol sales (interquartile interval: 4.5% to 122.5%). Effects of privatization on the consumption of nonprivatized alcoholic beverages: Nine of the 17 studies also

			examined the effects of privatization on the per capita consumption of alcoholic beverages that were not privatized. Sales of nonprivatized alcoholic beverages decreased by a median of 2.2% (interquartile interval: -6.6% to -0.1%). The authors highlight that these decreases are not of sufficient magnitude to offset the overall increase in per capita sales of privatized beverages. One cohort study in Finland assessed the impact of privatizing the sales of medium-strength beer (MSB) on self-reported alcohol consumption. This was associated with a mean increase in alcohol consumption of 1.7 liters of pure alcohol per person per year. Effects of re-monopolization on alcohol-related outcomes: One study in Sweden assessed the impact of re-monopolizing the sale of MSB on alcohol-related harms. This was associated with reductions in most of the alcohol-related harms (e.g., hospitalizations for acute alcohol intoxication) assessed across all age groups; however, many of these effects were not significant.
Middleton 2010 Title: Effectiveness of Policies Maintaining or Restricting Days of Alcohol Sales on Excessive Alcohol Consumption and Related Harms Community Guide review	Alcohol policies Adulthood Age not specified Community Australia, USA, UK, Norway, Sweden	14 studies (variety of study designs, including time series, controlled and uncontrolled before and after studies) At least six events were followed-up at 12 months or more	Alcohol use: This review focused on the effectiveness for preventing excessive alcohol consumption and related harms of laws and policies maintaining or reducing the days when alcoholic beverages may be sold. Qualifying studies assessed the effects of changes in days of sale in both on-premises settings (at which alcoholic beverages are consumed where purchased) and off-premises settings (at which alcoholic beverages may not be consumed where purchased). Eleven studies assessed the effects of adding days of sale, and three studies assessed the effects of imposing a ban on sales on a given weekend day. The evidence from these studies indicated that increasing days of sale

			leads to increases in excessive alcohol consumption and alcohol-related harms and that reducing the number of days that alcoholic beverages are sold generally decreases alcohol-related harms. Based on these findings, the review concludes that there is strong evidence for the effectiveness of maintaining limits on days of sale for the reduction of alcohol related harms. Other risky behaviours: This review found that increasing days of sale by allowing previously banned alcohol sales on either Saturdays or Sundays increased alcohol-related harms, including motor vehicle crashes, incidents of driving under the influence of alcohol, police interventions against intoxicated people, and, in some cases, assaults and domestic disturbances.
Popova 2009 Title: Hours and Days of Sale and Density of Alcohol Outlets: Impacts on Alcohol Consumption and Damage: A Systematic Review Systematic Review Quality: Acceptable	Alcohol policies Early adolescence Adolescence Adulthood Community USA (36), Australia (8), Canada (5), New Zealand (2), UK (2), Brazil (1), Iceland (1), Mexico (1), Norway (1), Sweden (1), Switzerland (1)	59 studies (44 studies on density of alcohol outlets and 15 studies on hours and days of sale) (range of study designs, including cross-sectional and longitudinal designs) Follow-up not reported consistently / not applicable	Alcohol use: The authors conclude that restricting availability of alcohol is an effective measure to prevent alcohol-attributable harm. The majority of studies reviewed found that alcohol outlet density and hours and days of sale had an impact on one or more of the three main outcome variables, such as overall alcohol consumption, drinking patterns and damage from alcohol. With regard to outlet density, it appeared that alcohol outlet density was associated, for example, with a higher overall consumption in the jurisdiction, frequency of drinking, as well as college campus means for the average number of drinks when partying. With regard to hours/days of sale, one study found that higher volumes of high alcohol content beer, wine and distilled spirits were purchased in the licensed hotels during late trading hours, and that extended hours were also associated with young crowds, more likely to be women, and lower blood alcohol levels among

			women but not men. Another study examined the impact of changes in trading days (opening on Saturdays), and found a statistically significant increase in alcohol sales. Other risky behaviours: With regard to alcohol outlet density, a general finding is that higher alcohol outlet density tends to be associated with higher rates of damage, harm or problems. These problems included, for example, alcohol-involved pedestrian collisions, self-reported injuries and suicide, alcohol-related crashes and alcohol-related crash fatalities. With regard to hours/days of sale, findings were mixed.
Rammohan 2011 Title: Effects of Dram Shop Liability and Enhanced Overservice Law Enforcement Initiatives on Excessive Alcohol Consumption and Related Harms: Two Community Guide Systematic Reviews Community Guide review	Alcohol policies Adolescence Adulthood Community Studies were conducted in multiple states in the United States.	13 outcome evaluations - 11 studies of the effectiveness of dram shop liability and 2 studies on enhanced enforcement of overservice laws; including only 2 studies in relation to alcohol consumption. Follow-up unclear.	Alcohol use: With regard to dram shop liability, only two studies assessed changes in alcohol consumption (i.e., self-reported binge drinking) as an outcome. These studies were of least suitable design but had a fair quality of execution. Both studies found small, non-significant decreases (1.2% and 2.4%) associated with dram shop liability in states. With regard to enhanced enforcement of overservice laws, two studies were available. Both studies were of greatest design suitability and fair quality of execution. Both studies had pre–post designs, with concurrent comparisons. However, the small number of studies and inconsistent findings provided an insufficient body of evidence to determine the effectiveness of enhanced enforcement of overservice laws on excessive alcohol consumption and related harms. Other risky behaviours: Eleven studies of dram shop liability consistently found that this intervention reduced motor vehicle crash deaths in general and alcohol-related crash

			deaths in particular. Strong evidence indicated that dram shop liability is an effective intervention for reducing alcohol-related harms, as indicated by reduced motor vehicle crashes.
Smith 2009 Title: The effect of alcohol advertising, marketing and portrayal on drinking behaviour in young people: systematic review of prospective cohort studies Systematic review Quality: Acceptable	Alcohol policies Early adolescence Adolescence Adulthood Community Media Five studies were conducted in the USA, one in Belgium and one in New Zealand.	7 prospective cohort studies In five studies, participants were followed up at 12 months or more (in one study up to 14 years).	Alcohol use: Data from prospective cohort studies suggest there is an association between exposure to alcohol advertising or promotional activity and subsequent alcohol consumption in young people. All seven studies demonstrated significant effects across a range of different exposure variables and outcome measures. Notably, three studies showed that onset of drinking in adolescent non-drinkers at baseline was significantly associated with exposure. One study showed that for each additional hour of TV viewing per day the risk of starting to drink increased by 9% during the following 18 months. Another study found that for each additional hour of exposure to alcohol use depicted in popular movies there was a 15% increase in likelihood in having tried alcohol 13 to 26 months later. A third study showed that exposure to in-store beer displays significantly predicted drinking onset two years later. Effects were less clear in baseline drinkers: whilst greater exposure predicted greater drinking frequency, analyses adjusting for possible confounding factors failed to detect significant relationships.
Spoth 2008 Title: Preventive Interventions Addressing Underage Drinking: State of the Evidence and Steps Toward Public Health Impact Review of reviews and primary studies Quality: Acceptable	Alcohol policies Adolescence Adulthood Community USA	17 studies (study designs not consistently reported) Follow-up times not consistently reported; a follow-up period of at least 6 months was an inclusion criterion	Alcohol use: The evidence on effects of laws raising the minimum drinking age and zero-tolerance laws from studies with quasiexperimental designs suggests that minimum legal drinking age laws can reduce rates of underage drinking. The preventive effects from studies examining the minimum drinking age laws were not completely consistent,

			however. For example, some studies noted that drinking levels among 18- to 19-year-old students on college campuses remained high after enactment of underage drinking laws. These interventions were therefore classed by the review authors as having mixed or emerging evidence. Other risky behaviours: There was evidence to suggest that laws raising the minimum drinking age and zero-tolerance laws can reduce rates of single-vehicle nighttime car accidents and fatalities. However, some studies noted that rates of accidents and fatalities remained the same after the change in law. These interventions were therefore classed by the review authors as having mixed or emerging evidence.
Wagenaar & Toomey 2002 Title: Effects of Minimum Drinking Age Laws: Review and Analyses of the Literature from 1960 to 2000 Systematic review Quality: Acceptable	Alcohol policies Adolescence Adulthood Community USA, Canada, Australia	48 studies that assessed the effects of changes in the legal minimum drinking age on indicators of alcohol consumption and 57 studies that assessed the effects of changes in the legal minimum drinking age on indicators of driving after drinking and traffic crashes (variety of study designs, including cross-sectional and longitudinal designs, as well as studies with and without a comparison group) Follow-up not reported consistently / not applicable	Alcohol use: The authors conclude that higher legal drinking ages appear to reduce alcohol consumption. Of the 33 higher quality analyses of minimum drinking age laws and alcohol consumption, 11 (33%) found an inverse relationship; only 1 found the opposite. The quality of the studies of specific populations such as college students was considered poor, preventing any conclusions for this population. Only 6 of the 64 college-specific studies (9%) were of high quality; none found a significant relationship between the minimum legal drinking age and outcome measures. Other risky behaviours: The authors conclude that there appears to be an inverse relationship between the minimum legal drinking age and traffic crashes. Of the 79 higher quality analyses of minimum drinking age laws and traffic crashes, 46 (58%) found a higher minimum legal drinking age related to decreased traffic crashes; none found the opposite. Eight of the 23

			analyses of other problems found a higher minimum legal drinking age associated with reduced problems; none found the opposite.
Brief intervention			
Ballesteros 2004 Title: Efficacy of Brief Interventions for Hazardous Drinkers in Primary Care: Systematic Review and Meta-Analyses Meta-analysis Quality: Good	Brief intervention Adolescence Adulthood Health sector USA (5), UK (4), Spain (3), Australia (1)	13 RCTs 10 studies had a follow-up time of 12 months or more	Alcohol use: The authors conclude that the results of this review, although indicating smaller effect sizes than previous meta-analyses, support the moderate efficacy of brief interventions for hazardous (not dependent) drinkers in primary care settings. Brief interventions outperformed minimal interventions and usual care (random effects model OR = 1.55, 95% confidence interval [CI] = 1.27-1.90; RD = 0.11, 95% CI = 0.06-0.16; NNT = 10, 95% CI = 7-17). Similar results were obtained when two influential studies were removed (fixed effect model OR = 1.57, 95% CI = 1.32-1.87; RD = 0.11, 95% CI = 0.07-0.15; NNT = 9, 95% CI = 7-15). This translates to an improvement of 11% in the success rate between brief interventions and usual care or simple advice, or to the necessity to treat nine hazardous drinkers to obtain one additional success. Delivery: Brief interventions seem to have greater efficacy when applied in general screening programs (nontreatment seekers, fixed effect model OR = 2.19, 95% CI = 1.68-2.84) than at consultation (treatment seekers, fixed effect model OR = 1.41, 95% CI = 1.20-1.65). Also, brief interventions seem to work better when applied to heavy drinkers (fixed effect model OR = 1.94, 95% CI = 1.55-2.43) than when applied to moderate drinkers (fixed effect model OR = 1.42, 95% CI = 1.19 - 1.68).
Beich 2003	Brief intervention	19 RCTs of which 8 were combined	Alcohol use:

Title: Screening in brief intervention trials targeting excessive drinkers in general practice: systematic review and meta-analysis Meta-analysis Quality: Acceptable	Adolescence Adulthood Health sector USA (4), UK (3), Australia (1)	in meta-analysis Of the 8 studies included in the meta-analysis, 7 had a follow-up period of 12 months or more (up to 4 years in one study)	The pooled absolute risk reduction was 10.5% (95% confidence interval 7.1% to 13.9%). A random effects model yielded a similar result: 10% (6% to 14%). The pooled number needed to treat (NNT) was 10 (7 to 14). NNTs of single studies ranged from 5 to 61 and all results favoured intervention to some degree (table 4). Two studies had notably higher NNTs, and the 95% confidence intervals of five studies included the possibility of harm. The review found that, overall, in 1000 screened patients, 90 screened positive and required further assessment, after which 25 qualified for brief intervention; after one year 2.6 (95% confidence interval 1.7 to 3.4) reported they drank less than the maximum recommended level. This means that if a practitioner screens 1000 patients, carries out further assessment in those 90 patients (9%) who screen positive, and gives feedback, information, and advice to those 25 (2.5%) who qualify for brief intervention, two or three patients can be expected to have reduced their alcohol consumption to below recommended maximum levels after 12 months. The authors conclude that although even brief advice can reduce excessive drinking, screening in general practice does not seem to be an effective precursor to brief interventions targeting excessive alcohol use. This meta-analysis therefore raises questions about the feasibility of screening in general practice for excessive use of alcohol.
Bertholet 2005 Title: Reduction of Alcohol Consumption by Brief Alcohol Intervention in Primary Care: Systematic Review and Meta-analysis	Brief intervention Adulthood Health sector 9 trials conducted in North America, 7 in Europe, 2 in Africa,	19 RCTs; the meta-analysis was restricted to 10 trials for which necessary data was available. All studies had a follow-up of at least 6 months. In 15 out of 19 trials, follow-up was at 12 months or more (up to 48 months in one	Alcohol use: The authors conclude that, focusing on patients in primary care, brief alcohol intervention is effective in reducing alcohol consumption at 6 and 12 months. Seventeen trials reported a measure of alcohol consumption, of which 8 reported a significant effect of

Systematic Review / Meta-analysis Quality: Good	and 1 in Australia.	study).	intervention. The adjusted intention-to-treat analysis showed a mean pooled difference of −38 g of ethanol (approximately 4 drinks) per week (95% confidence interval, −51 to −24g/wk) in favor of the brief alcohol intervention group. Evidence of other outcome measures was inconclusive. Delivery: The authors suggest that brief alcohol intervention lasting from 5 to 15 minutes, accompanied by written material and the opportunity for the patient to schedule a follow-up visit, has the potential to significantly reduce alcohol consumption compared with either no intervention, usual care, or less than 5 minutes of intervention. However, specific moderator analyses to verify this were not carried out.
Carney 2012 Title: Effectiveness of early interventions for substance using adolescents: findings from a systematic review and meta-analysis Meta-analysis Quality: Acceptable	Brief intervention Adolescence School Community Health sector USA (8), Australia (1)	9 studies (6 RCTs, 3 quasi-experimental) of which 7 were combined in meta-analysis Follow-up times ranged from 1 to 12 months; follow-up periods not reported per study	Drug use: The authors conclude that early interventions for adolescent substance use do hold benefits for reducing substance use and associated behavioural outcomes. When alcohol and drug outcomes were considered together, the overall effect size was significant at g = 0.24 (p<0.0001). Marijuana/Cannabis frequency: The overall effect size was Hedge's g = 0.22 and was not significant (p = 0.16; 3 studies). All of these studies delivered individual interventions. Subgroup analyses showed that while single-session interventions had a significant effect on outcomes (g = 0.06, p = 0.05), a stronger effect size was obtained for multiple-session interventions (g = 0.42, p = 0.006). Alcohol use: Alcohol frequency: The overall effect size was significant at Hedge's g = 0.44 (p = 0.008; 4 studies). Alcohol quantity: The effect size was small at 0.05, but significant (p<0.001;

			4 studies). Binge drinking: The overall mean difference score was significantly different to zero (g=0.14, p = 0.001; 4 studies). Other risky behaviours: The results of the overall meta-analysis found that the interventions had a significant effect on problem and criminal behaviours related to substance use. Delivery: Subgroup analysis suggested that interventions delivered in an individual format and over multiple sessions had a stronger effect on the outcomes of interest. Across all outcomes, the results of the subgroup analysis indicated that there was a difference in delivering the intervention in a group setting (g = −0.03, p = 0.74) in comparison to an individual setting (g = 0.29, p<0.001) showing better outcomes for interventions delivered in individual formats. Results indicated that both single (g = 0.11, p = 0.008) and multiple intervention sessions (g = 0.44, p =<0.001) had a significant effect on the outcomes, but the effect size was larger for multiple-session interventions. Moreover, the authors note that some of the studies clearly seemed more effective than others, for example the outcome effect size for "Teen Intervene" were generally consistently larger than that of the other studies. Of the nine interventions included in this systematic review, it is the only intervention that included a session with the adolescents' parents.
Christakis 2003 Title: Pediatric Smoking	Brief intervention Early adolescence	4 RCTs Follow-up ranged from 12 to 36	Tobacco use: The authors conclude that, although the cumulative results do not conclude that

Prevention Interventions Delivered by Care Providers: A Systematic Review Systematic Review Quality: Acceptable	Adolescence Health sector USA (2), UK, Finland	months	smoking prevention is ineffective, definitive evidence of effectiveness is lacking. Included were two studies conducted in primary care, and one each in dental and orthodontic offices. Three studies found no significant differences between treatment and control groups with respect to initiation of smoking at follow-up Only one study demonstrated a small but significant effect on smoking initiation; in that study, 5.1% of the intervention group and 7.8% of the control group reported smoking at 12-month follow-up (odds ratio 0.63; 95% confidence interval, 0.44–0.91).
Dunn 2001 Title: The use of brief interventions adapted from motivational interviewing across behavioral domains: a systematic review Systematic review Quality: Acceptable	Brief intervention Adolescence Adulthood School Health sector Countries not reported (likely USA only)	29 RCTs (17 in substance abuse, 2 in smoking cessation, 4 in HIV risk reduction and 6 in diet/exercise); 26 studies reported adequate information to calculate effect sizes. Out of the 17 studies on substance use, 6 had a follow-up period of 12 months or more. Neither of the two studies on smoking cessation had a follow-up period of 12 months or more.	Drug use: Please see information on alcohol use. Alcohol use: The effect sizes in 10 of 15 substance abuse studies (including alcohol and illicit drugs, although about half of these studies focused on alcohol only) were significant and in favor of Motivational Interviewing (MI), ranging from 0.30 to 0.95. One study found a significant negative effect for MI, Project MATCH, in which 9- month drinking consequences were worse for 4 hours of MI versus 12 hours of Twelve-Step facilitation treatment. The authors state that there is good evidence that MI works with substance-dependent as well as substance-abusing people. Both substance abuse studies of MI with youth had significant, positive results. Tobacco use: One of two smoking cessation studies had a small and significant effect size; the effect size for percent of smokers abstinent in the past 24 hours was 0.23. The other study, a small-sample study of youth in the emergency room, was also encouraging in that most of its effect sizes were in a positive direction, although non-significant.

			Other risky behaviours: In two studies of HIV risk reduction, MI was found to increase condom use and reduce unprotected sex among high-risk women. The effects of both studies were consistent in size and direction. However, among injecting drug users, other studies found that MI did not reduce HIV risk by reducing injecting. Delivery: Focusing on study results that are consistent in size and direction, the best evidence for MI effectiveness found by this review was when it was used as an enhancement to more intensive substance abuse treatment. The authors highlight that in these cases that MI was not simply blended into the repertoires of real-world, specialist substance abuse clinicians after an inservice training. Rather, one or two separate MI sessions were added before the start of treatment-as-usual, usually performed at the treatment-as-usual site by intensively trained MI research interventionists not on the clinical staff at that site.
Emmen 2004 Title: Effectiveness of opportunistic brief interventions for problem drinking in a general hospital setting: systematic review Systematic review Quality: Good	Brief intervention Age not specified Health sector Countries not specified	8 studies (3 individually randomised trials, 4 cluster randomised trials, 1 non-randomised trial with matched controls) 5 out of 8 studies had follow-up times of 12 months or more.	Alcohol use: Evidence for the effectiveness of opportunistic brief interventions in a general hospital setting for problem drinkers is still inconclusive. Only one study, with a short follow-up period of two months, found a significant reduction in weekly alcohol consumption in the intervention group. The other studies found no significant effects.
Fager 2004 Title: The effectiveness of intervention studies to decrease alcohol use in college undergraduate students: an integrative analysis	Brief intervention Adolescence Adulthood School	15 studies (13 RCTs, 2 quasi-experimental) Only two studies had a follow-up at 12 months or more.	Alcohol use: The authors conclude that there is little empirical support for many approaches used to intervene in high-risk college alcohol use. Alcohol education or awareness programmes are ineffective when used alone and sometimes even

Literature review Quality: Acceptable	USA, Sweden		when they are used with other intervention strategies. Two studies suggested that brief motivational interventions (BMIs) were effective in the short-term; however, the only study with a long-term follow-up (4 years) found differences only in alcohol-related problems but not alcohol intake. Other risky behaviours: The authors conclude that brief motivational interventions appeared promising with regard to reducing alcohol-related harms, but the evidence is not clear-cut. Delivery: The authors provide recommendations for the delivery and content of interventions (Table 2).
Gates 2006 Title: Interventions for prevention of drug use by young people delivered in non-school settings Cochrane review	Brief intervention Adolescence Adulthood School Health sector USA, UK	2 RCTs (one cluster randomised and one individually randomised) Both studies had a follow-up of only 3 months	Drug use: There is a lack of evidence concerning the effectiveness of non-school based interventions in preventing or reducing drug use by young people. One of two studies of motivational interviewing suggested that this intervention was beneficial on self-reported cannabis use. The authors conclude that further evaluation is needed before it can be firmly established that these interventions are effective.
Jensen 2011 Title: Effectiveness of Motivational Interviewing Interventions for Adolescent Substance Use Behavior Change: A Meta-Analytic Review Meta-analysis Quality: Acceptable	Brief intervention Adolescence Health sector Setting not specified Countries not reported	21 controlled trials (some of which randomised, no detail reported) Follow-up not reported in detail (7 studies had a follow-up period of 6 months or more, up to 24 months post-treatment)	Drug use: Of the included studies, 57.1% (n = 12) included an outcome measure for frequency of marijuana use, 57.1% (n = 12) examined alcohol use, 33.3% (n = 7) included tobacco use, 28.6% (n = 6) examined the use of various street drugs (e.g., cocaine; methamphetamines), and 28.6% (n = 9) examined use of multiple restricted substances. The authors conclude that the effectiveness of MI interventions for adolescent substance use behavior

			change is supported by this meta-analytic review. Across all substances (including alcohol and tobacco) and all identified interventions, the random effects weighted mean effect size revealed a small, but significant, post-treatment effect size (mean d = 0.173, 95% CI [.094, .252], n = 21). Not considering studies that addressed only tobacco cessation, studies that addressed alcohol and other drug use yielded a small, but significant, effect size comparable to the total sample effect size (mean d = 0.146, 95% CI [.059, .233], n = 16). Across all substances (including alcohol and tobacco), small, but significant, effect sizes were observed at follow-up suggesting that MI interventions for adolescent substance use retain their effect over time. Follow-up effect sizes were categorized into groups of greater or less than 6 months. Follow-up effect sizes less than 6 months were relatively larger (mean d = 0.323, 95% CI [.040, .607], n = 4) than those occurring over a period greater than 6 months (mean d = 0.133, 95% CI [.023. .244], n = 7). Alcohol use: Please see information on drug use. Tobacco use: Studies that addressed only tobacco smoking yielded a larger, but not statistically different, effect size (mean d = 0.305, 95% CI [.113, .497], n = 5). Please also see information on drug use.
Jones 2006 Title: A review of community-based interventions to reduce substance misuse among vulnerable and disadvantaged young people Systematic review of reviews and primary studies	Brief intervention Age not specified School Health sector Countries not specified	7 studies (2 systematic review, 3 RCTs, 1 controlled non-randomised trial, 1 before-and-after study) Only one study had a follow-up of 12 months	Drug use: There was evidence from one review and three primary studies to suggest that motivational interviewing and brief intervention can have short term effects on the use of cigarettes, alcohol and cannabis. The only RCT with a longer follow-up period, however, suggested that motivational interviewing does not have an impact on the use of cigarettes,

Quality: Good			alcohol or cannabis at 12 months follow-up. Alcohol use: Please see information on drug use. Tobacco use: Please see information on drug use.
Kahan 1995 Title: Effectiveness of physician-based interventions with problem drinkers: a review Systematic review Quality: Acceptable	Brief intervention Adulthood Health sector USA, UK, Sweden, and others (countries not consistently reported)	11 RCTs (3 studies presented separate results for men and women, 1 study involved women only, 2 involved men only, and 5 presented results for men and women as a combined sample) Follow-up times not reported	Alcohol use: This review examined the effectiveness of interventions by physicians in reducing alcohol consumption among problem drinkers attending a health-care facility. The authors conclude that the reviewed trials support the use of brief interventions by physicians for patients with drinking problems. The four trials with the highest validity scores showed that men in the intervention groups reduced their weekly alcohol consumption by five to seven standard drinks more than the men in the control groups. Considering all trials, in the seven studies that calculated weekly alcohol intake, consumption tended to decrease in both the intervention and control groups. Five of the studies showed significantly greater declines in alcohol consumption among men in the intervention group. Results for women were inconsistent. Only one trial showed statistically significant improvements in the serum GGT level and in alcohol intake (by four drinks per week on average). Two other trials both had negative results. Another trial found that women, like men, had significantly fewer sick days following intervention.
Kaner 2007 Title: Effectiveness of brief alcohol interventions in primary care populations Cochrane review	Brief intervention Adolescence Adulthood Health sector USA (11), UK (5), Spain (5), Canada (2), Finland (2), Sweden	29 RCTS of which 22 RCTs were included in meta-analysis 24 trials conducted a follow-up at 12 months or more.	Alcohol use: The authors conclude that, overall, brief interventions lowered alcohol consumption. Meta-analysis of 22 RCTs (enrolling 7,619 participants) showed that participants receiving brief intervention had lower alcohol consumption than the control group after follow-up of one year or longer

	(2), France (1), Australia (1).		(mean difference: -38 grams/week, 95% CI: -54 to -23), although there was substantial heterogeneity between trials. Sub-group analysis (8 studies, 2,307 participants) confirmed the benefit of brief intervention in men (mean difference: -57 grams/week, 95% CI: -89 to -25, I2 = 56%), but not in women (mean difference: -10 grams/week, 95% CI: -48 to 29, I2 = 45%). Thus, when data were available by gender, the effect was clear in men at one year of follow up, but not in women. Longer duration of counselling probably has little additional effect. Meta-regression showed little evidence of a greater reduction in alcohol consumption with longer treatment exposure or among trials which were less clinically representative. Extended intervention was associated with a non-significantly greater reduction in alcohol consumption than brief intervention (mean difference = -28, 95%CI: -62 to 6 grams/week, I2 = 0%). The lack of evidence of any difference in outcomes between efficacy and effectiveness trials suggests that the current literature is relevant to routine primary care.
Khadjesari 2010 Title: Can stand-alone computer-based interventions reduce alcohol consumption? A systematic review Systematic Review / Meta-analysis Quality: Good	Brief intervention Adolescence Adulthood Computer/Internet USA, UK, New Zealand, Netherlands, Germany	24 RCTs of which 19 trials were included in meta-analysis 3 out of 24 studies had a follow-up at 12 months; 9 studies followed up at 1 month or less.	Alcohol use: The data identified by this review suggest that computer-based interventions were more effective than minimally active comparator groups at reducing alcohol consumed per week (in both student and non-student adult populations) and binge frequency (in student populations). A small number of studies found no difference between alcohol consumed per week in those receiving the intervention or an active comparator. Notwithstanding the limitations of the data in the current review, a mean difference of 26 g of alcohol per week was found between computer-based interventions and minimally active comparator

			groups. The effectiveness of computer based interventions in student populations was less pronounced than in non-student populations and diluted the overall reduction in alcohol consumption (mean difference of 19 g of alcohol per week for student populations (12 studies), 115 g per week for non student adult populations (4 studies)).
McQueen 2011 Title: Brief interventions for heavy alcohol users admitted to general hospital wards Cochrane review	Brief intervention Adolescence Adulthood Health sector UK (5), USA (4), Australia (1), Germany (1), Finland (1), Taiwan (2)	14 randomised controlled trials and controlled clinical trials 9 studies had a follow-up period of 12 months or more	Alcohol use: The main results of this review indicate that there are benefits to delivering brief interventions to heavy alcohol users in general hospital. Patients receiving brief interventions had a greater reduction in alcohol consumption compared to those in control groups at six month, MD -69.43 (95% CI -128.14 to -10.72; meta-analysis of 4 studies) and nine months follow up, MD -182.88 (95% CI -360.00 to -5.76; based on 1 study) but this was not maintained at one year. Self reports of reduction of alcohol consumption at 1 year were found in favour of brief interventions, SMD -0.26 (95% CI -0.50 to -0.03), but there was no significant difference between the groups at 3 or 6 months. These findings are based on studies involving mainly male participants.
Nilsen 2008 Title: A systematic review of emergency care brief alcohol interventions for injury patients Systematic review Quality: Acceptable	Brief intervention Adolescence Adulthood Health sector USA (9), Finland (1), Wales (1), Spain (1), Germany (1), Switzerland (1)	14 RCTs 12 studies had a follow-up period of 12 months or more	Alcohol use: This review focused on the effectiveness of brief interventions (BIs) delivered to injury patients in emergency care settings. There was a general trend of reduced alcohol intake at follow-up assessments. Alcohol intake reduced more among BI patients than CG patients in most studies. Of the 12 studies that compared pre- and post-BI results, 11 observed a significant effect of BI on at least some of the outcomes: alcohol intake, risky drinking practices, alcohol-related negative consequences, and injury frequency. Two studies

			assessed only post-BI results. BI patients achieved greater reductions than control group patients, although there was a tendency for the control group(s) to also show improvements. Five studies failed to show significant differences between the compared treatment conditions. Variations in the study protocol, alcohol-related recruitment criteria, screening and assessment methods, and injury severity limit the specific conclusions that can be drawn. Delivery: More intensive interventions tended to yield more favorable results. However, the authors were unable to draw any dose–response conclusions about BI because it is unclear whether more BI (either in number, length, or intensity of sessions) results in a greater treatment effect. No study suggested a simple stepwise increase in effect with higher dosage of the initial BI, although one study did find a booster session to be needed.
Riper 2009 Title: Curbing Problem Drinking with Personalized-Feedback Interventions: A Meta-Analysis Meta-analysis Quality: Good	Brief intervention Adolescence Adulthood School Community Workplace Computer/Internet USA (9), Netherlands (2), Canada (2), Australia (1)	14 RCTs of single-session personalized-feedback interventions without therapeutic guidance No study had a follow-up period of 12 months or more; maximum follow-up period was 9 months in one study	Alcohol use: The pooled standardized-effect size (14 studies, 15 comparisons) for reduced alcohol consumption at post-intervention was d = 0.22 (95% CI 0.16, 0.29; the number needed to treat = 8.06; areas under the curve = 0.562). The authors conclude that single-session personalized-feedback interventions without therapeutic guidance can be effective for reducing problem drinking in student and general populations.
Smedslund 2011 Title: Motivational interviewing for substance abuse Cochrane review	Brief intervention Early adolescence Adolescence Adulthood	59 RCTs (29 studies on alcohol use, 8 studies on cannabis use, 4 studies on cocaine use, 18 studies on poly substance use) 19 studies conducted follow-up at	Drug use: The authors conclude that motivational interviewing can reduce the extent of alcohol and illicit drug use compared to no intervention. Compared to no treatment control motivational

	School Community Health sector USA (44), Australia (5), Netherlands (3), UK (3), Canada (2), Germany (1), New Zealand (1)	12 months or more	interviewing showed a significant effect on substance use which was strongest at post-intervention [standardised mean difference 0.79, (95% CI 0.48 to 1.09)] and weaker at short follow-up [standardised mean difference 0.17 (95% CI 0.09 to 0.26)], and medium follow-up [standardised mean difference 0.15 (95% CI 0.04 to 0.25)]. For long follow-up, the effect was not significant [standardised mean difference 0.06 (95%CI-0.16 to 0.28)]. However, it seems that other active treatments, treatment as usual and being assessed and receiving feedback can be as effective as motivational interviewing. There were no significant differences between motivational interviewing and treatment as usual for either follow-up post-intervention, short and medium follow up. Motivational interviewing did better than assessment and feedback for medium follow-up [standardised mean difference 0.38 (95% CI 0.10 to 0.66)]. For short follow-up, there was no significant effect. For other active interventions, there were no significant effects for either follow-up. The evidence is mostly of low quality, so further research is very likely to change the estimates of effect. Alcohol use: Please see information on drug use.
Tait 2003 Title: A systematic review of the effectiveness of brief interventions with substance using adolescents by type of drug Systematic review Quality: Acceptable	Brief intervention Adolescence School Health sector USA (10), Finland (1)	11 controlled trials (all the studies used cohort designs, with most adopting a two-group randomized control design) (7 reported outcomes for alcohol interventions and 4 involved other substances (one of which reported alcohol outcomes separately)) 3 studies had a follow-up period of 12 months or more	Drug use: The review focused on the effectiveness of brief interventions (BI) with adolescents in reducing alcohol, tobacco or other drug use. The evidence with regard to illicit drugs was limited in this review. The effect of BI with multiple substances (including alcohol and tobacco) appears substantial but the small sample cautions against expansive generalization. The two interventions addressing multiple substances involved few participants (n =110). One had a medium to large effect (d = 0.78). The

			data presented for the other study did not allow an effect size to be calculated. Alcohol use: The review suggested that BI, including those based on the motivational approach, were effective in reducing alcohol consumption by young people. The effect size from the eight alcohol interventions on alcohol consumption and related measures was significant but was considered "small" (d = 0.275). Tobacco use: The data for tobacco interventions suggested a very small reduction, particularly with general community interventions. The two interventions with tobacco involved a substantial sample (n =2626) but had a very small, non-significant effect (d = 0.037).
Vasilaki 2006 Title: The efficacy of motivational interviewing as a brief intervention for excessive drinking: a meta-analytic review Meta-analysis Quality: Acceptable	Brief intervention Adolescence Adulthood School Community Health sector Countries not reported	22 RCTs of which 15 were included in the meta-analyses 8 out of 15 studies had a follow-up period of 12 months or more	Alcohol use: The authors conclude that brief motivational interviewing (MI) is an efficacious strategy for reducing alcohol consumption. Nine trials compared brief MI with no treatment. In these, the aggregate effect size was 0.18 (95% C.I. 0.07, 0.29), but was greater at 0.60 (95% C.I. 0.36, 0.83) when, in a post-hoc analysis, the follow-up period was three months or less. The aggregate effect size for the five studies that compared MI with no treatment was significant at the <3 month follow-up but not significant at the <6 month follow-up. This suggests that MI's effects fade across time. Efficacy also increased when dependent drinkers were excluded. Nine studies compared brief MI with another treatment (one of a diverse set of interventions), yielding an aggregate effect size of 0.43 (95% C.I. 0.17, 0.70). Delivery: The authors state that ~87 min of MI

			was more efficacious than no treatment in reducing alcohol consumption among non-dependent drinkers in the short term (<3 months), and that ~53 min of MI was more efficacious than an aggregated set of diverse comparison treatments, although it cannot be inferred from this result that MI is more efficacious than any one of the other treatments alone. When brief MI was compared with extended treatments (cognitive behavioural therapy (CBT), skill-based counseling, or directive-confrontational counseling), its average duration was shorter (53 min vs. 90 min), making MI more cost-effective than more extensive treatments. For instance, in one study in which both MI and CBT were effective in reducing alcohol use, MI lasted 60 min, but CBT lasted four and one-half hours. In addition, MI was found to be more effective than other brief interventions, such as brief advice and standard care. The review also showed that MI is more effective with young adults who are heavy- or low-dependent drinkers than with older drinkers or those with a more severe drinking problem. Specifically, the authors suggest that low-dependent drinkers who voluntarily seek help seem to benefit the most from MI.
Wachtel 2010 Title: The effectiveness of brief interventions in the clinical setting in reducing alcohol misuse and binge drinking in adolescents: a critical review of the literature Systematic review Quality: Acceptable	Brief intervention Early adolescence Adolescence Adulthood School Health sector USA, Australia, Netherlands	14 RCTs 8 studies had a follow-up of 12 months or more	Alcohol use: Twelve studies used a Motivational Intervention (MI) style of intervention, seven of which reported reduced alcohol frequency and amount. Two studies specifically found a reduction in binge-drinking episodes and seven reported a decrease in harmful alcohol effects. Two studies that had held multiple Motivational Interview sessions for its participants reported no significant results in relation to alcohol misuse. Two trials that used a brief intervention other than MI found the intervention ineffective for reducing alcohol misuse

			for adolescents. However, as there were only two trials with which to make a comparison and because the MI studies had varying outcomes, it remains inconclusive. Two trials on Motivational Interviewing conducted a follow-up of 24 months or more. Both had one intervention group (providing a single session) and a control group; but also included a second normative control group (chosen from the entire screening pool as a normative comparison). One study reported significant reductions in the negative consequences of high-risk drinking and in the quantity of consumption over the four-year follow-up. The greatest effect was found in a reduction of the negative consequences of drinking. It was also found that the high-risk control group drinkers, although they continued to drink more than the normative group, steadily reduced the quantity of alcohol intake and associated problems over time. This may be attributed to a normal maturation trend whereby adolescents reduce high-risk drinking as they get older. This maturation trend was also evident in the second long-term study, which reported at the final two-year follow-up a reduction in drinking rates and harmful effects in the intervention group, when compared to the no-treatment control group. Delivery: The authors note that MI appeared to have more success than other brief intervention types and that even a single-session intervention can produce positive results. They also highlight that face-to-face delivery of the intervention might possibly be more effective for adolescents than audio or laptop-computer delivery.

White 2010 Title: Online Alcohol Interventions: A Systematic Review Systematic review Quality: Acceptable	Brief intervention Adolescence Adulthood Computer/Internet Countries not specified	8 RCTs Only 1 study conducted a follow-up assessment at 12 months, 7 studies had a maximum follow-up of one month	Alcohol use: This review suggests that users can benefit from online alcohol interventions and that this approach could be particularly useful for groups less likely to access traditional alcohol-related services, such as women, young people, and at-risk users. In relation to alcohol units per week or month and based on 5 RCTs where a measure of alcohol units per week or month could be extracted, differential effect sizes to posttreatment ranged from 0.02 to 0.81 (mean 0.42, median 0.54). Pre-post effect sizes for brief personalized feedback interventions ranged from 0.02 to 0.81, and in 2 multi-session modularized interventions, a pre-post effect size of 0.56 was obtained in both. Pre-post differential effect sizes for peak blood alcohol concentrations (BAC) ranged from 0.22 to 0.88, with a mean effect size of 0.66.
Wilk 1997 Title: Meta-analysis of Randomized Control Trials Addressing Brief Interventions in Heavy Alcohol Drinkers Meta-analysis Quality: Acceptable	Brief intervention Adulthood Community Health sector Countries not consistently reported	12 RCTs (odds ratios could be calculated for 8 trials) 8 studies had a follow-up time of 12 months or more	Alcohol use: This review focused on the effectiveness of brief interventions in heavy drinkers. The authors concluded that heavy drinkers who received a brief intervention were twice as likely to moderate their drinking 6 to 12 months after an intervention when compared with heavy drinkers who received no intervention. The combined odds ratio from the six high-quality RCTs was 1.91 (95% CI 1.16, 2.27) in favour of brief alcohol interventions over no intervention. This was consistent across gender, intensity of intervention, type of clinical setting, and similar to the results obtained when including the lower-quality clinical trials. Delivery: Calculated odds ratios suggested a greater likelihood of alcohol moderator with greater intensity of intervention (OR 2.12 for more than 1 session

			compared to OR 1.83 for 1 session), female gender (OR 2.42 for women compared with OR 1.90 for men), and the intervention in the inpatient setting (OR 2.41 for inpatient compared with OR 1.91 for outpatient), although none of these comparisons was significant by Z statistic.
Humeniuk 2012 Title: A randomized controlled trial of a brief intervention for illicit drugs linked to the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) in clients recruited from primary health-care settings in four countries RCT Quality: Acceptable	Brief intervention Adolescence Adulthood Health sector USA, Australia, Brazil, India	Intervention group: 372 (baseline), 323 (last follow-up) (87%) Control group: 359 (baseline), 308 (last follow-up) (86%) Follow-up at 3 months post-randomization	Drug use: The authors conclude that brief interventions linked to the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) with an average duration of 15 minutes reduced illicit substance use and associated risk significantly among clients recruited from a range of primary health-care settings and countries, at least in the short term. Country-specific analyses showed that, with the exception of the site in the United States, BI participants had significantly lower ASSIST total illicit substance involvement scores at follow-up compared with the control participants. The sites in India and Brazil demonstrated a very strong brief intervention effect for cannabis scores ($P < 0.005$ for both sites), as did the sites in Australia ($P < 0.005$) and Brazil ($P < 0.01$) for stimulant scores and the Indian site for opioid scores ($P < 0.01$). However, ASSIST follow-up scores were significantly lower than baseline scores in both intervention and control groups, indicating that there was an overall decrease in substance use and risk over time. Therefore, other factors may have also contributed to changes in substance use over time. The analyses of all participants showed no significant group X time interaction effect for inhalants ($F(1,729) = 2.3$, $P = 0.13$), sedatives ($F(1,729) = 0.1$, $P = 0.8$) or hallucinogens ($F(1,729) = 0.005$, $P = 0.94$). Alcohol use: The analyses of all participants showed

			no significant group X time interaction effect for alcohol (F(1,729) = 3.5, P = 0.06), although the BI group showed a trend towards decreased alcohol scores at follow-up. Tobacco use: The analyses of all participants showed no significant group X time interaction effect for tobacco (F(1,729) = 1.2, P = 0.23).
Classroom environment improvement programmes			
Oliver 2011 Title: Teacher classroom management practices: effects on disruptive or aggressive student behavior Campbell review	Classroom environment improvement programmes Middle childhood Early adolescence Adolescence School USA (11), Netherlands (1)	12 studies (7 individually randomised studies, 4 cluster-randomised studies, 1 non-randomised study) Follow-up not reported	Drug use: This review does not report drug use outcomes but effects on problem student behavior (i.e., any intentional behavior that is disruptive, defiant, or intended to harm or damage persons or property, and includes off task, inappropriate, disruptive or aggressive classroom behavior). Mediators: The classroom-level mean effect size for the 12 programs was positive and statistically significant (d=.80 with an ICC=.05; d=.71 with an ICC=.10; p<.05). These effect sizes refer to classroom-level differences and cannot be compared to the typical student-level effect sizes commonly reported in the literature. The review found that teachers' classroom management practices have a significant, positive effect on decreasing problem behavior in the classroom. Students in the treatment classrooms in all 12 studies located for the review showed less disruptive, inappropriate, and aggressive behavior in the classroom compared to untreated students in the control classrooms. The overall mean classroom effect size of either .80 or .71 indicates a positive effect that significantly impacts the classroom environment. The classroom-level mean effect sizes of .80 and .71 are roughly

			comparable to student level effect sizes of .18 and .22 for ICC=.05 and ICC=.10, respectively. Teachers who use effective classroom management can expect to experience improvements in student behavior and improvements that establish the context for effective instructional practices to occur.
Community-based multi-component initiatives			
Bühler 2008 Title: Prevention of substance abuse (EMCDDA Insights Nr 7) Review of reviews and primary studies Quality: Acceptable	Community-based multi-component initiatives Age not specified Community Most included reviews originated from the USA.	6 reviews Follow-up not consistently reported	Alcohol use: - One review suggested that cross-system projects with numerous components (involving school, family, media etc.) have preventive effects on consumption behaviour, other reviews have been inconclusive. - Two individual studies recorded 10–20 absolute percentage points fewer smokers than in the control group. Effect size from a meta-analysis based on nine projects: .27 (not differentiated by substance) - Programmatic legislative provisions at community level (in relation to programme financing, implementation measures/quality assurance, conditions for running programmes etc.) have an indirect long-term effect on consumption (of tobacco and alcohol). Effect: 2–40 % reduction in consumption (review authors note that it is unclear whether percentage difference is absolute or relative) - Regulatory provisions at community level (in relation to rates of duty and to compliance monitoring) have a direct, short-term effect on consumption (of tobacco and alcohol). Effect: 5–10 % reduction in consumption (review authors note that it is unclear whether percentage difference is absolute or relative) Tobacco use: Please see information on alcohol use.
Carson 2011	Community-based multi-component initiatives	25 controlled trials (15 cluster randomised controlled trials, 10	Tobacco use: The authors conclude that there is some

Title: Community interventions for preventing smoking in young people Cochrane review	 Middle childhood Early adolescence Adolescence Adulthood Family School Community Media Multi-setting USA (17), Australia (3), UK (2), Finland (1), multiple countries in Europe (1), India (1)	controlled clinical trials) Most studies had a follow-up of 12 months or more	evidence to support the effectiveness of community interventions in reducing the uptake of smoking in young people, but the evidence is not strong and contains a number of methodological flaws. Of the 25 studies included in the study, ten were associated with a reduction in the uptake of smoking amongst young people. One study reported a reduction in short-term smoking prevalence (twelve months or less), while nine studies detected significant long-term effects. Two studies reported significantly lower smoking rates in the *control* population while the remaining thirteen studies showed no significant difference between groups. Delivery: Common features to the successful programmes include nine of the ten incorporating school based multi-component interventions with intervention delivery by school teachers and other faculty members, six had parental involvement in the intervention programme, and eight had intervention durations longer than 12 months.
Carson 2012 Title: Interventions for tobacco use prevention in Indigenous youth Cochrane review	Community-based multi-component initiatives Middle childhood Early adolescence Community USA	2 RCTs One study had a follow-up of 12 months or more (up to 36 months), the other study had a follow-up of 6 months	Tobacco use: This review found that there is not enough published research evaluating programmes aiming to prevent Indigenous youth from starting to use tobacco. The two included studies employed multi-component community-based interventions tailored to the specific cultural aspects of the population and were based in Native American populations. At final follow-up, neither study detected statistically significant changes between intervention and control groups. No difference was observed in weekly smoking at 42 months follow-up in the one study assessing this outcome (skills-community group versus control: risk ratio [RR] 0.95, 95% CI 0.78 to

			1.14; skills-only group versus control: RR 0.86, 95% CI 0.71 to 1.05). For smokeless tobacco use, no difference was found between the skills-community arm and the control group at 42 weeks (RR 0.93, 95% CI 0.67 to 1.30), though a significant difference was observed between the skills-only arm and the control group (RR 0.57, 95% CI 0.39 to 0.85). Whilst the second study found positive changes for tobacco use in the intervention arm at post-test ($p < 0.05$), this was not maintained at six month follow-up (change score -0.11 for intervention and 0.07 for control).
Foxcroft 2011 Title: Universal multi-component prevention programs for alcohol misuse in young people Cochrane review	Community-based multi-component initiatives Middle childhood Early adolescence Adolescence Family School Community Multi-setting USA (17), Australia (1), the Netherlands (1), India (1)	20 RCTs (15 cluster randomised, 5 individually randomised) 8 studies had a post-intervention follow-up of 12 months or more (up to 6 years in one study)	Alcohol use: The authors conclude that there is some evidence that multi-component interventions for alcohol misuse prevention in young people can be effective. 12 of the 20 trials reported positive effects of multi-component programs for the prevention of alcohol misuse in young people, with persistence of effects ranging from 3 months to 3 years. One trial reported statistically significant effects using one-tailed tests and may have been underpowered to detect significant effects using more conventional two-tailed tests. One trial found significant effects but only in a subsample of baseline drinkers. The remaining six trials reported no significant effects of the multi-component interventions for reducing alcohol misuse. Delivery: There is no clear evidence to suggest that multi-component interventions are more effective than single-component interventions. In seven studies the authors were able to assess the impact of single versus multiple components, and only 1 out of the 7 studies clearly showed a benefit of components

			delivered in more than one setting. Three indicated some possible benefit though this was straightforward to interpret in only one, and three trials showed no benefit of additional components.
Gates 2006 Title: Interventions for prevention of drug use by young people delivered in non-school settings Cochrane review	Community-based multi-component initiatives Middle childhood Early adolescence Adolescence Adulthood School Community USA (4), China (1)	5 RCTs (cluster randomised) All 5 studies had a follow-up of 12 months or more (42 months or more in three studies)	Drug use: There is a lack of evidence concerning the effectiveness of non-school based interventions in preventing or reducing drug use by young people. The studies of multi-component community interventions did not find any strong effects on drug use outcomes. There were five studies, four of which added the community component to a school drug education program.
Jackson 2012 Title: Interventions to prevent substance use and risky sexual behaviour in young people: a systematic review Systematic review Quality: Acceptable	Community-based multi-component initiatives Middle childhood Early adolescence Adolescence Family School Community Multi-setting USA (4), Canada (1), Australia (1)	6 studies (4 RCTs, 2 controlled trials) At least 3 studies had a follow-up of 12 months or more post-intervention	Drug use: Of the six programmes included in the review, none provided clear evidence of effectiveness for programmes targeting substance use and sexual health. The 'Forth R: Skills for Youth Relationships' programme included a curriculum-focused component, additional information for parents and a student-led school committee. After 30 months there was no effect on problem substance use among males and females (OR 1.11, 95% CI 0.84–1.44). The Aban Aya Youth Project evaluated a multi-component programme, composed of a classroom-based social development curriculum plus parental, school climate and community components. After 4 years, growth in rates of substance use was reduced in the intervention compared with control group among boys only (relative reduction 34%, P = 0.05), with no significant effects among girls. This study also included a comparison of the curriculum component only with the control group, and found a reduction in substance use among boys only

			(relative reduction 32%, P = 0.05). The Gatehouse Project, a whole-school programme aimed at promoting social and emotional wellbeing through improving social inclusion and connection in secondary schools, found that after 3 years, there were non-significant trends towards reduced regular smoking (OR 0.79, 95% CI 0.58–1.07) and past 6-month cannabis use (0.81, 95% CI 0.57–1.16), but no effects on alcohol use. In a further survey of 14-year-olds, carried out 4 years post-intervention, there was no significant difference in substance use. The Healthy For Life Project consisted of a classroom-based social influence curriculum, alongside peer, parental and community components. After 2 years, there were no significant effects on past-month alcohol, tobacco or cannabis use. However, in the intervention group which contained the intensive classroom-based curriculum element, smoking and cannabis were reduced. The Seattle Social Development Project (SSDP) sought to promote bonding to school and family and strengthening of children's social competencies during elementary school years. At age 18, heavy drinking was reduced significantly in the intervention group (OR 0.54, 95% CI 0.32–0.92). There was, however, no difference in life-time smoking or cannabis use. At age 21, there was no significant difference in substance use, and there were no significant effects on substance use at age 24. Youth Action Research for Prevention sought to empower young people to use research to understand their community more clearly, and to promote social action at multiple levels, from the individual to group and community levels. After 3 years there was a significant reduction in cannabis use, but not in alcohol use. Alcohol use: Please see information on drug use.

			Tobacco use: Please see information on drug use. Other risky behaviours: With regard to sexual health, the 'Forth R: Skills for Youth Relationships' programme showed significant increase in condom use in the intervention group among sexually active males (OR 1.70, 95% CI 1.10–2.66), but not females. The Aban Aya Youth Project reduced sexual intercourse among boys only (relative reduction 65%, with had no significant effects among girls. The Gatehouse Project had not effects on early initiation of sex in the short-term, but in the long term there was a significant reduction in early initiation of sexual intercourse (OR 0.55, 95% CI 0.37–0.83). The review authors concluded that it may take time for whole-school changes to impact upon risk behaviour. The Healthy For Life Project found no significant effects on sexual intercourse. The SSDP reduced life-time sexual activity, and sex with multiple partners significantly in the intervention group at age 18 (OR 0.52, 95% CI 0.38–0.72; and OR 0.61, 95% CI 0.43–0.88, respectively), as well as pregnancy or causing pregnancy (OR 0.57, 95% CI 0.34–0.95). At age 21, mean age at first sexual intercourse was significantly higher in the intervention versus control group (mean 16.3 versus 15.8; $P < 0.05$), and condom use during last sexual intercourse (if single) was more common in the intervention group (OR 1.88, 95% CI 1.11–3.19). There was no difference in condom use at first intercourse. Having multiple sex partners was reduced significantly in the intervention group ($P < 0.05$). Among women, pregnancy and giving birth were both reduced significantly ($P < 0.05$), but there was no effect among men on causing pregnancy or fathering a child. The prevalence of life-time

			sexually transmitted disease (STD) was not significantly different at age 21, but the life-time STD index was significantly lower in the intervention than control group at age 24 (P = 0.02). Youth Action Research for Prevention had no significant effect concerning multiple sexual partners. Delivery: The authors conclude in this review, which included different types of interventions, that the most promising interventions addressed multiple domains (individual and peer, family, school and community) of risk and protective factors for risk behaviour. Programmes that addressed just one domain (e.g., school) were generally less effective in preventing multiple risk behaviour.
Jones 2006 Title: A review of community-based interventions to reduce substance misuse among vulnerable and disadvantaged young people Systematic review of reviews and primary studies Quality: Good	Community-based multi-component initiatives Middle childhood Early adolescence Adolescence Family School Community Multi-setting USA	7 studies (1 systematic review, 5 RCTs, 1 before-and-after study) 3 studies had a follow-up of 12 months or more	Drug use: There was evidence from one review to suggest that multicomponent community-based approaches are more effective for high-risk youth at preventing, delaying, or reducing drug use than school and community projects alone. Compared with low risk youth, this population may respond more favourably to comprehensive interventions targeting alcohol, cannabis, tobacco, and generic substance use. One RCT found that multicomponent interventions can be effective in reducing substance use in the short term, however there is inconsistent evidence from one review and two RCTs about their effectiveness in the long-term, with studies either indicating no change in substance use, or a reduction in patterns of alcohol use. Findings from one RCT suggest that a community mobilisation and youth development programme had no effect on neighbourhood co-operation or pride, indicators of community mobilisation, or

			generic youth risk behaviours. Alcohol use: Please see information on drug use. Tobacco use: Please see information on drug use.
Müller-Riemenschneider 2008 Title: Long-Term Effectiveness of Behavioral Interventions to Prevent Smoking among Children and Youth Meta-analysis Quality: Good	Community-based multi-component initiatives Middle childhood Early adolescence Adolescence Family Community Multi-setting UK, USA, Canada, Netherlands, India	21 RCTs (10 included in meta-analysis) A follow-up of 12 months or more was an inclusion criterion; follow-up of included studies ranged from 12 months to 120 months.	Tobacco use: The present work identified moderate evidence for the effectiveness of behavioural interventions to prevent smoking. There was evidence that community-based and multisectorial interventions were effective in reducing smoking rates, although the reductions observed in smoking rates were only modest. Seven good/high-quality studies on community-based intervention were available, of which four reported strong evidence of intervention effectiveness, as demonstrated by reductions in smoking rates of up to 10.6%. Conversely, two studies reported a trend towards unfavourable intervention effects, reflecting an increase in smoking rates of up to 1.5% within the intervention group. Six good/high-quality studies on multisectorial intervention were available (i.e., interventions consisting of a school and an out-of-school component), of which four studies reported strong evidence of long-term effectiveness, and two studies reported positive intervention effects for only some groups. One study reported different outcome measures for smoking behaviour, indicating similar intervention effects, and none of the studies identified found any association between the intervention strategies and unfavourable effects on smoking rates. The difference in smoking rates between intervention and control groups was as high as 6.1%, favouring the intervention group in all cases. Delivery:

			Specific intervention components were investigated only infrequently. Family-based interventions were used in many community-based and multisectorial intervention strategies. Although it was difficult to identify their specific impact, there seems to be some evidence for the additional effectiveness of this approach. In order to achieve reductions in smoking rates however, it appears that providing smoking related information to parents was not sufficient on its own, but rather that the family members needed to be actively involved. Activities targeted at parents who smoke were found to be especially effective. Further research will be necessary to confirm these results and investigate the additional reductions in smoking rates associated with this approach.
Roe 2005 Title: Drug prevention with vulnerable young people: A review Systematic review Quality: Acceptable	Community-based multi-component initiatives Middle childhood Early adolescence Adolescence Adulthood Family School Community Multi-setting USA	5 evaluation studies with control or comparison groups (2 RCTs, 3 quasi-experimental designs) 3 studies had a follow-up of 12 months or more	Delivery: In the community, an intensive multi-component intervention (the Children at Risk program) was found to be the most effective in this review. Evaluated in five US cities, the CAR program made use of case managers to assess the multiple needs of at-risk young people and to co-ordinate the provision of necessary services. According to the review authors, this high-quality study supports other evidence to suggest that the most vulnerable young people experience multiple problems that can lead to drug use, and therefore effective interventions need to be multi-faceted. The authors conclude that across different settings the 11–13 age range appeared to be a crucial period for intervention with vulnerable young people. They describe this as a time when high-risk young people start to experiment with drugs, which appears to be a few years earlier than the onset of drug use amongst the general

			population.
Schröer-Günther 2011 Title: Primary Tobacco Prevention in China - A Systematic Review Systematic review Quality: Good	Community-based multi-component initiatives Adulthood School Community Media Multi-setting China	5 RCTs 1 study had a follow-up of 12 months	Tobacco use: The evidence for the effectiveness of smoking prevention interventions in China is weak, partly due to methodological limitations of the studies. The available research suggests that community-based smoking prevention and cessation programmes can have a significant effect on adults in the very short-term. Four out of five studies found significant differences between intervention and control groups at post-intervention. However, follow-up data was only available from one study. That study found significant differences at post-intervention, but not at 12 months. Delivery: With regard to the wider range of smoking prevention and cessation programmes included in this review, the authors conclude that interventions applying health promotion techniques were more often successful than interventions that were only based on health education.
Skara 2003 Title: A review of 25 long-term adolescent tobacco and other drug use prevention program evaluations Systematic review Quality: Acceptable	Community-based multi-component initiatives Middle childhood Early adolescence Adolescence Adulthood School Community USA (5), Finland (1)	6 quasi-experimental studies Only studies with a long-term follow-up of at least 24 months were included in this review (follow-up ranged from 27 to 180 months)	Drug use: This review of long-term tobacco and drug use prevention intervention studies indicates that school- and community-based programs were effective in preventing or reducing adolescent cigarette, alcohol, and marijuana use across follow-up periods ranging from 2 to 15 years. Of the six multi-component studies in this review, two studies had measured marijuana use. Both of these studies found sustained reductions in marijuana use among the intervention groups. Alcohol use: Two studies had also measured alcohol use; both studies found significant reductions in alcohol use at the initial

			follow-ups, but only one study still reported reduced alcohol use at the final follow-up (7 years). Tobacco use: Four studies consistently found significant reductions on a variety of smoking outcomes over multiple time points. This included the study with the longest follow-up (15 years). Two studies found no significant differences at any time point. Delivery: Results indicated that program effects were less likely to decay among studies that delivered booster programming sessions as a supplement to the program curricula.
Spoth 2008 Title: Preventive Interventions Addressing Underage Drinking: State of the Evidence and Steps Toward Public Health Impact Review of reviews and primary studies Quality: Acceptable	Community-based multi-component initiatives Pre-natal and early childhood Middle childhood Early adolescence Family School Community Health sector Multi-setting USA, Canada (countries not consistently reported)	11 programmes in 21 reports (study designs not consistently reported) 9 out of 11 programmes were followed up at 12 months or more; a follow-up period of at least 6 months was an inclusion criterion	Alcohol use: Across different types of interventions (including single-component interventions), the review authors found that most of the effective interventions in the younger age group used multidomain models (i.e., focusing on 2 or more different domains such as family, school, community) (e.g., Linking the Interests of Families and Teachers, Fast Track, Seattle Social Development Project, Raising Healthy Children, and Preventive Treatment Program). Delivery: Analyses of components across domains conducted on one of the most-promising multidomain interventions reviewed (Project Northland) suggested that the relatively strongest effects on tendency toward alcohol use were shown for the parent program component.
Spoth 2008 Title: Preventive Interventions Addressing Underage Drinking: State of the Evidence and Steps	Community-based multi-component initiatives Adolescence Adulthood	2 programmes in 3 reports (study designs not consistently reported) Both programmes were followed up at 12 months or more; a follow-	Alcohol use: With regard to community mobilisation programmes, the review authors found two relatively effective interventions that focused on decreasing sales to

Toward Public Health Impact Review of reviews and primary studies Quality: Acceptable	Community USA	up period of at least 6 months was an inclusion criterion	minors, increasing identification checks by vendors, or reducing community tolerance of underage purchasing and consumption of alcohol (Communities Mobilizing for Change on Alcohol, Community Trials Intervention to Reduce High-Risk Drinking). The review authors conclude that studies of these interventions provided only mixed or emerging evidence, either because of failure to measure specific alcohol use outcomes (or direct logical consequences of use) or because too few communities were studied to allow definitive statements regarding the generalizability of findings.
Early childhood education			
D'Onise 2010 Title: Does attendance at preschool affect adult health? A systematic review Systematic review Quality: Good	Early childhood education Pre-natal and early childhood Family School Community USA	12 studies with comparison groups regarding all health behaviours (6 studies on substance use) The intervention took place at around age of 4 years; follow-up was conducted at age 18 or later	Drug use: There was consistent evidence for a reduction in the absolute risk of marijuana consumption in the methodologically rigorous Perry Preschool, Abecedarian and Project CARE studies (-7 to -23%). There was an overall beneficial effect of preschool programmes on cocaine or other illicit drug use; however, the absolute number of participants who reported heroin or LSD use was small. Risk ratio = .84 for marijuana. Alcohol use: There was a moderate *increase* in the absolute risk of binge drinking in the past month in the Perry Preschool and Abecedarian studies (10 and 13%), but no difference in reports of driving after 'probably drinking too much' in the Perry Preschool study. Tobacco use: Six studies examined tobacco smoking. For five of the six studies, there was consistent evidence for centre-based preschool programmes reducing the prevalence of current and ever smoking . There was an absolute risk difference in the two methodologically

			rigorous randomized studies, the Perry Preschool study (followed to 40 years of age) and the Abecedarian study (followed to 21 years of age), of 13% and 16%, respectively. The Project CARE intervention was the only study to find an increased risk of smoking in the intervention group, although with wide CIs due to small numbers (n = 9) in both the intervention and control groups. Risk ratio = .81 for tobacco.
Jones 2006 Title: A review of community-based interventions to reduce substance misuse among vulnerable and disadvantaged young people Systematic review of reviews and primary studies Quality: Good	Early childhood education Pre-natal and early childhood School USA	2 controlled non-randomised trials 1 study had a follow-up of 12 months or more (6 years)	Mediators: There was evidence from two studies to suggest that early, pre-school intervention, delivered by specially trained teachers can produce immediate and long term effects (up to 6 years) on behaviours promoting education, risk reduction, and social inclusion.
Entertainment venues			
Bolier 2011 Title: Alcohol and Drug Prevention in Nightlife Settings: A Review of Experimental Studies Literature review Quality: Acceptable	Entertainment venues Early adolescence Adolescence Adulthood Community USA, Canada, Australia, Sweden	17 studies, of which 2 studies focused on drug prevention programmes and 15 on alcohol prevention (4 RCTs, 5 studies with pretest-posttest and matched control group design, 4 studies employing time series quasi-experimental designs, 4 uncontrolled before and after studies) The follow-up periods ranged from immediate post-tests through 3 months to up to 3- or 4-year follow-up periods. More detailed information was not provided.	Alcohol use: The authors conclude that, taking the results and quality of studies into account, both server training interventions and policy interventions could have an effect on alcohol-use-related problems in nightlife settings. In particular, community interventions in which these interventions are combined seem recommendable, especially with regard to reducing high-risk consumption and use-related harms. Furthermore, the chances of these types of interventions (particularly policies) being effective appear to increase when interventions are combined with enforcement. The evidence base for educational interventions and drug prevention interventions is limited.
Brennan 2011 Title: Interventions for disorder	Entertainment venues Adolescence	15 studies (5 RCTs and 10 non-randomized quasi-experimental evaluations)	Alcohol use: The authors conclude that there is only limited evidence that premises-level

and severe intoxication in and around licensed premises, 1989–2009 Systematic review Quality: Acceptable	Adulthood Community USA (5), Australia (5), Sweden (3), Canada (2)	Only 4 included studies measured breath alcohol concentration, and none of these had a follow-up of 12 months or more	interventions reduce intoxication and disorder. Five studies used RCT methods to evaluate interventions, of which three focused on preventing disorder, one focused on reducing intoxication, and one was concerned with both. None can be compared easily due to differences in intervention technique. One intervention evaluated using RCT methods demonstrated a significant *increase* in patron BrAC (breath alcohol concentration). Ten evaluations did not use RCT methods, of which three reported significant reductions in intoxication. Premises-level interventions were the most commonly used intervention type but were not likely to reduce intoxication. Other risky behaviours: According to the authors, of the RCTs for violence prevention interventions, server training appears to be the most successful, although the content varied considerably. No other intervention reduced violence. Ten evaluations did not use RCT methods, of which three reported a significant reduction in disorder. Premises-level interventions were the most commonly used intervention type and were most likely to reduce disorder. Two community-level interventions were evaluated using RCT methods and neither reported a significant reduction in disorder. Of the other five community-level evaluations, only three reported significant reductions in disorder, but varied considerably in respect of intervention content.
Interventions targeting pregnant women with substance abuse disorders			
Niccols 2012a Title: Integrated programs for mothers with substance abuse issues: A systematic review of	Interventions targeting pregnant women with substance abuse disorders Pre-natal and early childhood	4 RCTs 1 study had a follow-up of 12 months	Drug use: This review did not report on drug use outcomes. Mediators:

studies reporting on parenting outcomes Systematic review Quality: Good	Community Health sector Countries not specified		The limited available evidence suggests that integrated programs are associated with improvements in parenting skills, although due to methodological limitations of the reviewed studies it is not possible to make firm conclusions. In the three randomized trials comparing integrated programs to addiction treatment-as-usual (N = 419), most improvements in parenting skills favored integrated programs and most effect sizes indicated that this advantage was small, ds = -0.02 to 0.94. Results for child protection services involvement did not differ by group. Delivery: In the three studies that examined factors associated with treatment effects, parenting improvements were associated with attachment-based parenting interventions, children residing in the treatment facility, and improvements in maternal mental health.
Niccols 2012b Title: Integrated programs for mothers with substance abuse issues and their children: A systematic review of studies reporting on child outcomes Systematic review Quality: Good	Interventions targeting pregnant women with substance abuse disorders Pre-natal and early childhood Middle childhood Community Health sector Countries not specified	13 studies (8 cohort studies, 3 quasi-experimental studies, and 2 RCTs comparing integrated to non-integrated programs) 7 studies had a follow-up of 12 months or more	Drug use: This review did not report on drug use outcomes. Mediators: Although due to a weak evidence it is difficult to draw definite conclusions, integrated programs appear to have a positive impact on child development and emotional and behavioral functioning from intake to post-test. In the studies reviewed, developmental test scores for 6- to 24-month-old infants of women who participated in integrated programs were within or above one standard deviation of the normative mean. Most pre-post effects indicated small to large improvements in child development scores. With regard to emotional and behavioral

			functioning, most effects indicated improvements from pre-test to post-test and, where available, most effect sizes were large. Most developmental scores for infants in integrated programs appeared higher than those for infants of women not in treatment and similar to those for infants of non-users. In terms of growth parameters (length, weight, and head circumference), most measures for infants in integrated programs were higher than those for infants of women not in treatment and, where available, all effect sizes were large. Therefore, integrated programs may be more effective than no treatment in improving child development and child growth. In comparison group studies of emotional and behavioral functioning, most effects favored integrated over non-integrated treatment and, where available, most effect sizes were small. As such, available evidence suggests that integrated programs may be associated with a small advantage over non-integrated programs in some child emotional and behavioral functioning outcomes. There were no studies comparing integrated to non-integrated programs on child development and growth outcomes.
Turnbull 2012 Title: Home visits during pregnancy and after birth for women with an alcohol or drug problem Cochrane review	Interventions targeting pregnant women with substance abuse disorders Pre-natal and early childhood Adolescence Adulthood Family USA, Australia	7 trials (6 RCTs, 1 quasi-experimental study) At least two studies had a follow-up period of 12 months or more	Drug use: The authors conclude that there is insufficient evidence to recommend the routine use of home visits for pregnant or postpartum women with a drug or alcohol problem. Seven studies compared home visits mostly after birth with no home visits. There was no significant difference in continued illicit drug use among mothers (three studies, 384 women; risk ratio (RR) 1.05, 95% confidence interval (CI) 0.89 to 1.24), continued alcohol use (three studies, 379 women; RR 1.18, 95% CI 0.96 to 1.46), or failure to enroll in a drug

			treatment program (two studies, 211 women; RR 0.45, 95% CI 0.10 to 1.94). Mediators: The authors found evidence that home visits after the birth may increase the engagement of these women in drug treatment services and their use of contraception, but there were insufficient data to say if this improved the health of the baby or mother. There was no significant difference in not breastfeeding at six months (two studies, 260 infants; RR 0.95, 95% CI 0.83 to 1.10), incomplete six-month infant vaccination schedule (two studies, 260 infants; RR 1.09, 95% CI 0.91 to 1.32), the Bayley Mental Development Index (three studies, 199 infants; mean difference 2.89, 95% CI -1.17 to 6.95) or Psychomotor Index (MD 3.14, 95% CI -0.03 to 6.32), child behavioural problems (RR 0.46, 95% CI 0.21 to 1.01), infants not in care of biological mother (two studies, 254 infants; RR 0.83, 95% CI 0.50 to 1.39), non-accidental injury and non-voluntary foster care (two studies, 254 infants; RR 0.16, 95% CI 0.02 to 1.23) or infant death (three studies, 288 infants; RR 0.70, 95% CI 0.12 to 4.16). Individual studies reported a significant reduction in involvement with child protective services (RR 0.38, 95% CI 0.20 to 0.74) and failure to use postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82). Delivery: According to this review, there is insufficient evidence at present to recommend the routine use of home visits, any particular model of home visits or any specific home interventions in women with a drug or alcohol problem.
Media campaigns			

Brinn 2010 Title: Mass media interventions for preventing smoking in young people Cochrane review	Media campaigns Middle childhood Early adolescence Adolescence School Media USA (6), Norway (1)	7 trials (parallel group RCTs or controlled clinical trials) At least 4 studies had a follow-up of 12 months or more	Tobacco use: The authors conclude that there is some evidence that mass media can prevent the uptake of smoking in young people, however the evidence is not strong and contains a number of methodological flaws. Three studies concluded that mass media reduced the smoking behaviour of young people, whilst the remaining four demonstrated no effect. Delivery: All of the effective campaigns had a solid theoretical basis, used formative research in designing the campaign messages, and message broadcast was of reasonable intensity over extensive periods of time. Campaigns which researched and developed their message to reach their target audience had a higher success rate than those which did not. Overall, effective campaigns lasted longer with a minimum of three consecutive years, and were also more intense than less successful ones for both school based lessons (minimum eight lessons per grade) and media spots (minimum 4 weeks' duration across multiple media channels with between 167 and 350 TV and radio spots). The timing and type of broadcast made a difference to their success, with older youths in one study preferring radio to television. Implementation of combined school based curriculum/components (i.e. school posters) and the use of repetitive media messages delivered via multiple channels (i.e. newspapers, radio, television) over a minimum period of three years contributed to successful campaigns. Changes in attitudes, knowledge or intention to smoke did not generally seem to affect the long-term success of the campaigns.
Bühler 2008	Media campaigns	5 reviews	Alcohol use: - Warnings on drinks bottles, as an

Title: Prevention of substance abuse (EMCDDA Insights Nr 7) Review of reviews and primary studies Quality: Acceptable	Middle childhood Early adolescence Adolescence Adulthood Community Media Most included reviews originated from the USA.	Follow-up not consistently reported	isolated measure, have no effect on alcohol consumption. - TV advertisements to combat alcohol-impaired driving, in combination with supporting measures, have effects on the incidence of alcohol-impaired driving and on alcohol-related accidents. Tobacco use: - Mass-media campaigns in combination with other components (school-based, community-based and national programmes) have preventive effects on consumption behaviour (in relation to tobacco), whereas isolated mass-media campaigns do not reduce consumption (of tobacco). - Effects in combination with other components (one systematic review): 0–10 absolute percentage points fewer smokers than in the control group - Media campaigns tend to be more influential in preventing uptake of smoking than in promoting cessation of smoking and also tend to be more effective with young people at the lower end of the age band. Delivery: - Youth-orientated media campaigns are more effective as part of national programmes than as part of community programmes (in relation to tobacco). - Effective measures have the following characteristics: (i) they deploy powerful emotional imagery; (ii) they are not humorous; (iii) they make no ambiguous statements; (iv) they do not confront young people with the decision to consume or not; (v) they uncover the strategies of the tobacco industry, and their messages are delivered by young spokespersons (in relation to tobacco).
Ferri 2013 (in press) Title: Media campaigns for the prevention of illicit drug use in	Media campaigns Early adolescence Adolescence	23 studies (12 RCTs, 2 perspective cohort studies, 1 RCT with a perspective cohort study nested, 7 interrupted time series, 1 before	Drug use: The authors reviewed 23 studies, the majority of which were conducted in the USA, and found a weak evidence in

young people Cochrane review	Adulthood Media USA (21), USA and Canada (1), Australia (1)	and after study) No follow-up was described, or was applicable, for six studies. Follow-up was shorter than 12 months for four studies, and longer than or equal to 12 months for the remaining thirteen studies.	favour of media campaigns to prevent illicit drug use. Given the absence of strong evidence, media campaigns for prevention of illicit drug use among young people should not be provided out of rigorously designed and evaluated programs. This is particularly relevant, as these are prevention interventions which are provided without a demand from the target population.
Hopkins 2001 Title: Reviews of Evidence Regarding Interventions to Reduce Tobacco Use and Exposure to Environmental Tobacco Smoke Community Guide review	Media campaigns Early adolescence Adolescence Adulthood Media Multi-setting USA (10), Norway (1), Finland (1)	12 studies Follow-up periods not reported consistently	Tobacco use: According to the Community Guide's rules of evidence, strong scientific evidence exists that mass media campaigns are effective in reducing tobacco use prevalence in adolescents when combined with other interventions. The contribution of individual components to the overall effectiveness of these interventions cannot be attributed. In follow-up periods that ranged from 2 to 5 years, self-reported tobacco use was a median 2.4 percentage points lower in groups exposed to a mass media campaign (range: 0.02% to -9.5%; 5 studies). All seven studies of mass media campaigns that ran for 2 or more years indicated that they reduced tobacco use. Delivery: In all but one study, the mass media campaign occurred in coordination or concurrently with other interventions including contests, school-based education programs, community education programs, or excise tax increases on tobacco products.
NCI 2008 Title: The Role of the Media in Promoting and Reducing Tobacco Use (Chapter 12: Assessing the Effectiveness of the Mass Media in Discouraging Smoking Behavior)	Media campaigns Early adolescence Adolescence Adulthood Community	Youth: 10 programmes examined in 25 controlled studies; Cardiovascular Health Promotion in adults: 10 programmes in 24 quasi-experimental studies; Population-based studies using a variety of study designs (total	Tobacco use: The authors conclude that, although methodological limitations present problems in interpretation, antitobacco mass media campaigns can reduce tobacco use. The findings suggest that antismoking media campaigns can

Systematic Review Quality: Acceptable	Media Multi-setting USA, Canada, Australia, UK, Ireland, Finland, Norway, Germany, Austria, Greece, South Africa, Singapore, and others	number of studies not reported) Youth: At least 5 out of the 10 programmes were followed up at 12 months or more; adults: at least 6 out of the 10 programmes were followed up at 12 months or more	influence attitudes toward tobacco within a short period, followed by longer-term effects on smoking behavior. Evidence from controlled field experiments (quasi-experimental studies) suggests that antitobacco mass media campaigns conducted in conjunction with school- or community-based programming can be effective in curbing smoking initiation in youth and promoting smoking cessation in adults. The majority (seven of ten) of the youth studies provided evidence that media can play an important role in affecting smoking behavior. Although one of the studies that evaluated the effect of media alone (versus no intervention) found evidence for an effect, three did not, and one did not test the effect. In studies comparing media combined with a school-based intervention to a school-based intervention alone, or to no intervention, all but one found evidence for an effect. The results for the role of media in influencing adult smoking behavior are also mixed. Among studies concerned with promoting cardiovascular health, which had many other media messages besides those related to smoking cessation, seven of ten found at least some evidence of an effect on adult smoking prevalence or quitting. However, if strong and consistent evidence of an effect is the criterion (uniformly decreased smoking prevalence or increased quitting), only five of the studies concerning cardiovascular health would meet this standard. The few population-based studies of antitobacco mass media campaigns, in which the media campaign was the only antitobacco program, demonstrate that the media campaigns were effective in reducing smoking in the youth and adult target populations. Population-based studies of antitobacco mass media

			campaigns that were only one component of multicomponent tobacco control programs provide considerable evidence for reduced use of tobacco by youth and adults. Delivery: The findings suggest that for maximal effect on youth smoking, media need to be combined with other smoking prevention efforts. Whether media alone are as effective as media combined with other program components in promoting quitting in adults is difficult to discern. Of the six studies with designs allowing for a comparison of media alone versus no intervention, one did not make the comparison (only analyzed dose-response of intervention intensity), and all of the others showed at least some evidence for an effect. Of those studies with a media-alone condition, five also included a condition for media combined with other program components. Often, there appeared to be a greater effect for the combined intervention, but only one study provided a direct comparison of these two conditions, and that study did not find them to be significantly different. Although results are less clear than for youth, it is likely that multicomponent interventions that include media will have a greater chance of having an impact than will media-only or other-modes-only interventions.
Ranney 2006 Title: Tobacco Use: Prevention, Cessation, and Control Systematic review of reviews and primary studies Quality: Acceptable	Media campaigns Early adolescence Adolescence Adulthood Community Media One of the inclusion criteria was that studies were from "Developed	4 systematic reviews/meta-analyses, 1 cross-sectional study No follow-up in the primary study	Tobacco use: The authors note that previous systematic reviews investigating tobacco prevention among adolescents and young adults reported strong evidence of effectiveness for mass media campaigns that run concurrently with other interventions.

	countries: United States, Canada, United Kingdom, Western Europe, Australia, and New Zealand"		
Mentoring			
Bühler 2008 Title: Prevention of substance abuse (EMCDDA Insights Nr 7) Review of reviews and primary studies Quality: Acceptable	Mentoring Middle childhood Early adolescence Adolescence Setting not specified Countries not specified	1 review of 7 studies Follow-up not reported	Drug use: There is a lack of evidence concerning mentoring programmes and the authors were therefore unable to draw conclusions.
Thomas 2011 Title: Mentoring adolescents to prevent drug and alcohol use Cochrane review	Mentoring Middle childhood Early adolescence Adolescence School Community USA	4 RCTs 3 studies had a follow-up of 12 months or more (up to 3 years in one study)	Drug use: Of the four trials included in this review, one found evidence for the reduction of drug usage. Three RCTs provided evidence about mentoring and preventing drug use, but could not be pooled due to different outcome measures. One found significantly less use of illegal drugs, one did not, and one assessed only marijuana use and found no significant differences. One RCT measured "substance use" without separating alcohol and drugs, and found no difference for mentoring at the 3 year follow-up. The studies assessed structured programmes and not informal mentors. Alcohol use: Of the four trials included in this review, two RCTs found mentoring reduced the rate of initiation of alcohol. Three RCTs provided evidence about mentoring and preventing alcohol use. The authors pooled two RCTs (RR for mentoring compared to no intervention = 0.71 (95% CI = 0.57 to 0.90, P value = 0.005; the follow-up in both studies was 12 months or more). A third RCT found no significant differences at 6 months. The ability of the interventions to be effective was limited by the low rates of commencing alcohol and drug use

			during the intervention period. All students at baseline were non-users of alcohol and drugs. In one study the use of marijuana increased to 1% in the experimental and to 1.6% in the control group, and in another study drug usage rose to 6% in the experimental and 11% in the control group. However, in a third study there was scope for the intervention to have an effect as alcohol use rose to 19% in the experimental and 27% in the control group.
Tolan 2008 Title: Mentoring Interventions to Affect Juvenile Delinquency and Associated Problems Campbell review	Mentoring Middle childhood Early adolescence Adolescence Community The review was limited to studies conducted in the USA or another predominately English-speaking country (countries not reported)	39 studies (22 RCTs, 17 quasi-experimental studies involving non-random assignment, but with matched comparison groups) 22 studies had a follow-up period of 12 months or more	Drug use: The review suggests mentoring for high-risk youth has a modest positive effect for drug use. For drug use, the mean effect size using random effects calculation was SMD = 0.13, 95% CI = -0.02 – 0.28. Alcohol use: Please see information on drug use (the study did not distinguish between alcohol and illicit drugs). Other risky behaviours: The review suggests mentoring for high-risk youth has a modest positive effect for delinquency, aggression, and academic achievement. For delinquency, the mean effect size using random effects calculation was SMD = 0.23, 95% CI = 0.11 – 0.36. For aggression, the mean effect size using random effects calculation was SMD = 0.40, 95% CI = 0.06 – 0.74. For academic achievement, the weighted random effects estimate of effect size was SMD = 0.08, 95% CI = 0.01 – 0.15. Overall, effects were largest for delinquency and aggression. However, these categories also showed the most heterogeneity across studies. Delivery: Effects tended to be stronger when emotional support was emphasized within the intervention, and when

			professional development was an explicit motive for becoming a mentor. However, due to limited description of content of mentoring programs and substantial variation in what is included as part of mentoring efforts, the review authors highlighted that the valuable features and most promising approaches can not be stated with any certainty.
Parenting skills			
Barlow 2005 Title: Group-based parent-training programmes for improving emotional and behavioural adjustment in 0-3 year old children Campbell review	Parenting skills Pre-natal and early childhood Family USA (4), UK (1)	5 RCTs 2 studies had a follow-up period of 12 months or more	Drug use: The study did not report any drug use outcomes. Mediators: The findings of this review provide some support for the use of group-based parenting programmes to improve the emotional and behavioural adjustment of children under the age of 3 years. Meta-analyses were conducted for both parent-reports and independent assessments of children's behaviour. The result for parent reports showed a nonsignificant result favouring the intervention group (ES -0.29, CI -0.55 to 0.02). The result for independent observations of children's behaviour showed a significant result favouring the intervention group (ES -0.54, CI -0.84 to -0.23). There were limited data available concerning the long-term effectiveness of these programmes. A meta-analysis of the two studies for which data were available showed a small non-significant result favouring the intervention group (ES -0.24, CI -0.56 to 0.09). The authors conclude that there is currently insufficient evidence to reach any firm conclusions regarding the role of parenting programmes in the primary prevention of mental health problems.
Bühler 2008	Parenting skills	7 studies, mostly reviews	Alcohol use: - Comprehensive family-orientated

Title: Prevention of substance abuse (EMCDDA Insights Nr 7) Review of reviews and primary studies Quality: Acceptable	Pre-natal and early childhood Middle childhood Early adolescence Adolescence Adulthood Family Most included reviews originated from the USA.	Follow-up not consistently reported	approaches (training for parents, children and whole families) have preventive effects on consumption behaviour (in relation to alcohol). - Parental training alone influences risk factors but not consumption. - Family-orientated measures are particularly effective with non-consumers (of alcohol). - Impact on consumption behaviour and on risk factors is delayed (so-called sleeper effects). - Negative effects on risk factors cannot be ruled out. Delivery: - Characteristics of effective measures are: a focus on the promotion of positive parent-child interaction, training in the social-reinforcement approach and constructive discipline; interactive training methods; an empirically confirmed theoretical basis; mediator training; evaluation; comprehensive intervention that starts at an early age, continues throughout life, addresses numerous risk factors and protective factors and embraces several settings; material tailored to different stages of development; attention to cultural and community context; and sufficient treatment and follow-up. - Preventive measures for pre-school children (aged 3–5 years) should be family orientated.
Foxcroft 2011 Title: Universal family-based prevention programs for alcohol misuse in young people Cochrane review	Parenting skills Middle childhood Early adolescence Adolescence Family School USA (11), the Netherlands (1)	12 RCTs (4 cluster-randomised, 3 studies randomised by adolescent-family pair, 4 studies randomised by adolescent-parent pair, 1 trial individually randomised) At least 5 studies had a follow-up of 12 months or more	Alcohol use: The authors conclude that the effects of family-based prevention interventions are small but generally consistent and also persistent into the medium- to longer-term. Most of the studies included in the review (9 out of 12) reported positive effects of family-based universal programs for the prevention of alcohol misuse in young people. Four of

			these effective interventions were gender-specific, focusing on young females. One study suggested a positive, though not statistically significant effect which may have been due to the small sample size. Two studies, each with a large sample size, reported no effects. Delivery: There was no discernible pattern in characteristics (e.g., sample size, appropriate analysis, attrition rates, subgroups, intervention duration, unit of randomisation) that would distinguish trials with positive results from those with negative results. One of these studies found that the family-based intervention was effective when combined with a school-based intervention.
Furlong 2012 Title: Behavioural and cognitive-behavioural group-based parenting programmes for early-onset conduct problems in children aged 3 to 12 years Campbell review	Parenting skills Pre-natal and early childhood Middle childhood Early adolescence Family Community USA (5), UK (3), Ireland (1), Belgium (1), Norway (1), Sweden (1), Australia (1)	13 trials (10 RCTs and three quasi-randomised trials) as well as two economic evaluations based on two of the trials No study had a follow-up period of 12 months or more. All outcomes were measured either immediately post-treatment or up to three months post-treatment.	Drug use: The study did not report any drug use outcomes. Mediators: The authors conclude that behavioural and cognitive-behavioural group-based parenting interventions are effective and cost-effective for improving child conduct problems, parental mental health and parenting skills in the short term. The results indicate that parent training produced a statistically significant reduction in child conduct problems, whether assessed by parents (standardised mean difference (SMD) -0.53; 95% confidence interval (CI) -0.72 to -0.34) or independently assessed (SMD -0.44; 95% CI -0.77 to -0.11). The intervention led to statistically significant improvements in parental mental health (SMD -0.36; 95% CI -0.52 to -0.20) and positive parenting skills, based on both parent reports (SMD -0.53; 95% CI -0.90 to -0.16) and independent reports (SMD -

			0.47; 95% CI -0.65 to -0.29). Parent training also produced a statistically significant reduction in negative or harsh parenting practices according to both parent reports (SMD -0.77; 95% CI -0.96 to -0.59) and independent assessments (SMD -0.42; 95% CI -0.67 to -0.16). Evidence for the longer-term effects of these programmes is unavailable. Moreover, the intervention demonstrated evidence of cost-effectiveness. When compared to a waiting list control group, there was a cost of approximately $2500 (GBP 1712; EUR 2217) per family to bring the average child with clinical levels of conduct problems into the non-clinical range. These costs of programme delivery are modest when compared with the long-term health, social, educational and legal costs associated with childhood conduct problems. Delivery: Faithful implementation of the programme appears to be an important component of clinical effectiveness. For example, studies with higher levels of implementation fidelity were statistically significantly better than those with lower levels of fidelity in reducing negative parenting practices
Gates 2006 Title: Interventions for prevention of drug use by young people delivered in non-school settings Cochrane review	Parenting skills Pre-natal and early childhood Middle childhood Early adolescence Adolescence Adulthood Family School Health sector USA	8 RCTs (3 cluster randomised studies, 5 individually randomised studies) 5 studies had a follow-up of 12 months or more (up to 6 years in two studies)	Drug use: There is a lack of evidence concerning the effectiveness of non-school based interventions in preventing or reducing drug use by young people. Three family interventions (Focus on Families, Iowa Strengthening Families Program and Preparing for the Drug-Free Years), each evaluated in only one study, suggested that they may be beneficial in preventing self-reported cannabis use. The latter two programs were compared to the school-based Life Skills Training program. All of the eight studies of family interventions included contact

			with parents, in family groups or in separate sessions for parents and their children. The authors conclude that further evaluation is needed before it can be firmly established that these interventions are effective.
Jones 2006 Title: A review of community-based interventions to reduce substance misuse among vulnerable and disadvantaged young people Systematic review of reviews and primary studies Quality: Good	Parenting skills Pre-natal and early childhood Age not specified Family Countries not specified	16 studies (11 RCT, 2 controlled non-randomised trials, 3 before and after studies) 9 studies had a follow-up of 12 months or more (up to 4 years in one study)	Drug use: In this comprehensive review of interventions to reduce substance misuse among vulnerable young people, for young people exhibiting multiple risk factors, the authors conclude that family focused work showed the most potential for success. There was evidence from six primary studies to suggest that family based interventions may be effective in producing long term reductions in substance use, except for tobacco and alcohol. There was evidence from three studies to suggest that the Adolescent Transitions Programme can produce long-term increases in overall substance use abstention (although tobacco smoking may increase). One RCT suggested that the Family Check Up intervention can produce long-term reductions in substance use. Another RCT suggested that the Preparing for the Drug Free Years programme may result in a long-term trend towards a reduction in alcohol and cannabis initiation, but an increase in tobacco smoking and alcohol consumption (although the rise in alcohol may be less in pre-existing alcohol users). Alcohol use: Please see information on drug use. Tobacco use: Please see information on drug use. Mediators: Many parent and family focused interventions also produced significant improvements in some secondary outcomes of family functioning (including parenting styles and child

			behaviour). There was evidence from seven RCTs to suggest that family based interventions can be effective in producing long term improvements in parenting skills. There was evidence from one RCT to suggest that the early intervention Healthy Start Programme has no effects on child developmental status, perceived parental competence, parents' stress levels or mother-child interaction in the medium term, or on use of physical assault as discipline and child developmental status in the long-term, but that the intervention can produce improvements in non-violent discipline in the long term. Four RCTs suggested that Preparing for the Drug Free Years may lead to long term improvements in parenting skills and family responses to substance use but not family conflict or adolescent refusal skills compared with no intervention or information leaflets alone. One RCT suggested that a non-programmed multicomponent family based approach may increase some parenting skills and parental self-efficacy and self-esteem in the long term, compared to no intervention, but have no effects on parenting stress. There was evidence from one RCT to suggest that a programmed multicomponent family based approach, the Family Check Up, can produce long term increases in parental monitoring of child activities. There is inconsistent evidence from two RCTs about the long term effectiveness of family based interventions on child development. There was evidence from one RCT to suggest that a comprehensive early intervention in at risk families does not lead to long-term changes in ratings of child development. There was evidence from one RCT to suggest that non programmed multicomponent interventions may be effective at producing improvements in

			child development and oppositional behaviours in the long term and problem behaviours in the medium term. Finally, there was evidence from one non-randomised trial to suggest that participation in the peer support component of Adolescent Transitions Program produces a long-term increase in ratings of delinquency. This appears to be greatest in those participants expressing low levels of baseline delinquency.
Knerr 2013 Title: Improving Positive Parenting Skills and Reducing Harsh and Abusive Parenting in Low- and Middle-Income Countries: A Systematic Review Systematic review Quality: Good	Parenting skills Pre-natal and early childhood Middle childhood Family South Africa (3), Ethiopia (2), Brazil, Chile, China, Iran, Jamaica, Pakistan and Turkey	12 RCTs (11 individually randomised, 1 cluster randomised) 5 studies had a follow-up time of 12 months or more	Drug use: The study did not report any drug use outcomes. Mediators: Overall, the studies reviewed reported results favoring the intervention group on a range of parenting measures, including parent–child interaction, parent attitudes and knowledge, and reductions in harsh parenting. Only two trials had large sample sizes and were judged to be at low risk of bias, but both indicated that parenting interventions can be both feasible and effective in improving parent–child interaction and parental knowledge, respectively. Positive Parent–Child Interaction: Five studies evaluated the effects of intervention, compared to a no-treatment or treatment-as-usual control group, on measures of parent–child interaction. All studies reported significant ($p<.05$), positive effects of the intervention on parent–child interaction. Effect sizes were available for four of the seven parent–child interaction outcomes, and ranged from .24 (small) in the study with the largest sample to 1.59 (large), in the smallest study (N=26). Negative or Harsh Parenting: Two studies evaluated the effects of intervention compared to a no-

			treatment or treatment-as-usual control group, on measures of self-reported harsh or abusive parenting. Both studies reported significant (p<.03), positive effects of the intervention in reducing dysfunctional or harsh parenting. Effect sizes were available for all three of the outcomes in this category, and ranged from .28 (small) to 1.2 (large). The study with the longest follow up, 6 years, produced the smallest effect size (d=.28). Delivery: Trials in South Africa and Pakistan indicated the feasibility of using non-professional local staff, delivery through home visits and adding interventions to routine services for pregnant women and new mothers.
McGrath 2006 Title: Drug use prevention among young people: a review of reviews Review of reviews Quality: Acceptable	Parenting skills Age not specified Family School Mostly USA, one review included a study from Norway	2 reviews Follow-up not reported in detail although most studies appear to have had a follow-up of 12 months or more	Mediators: Both included reviews highlighted the possible effectiveness of family involvement in prevention programmes. Behavioural parent training, family-skills training and family therapy were found to be the most effective family-strengthening interventions according to one review. However, more research is needed to determine whether family based interventions are significantly more effective than other types of approaches and which types of family interventions are most effective. Delivery: The review suggests that interactive approaches are more beneficial than non-interactive approaches for delivering family-focused interventions.
Mejia 2012 Title: A Review of Parenting Programs in Developing Countries: Opportunities and	Parenting skills Pre-natal and early childhood Middle childhood	44 studies of which 8 were included in systematic review (7 RCTs and one pilot study) 2 studies included in the	Drug use: This review did not report on drug use outcomes. Mediators:

Challenges for Preventing Emotional and Behavioral Difficulties in Children Literature review and Systematic Review Quality: Acceptable	Family South Africa, Pakistan, China, Ethiopia, Chile, Iran, Brazil, Lebanon	systematic review had a follow-up of 12 months or more	The aim of this review was to examine the existing literature on parenting programs in developing countries. Results suggested that most programs to date have been primarily intended to prevent physical and neuro-cognitive difficulties. Of those designed to prevent emotional and behavioral outcomes, only one had a strong methodological design. Most of the reviewed studies reported positive results regarding the effectiveness of parenting programs. The mean of the effect sizes of this type of intervention was d = 0.81, and the range was 0.24 to 2.01. Effect sizes did not refer to the same outcome measures; outcomes reported related primarily to maternal wellbeing and parenting practices, although some studies also reported on infant development.
Miller 2012 Title: Home-based Child Development Interventions for Preschool Children from Socially Disadvantaged Families Campbell review	Parenting skills Pre-natal and early childhood Family USA (2), Canada (1), Ireland (1), Bermuda (1), Jamaica (1), unknown (1)	7 RCTs comparing home-based preschool child development interventions with a 'standard care' control Follow-up periods not reported consistently	Drug use: The study did not report any drug use outcomes. Mediators: The authors conclude that this review does not provide evidence of the effectiveness of home-based interventions that are specifically targeted at improving developmental outcomes for preschool children from socially disadvantaged families. It was possible to combine the results from four of the seven studies. Compared to the control group, there was no statistically significant impact of the intervention on cognitive development (standardised mean difference (SMD) 0.30; 95% confidence interval -0.18 to 0.78). Only three studies reported socioemotional outcomes and there was insufficient data to combine into a meta-analysis. No study reported on adverse effects.
Petrie 2007	Parenting skills	20 studies (16 RCTs, 1 controlled	Drug use:

Title: Parenting programmes for preventing tobacco, alcohol or drugs misuse in children <18: a systematic review Systematic review Quality: Good	Middle childhood Early adolescence Adolescence Family School Multi-setting USA (17), Australia (1), Norway (1), Russia (1); the Russian study was an offshoot of the US study, Project Northland.	trial, 3 controlled before and after studies) All studies had a follow-up of 12 months or more	The authors concluded that parenting programmes can be effective in reducing or preventing substance use. Statistically significant self-reported reductions of alcohol use were found in six of 14 studies, of drugs in five of nine studies and tobacco in nine out of 13 studies. Three interventions reported *increases* of tobacco, drug and alcohol use. The strongest evidence found in the review was based on work that had been undertaken with pre-teen and early adolescent children. Seven of the studies that were of good or fair quality, being well-designed and conducted RCTs, had focused on this group. Each of these studies reported that the parenting programme evaluated led to a significant reduction in one or more of the outcome variables measured, in particular the use of alcohol, drugs or tobacco, compared with controls. Alcohol use: Please see information on drug use. Tobacco use: Please see information on drug use. Delivery: The most effective appeared to be those that shared an emphasis on active parental involvement and on developing skills in social competence, self-regulation and parenting. A key feature of the three interventions found to be effective was that they focused on developing strategies to involve adolescents in family activities, maintain good familial bonds and manage conflict, rather than just focusing on the issue of substance misuse. A second shared feature was an emphasis on parental engagement in an activity-based programme. Although brief, 5–7 weeks duration, the three interventions required parents to be active participants in group exercises. In addition, in these studies parents

			demonstrated considerable commitment to the programme, with at least 61% attending all sessions two studies and >89% attending more than half of the sessions in the third study. Interventions with 11- to 14-year olds that were more specifically school-based were found to be effective in two high quality RCTs. These studies each found the intervention groups showed a significant reduction in substance use, compared with controls. A characteristic of the successful interventions was a focus on developing social skills and sense of personal responsibility among the young people. Although the interventions were primarily school-based, the homework tasks in two studies also involved active parental participation and there was direct communication with parents, either face to face or by telephone.
Spoth 2008 Title: Preventive Interventions Addressing Underage Drinking: State of the Evidence and Steps Toward Public Health Impact Review of reviews and primary studies Quality: Acceptable	Parenting skills Pre-natal and early childhood Middle childhood Early adolescence Adolescence Adulthood Family Multi-setting USA, Canada, Australia, Germany (countries not consistently reported)	12 programmes in 24 reports (study designs not consistently reported) At least 11 of the 12 programmes were followed up at 12 months or more post-baseline; a follow-up period of at least 6 months was an inclusion criterion	Alcohol use: Of the reviewed family-focused interventions delivered in the infant and preschool years, only one preschool program has shown effects on reduced use of alcohol in the teen years (Nurse Family Partnership). A number of family or family-school integrated interventions during the elementary school years have shown effects on either delayed initiation or reduction in alcohol use in adolescence (e.g., Linking the Interests of Families and Teachers, Seattle Social Development Project, Raising Healthy Children, and the Preventive Treatment Program). The reviewed family interventions that target the period of 10 to 15 years of age seem to have considerable promise. Although no family-based interventions have shown effectiveness with young people 16 to over 20 years of age who are not college-bound, findings with the college-bound population indicate their potential effectiveness.

			Mediators: The reviewed family-focused interventions delivered in the infant and preschool years (e.g., The Incredible Years and Triple-P programs) have shown reductions in children's aggressive behavior in the short term. Delivery: Independent of the targeted developmental phase, promising interventions typically address a range of risk and protective factors originating in the family, including child monitoring, parent-child bonding or affective quality, effective discipline, and parental involvement in child activities (e.g., Strengthening Families Program: For Parents and Youth 10–14, Guiding Good Choices, and Family Matters). Both small group-format and home-based interventions have been developed; small group interventions have shown relatively stronger evidence.
Thomas 2007 Title: Family-based programmes for preventing smoking by children and adolescents Cochrane review	Parenting skills Middle childhood Early adolescence Adolescence Family School Community Health sector Multi-setting USA (16), Norway (2), Australia (1), Finland (1), UK (1), India (1)	22 RCTs Included trials had to report outcomes measured at least six months from the start of the intervention; at least 11 studies had a follow-up of 12 months or more post-intervention	Tobacco use: The review authors conclude that it is not possible to draw firm conclusions from the current evidence base about the efficacy of family interventions to prevent adolescent smoking, or whether the interventions are intense enough to produce a sustained effect. Some high quality studies showed that family interventions may help to prevent adolescent smoking, but less well-conducted trials had mostly neutral or negative findings. Of the sixteen trials classed as having low or moderate risk of bias: (1) four of the nine that tested a family intervention against a control group had significant positive effects, but one showed significant negative effects; (2) one of the five RCTs that tested a family intervention against a school intervention had significant positive effects; (3) none of the seven

			that compared the incremental effects of a family plus a school programme to a school programme alone had significant positive effects; (4) the one RCT that tested a family tobacco intervention against a family non-tobacco safety intervention showed no effects; (5) two programmes which did not use tobacco interventions found positive outcomes: a parent-plus-teens general risk reduction intervention showed less tobacco use compared to a teen-only intervention or control, and an RCT using CD-ROMs to reduce alcohol use found both the family-and-teen and the teen interventions resulted in less tobacco usage. In neither trial was there a tobacco intervention, but tobacco outcomes were measured. Delivery: The authors note that how well the programme staff are trained and how well they deliver the programme may be related to effectiveness, but the number of sessions in the programme does not seem to make a difference.
Personal and social skills education (middle childhood)			
Bühler 2008 Title: Prevention of substance abuse (EMCDDA Insights Nr 7) Review of reviews and primary studies Quality: Acceptable	Personal and social skills education (middle childhood) Pre-natal and early childhood Middle childhood Early adolescence Adolescence School Most included reviews originated from the USA.	16 reviews Follow-up not consistently reported	Drug use: - Interactive school-based programmes have preventive effects on consumption behaviour (for tobacco, alcohol, cannabis and other illicit drugs). Based on two meta-analyses, interactive programmes show between .1 and .2 and up to .3 mean weighted effect size. - Long-term percentage differences between treatment group and control group (all approaches, based on a systematic review: treatment group 6–12 % absolute less than the control group) Alcohol use: Please see information on drug use. Tobacco use: Please see information on drug use.

			Other risky behaviours: - School-based preventive programmes have less effect on consumption behaviour than they do on risk factors such as dropping out of school, truancy and other forms of problem behaviour. Delivery: - School-based programmes that implement the concepts of social influence and life skills are effective and equally effective for all substances. - Additional components of general relevance to the school as a field of intervention improve effectiveness. - Non-interactive programmes are not effective: information-giving alone; emotional education alone; transmission of values and decision-making alone; and DARE-type programmes. - Smaller interactive programmes (with fewer participants) are more effective. - Interactive programmes are effective for ethnic minorities. - Interactive programmes are the most effective for younger pupils (up to and including age 11). - A substance-specific prevention focus is preferable in relation to tobacco but is not a determining factor in relation to alcohol. - Inclusion of substance-specific content such as information about short-term and long-term negative consequences; standard setting on the basis of school surveys and media analyses; and commitment to abstinence are all determining factors for effectiveness. - Programmes that include training in the ability to say 'no' are effective. - Programmes of moderate intensity and duration are more effective. - Programmes that include refresher sessions are more effective. - Involving peers as mediators increases the effectiveness of school-based

			programmes.
Faggiano 2005 Title: School-based prevention for illicit drugs' use Cochrane review	Personal and social skills education (middle childhood) Middle childhood Early adolescence Adolescence School USA (30), Canada (1), UK (1)	32 controlled studies (29 RCTs and three controlled prospective studies) (marijuana use: 19 studies; inhalants use: 3 studies; drugs use: 10 studies; hard drugs use: 6 studies) Approximately half of the included studies had a follow-up at 12 months or more (up to 10 years in one study).	Drug use: The authors conclude that skills based programs appear to be effective in deterring early-stage drug use. RCTs indicated that, compared to usual curricula, skills based interventions lowered drug use (RR 0.81; CI 95% 0.64 to 1.02), marijuana use (RR 0.82; CI 95% 0.73 to 0.92) and hard drug use (RR 0.45; CI 95% 0.24 to 0.85). No statistically significant results emerged from other study designs.
Foxcroft 2011 Title: Universal school-based prevention programs for alcohol misuse in young people Cochrane review	Personal and social skills education (middle childhood) Middle childhood Early adolescence Adolescence School USA, Canada, Australia, Europe (Austria, Belgium, Greece, Italy, Spain, Sweden, Netherlands, Norway, Germany), India, Swaziland	53 RCTs (46 cluster-randomised, 7 individually randomised) At least 23 studies had a follow-up of 12 month or more post-intervention	Alcohol use: The authors conclude that certain psychosocial and developmental alcohol misuse prevention in schools can be effective. The authors divided the studies into 1) programs targeting specifically prevention or reduction of alcohol misuse (n=11) and 2) generic programs with wider focus for prevention (e.g., other drug use/abuse, antisocial behavior) (n=19). The review authors found studies that showed no effects of the preventive program, as well as studies that demonstrated statistically significant effects. Six of the 11 trials evaluating alcohol-specific interventions showed some evidence of effectiveness compared to a standard curriculum, whereas five found no significant effects. In 14 of the 39 trials evaluating generic interventions, the program interventions demonstrated significantly greater reductions in alcohol use either through a main or subgroup effect, and 24 trials did not found statistically significant effects. Gender, baseline alcohol use, and ethnicity modified the effects of interventions. Results from the remaining 3 trials with interventions targeting cannabis, alcohol, and/or tobacco were inconsistent. Most

			commonly observed positive effects across programs were for drunkenness and binge drinking. Delivery: Effective programmes included the Life Skills Training Program, the Unplugged program, and the Good Behaviour Game.
Jones 2006 Title: A review of community-based interventions to reduce substance misuse among vulnerable and disadvantaged young people Systematic review of reviews and primary studies Quality: Good	Personal and social skills education (middle childhood) Middle childhood Early adolescence Adolescence School Countries not specified	20 studies (10 RCTs, 9 controlled non-randomised trials, 1 controlled before and after study) 10 studies had a follow-up of 12 months or more	Drug use: The evidence with regard to school based interventions and life skills training was considered inconclusive/mixed. There was evidence to suggest that schools-based Life Skills Training (LST) or generic life skills, on their own or in combination with other approaches, are not effective in reducing substance misuse in the long term. Three RCTs indicate that when delivered as a stand alone intervention, LST or generic life skills may produce medium, but not short or long term, reductions in substance use. There was evidence from one RCT to suggest that this effect on substance use may be strongest in girls. Seven trials suggested that school-based LST or generic life skills in combination with other approaches, including parent workshops, staff training or mentoring, has no effects on substance use outcomes in the short, medium or long term compared to no intervention. However, there was evidence from two controlled non-randomised trials to suggest that delivering generic life skills with family components can produce both immediate and medium term reductions in alcohol use and frequency, but only immediate effects on the frequency of cannabis use. One RCT indicates that female-targeted peer support can be effective at producing medium term reductions in substance use in younger participants, but not older students. There was evidence from

			two trials to suggest that curricula addressing other risky behaviours (e.g. violence, sexual activity) have no indirect immediate or medium term effects on substance use outcomes.
McGrath 2006 Title: Drug use prevention among young people: a review of reviews Review of reviews Quality: Acceptable	Personal and social skills education (middle childhood) Middle childhood Early adolescence Adolescence School USA	4 reviews (2 meta-analyses, 2 systematic reviews) Follow-up not reported in detail although most studies appear to have had a follow-up of 12 months or more	Delivery: The review suggests that interactive approaches in universal school-based drug prevention programmes are more effective than non-interactive approaches in reducing drug use. Peer educators may contribute to the effectiveness of drug prevention programmes, although they may not produce positive effects per se. There is good evidence for the effectiveness of programmes based on social influences approaches, although the authors note that some social influence interventions may be more effective than others. The authors also found some evidence to support the efficacy of life skills training when added to social influence programmes. One review reported that there was no convincing evidence to indicate that intensive school programmes (10 or more lessons) were more effective than non-intensive ones.
Müller-Riemenschneider 2008 Title: Long-Term Effectiveness of Behavioral Interventions to Prevent Smoking among Children and Youth Meta-analysis Quality: Good	Personal and social skills education (middle childhood) Middle childhood Early adolescence Adolescence School UK, Australia, USA, Canada, Netherlands, Germany, Ireland, China	14 RCTs (8 included in meta-analysis) A follow-up of 12 months or more was an inclusion criterion; follow-up of included studies ranged from 12 months to 60 months.	Tobacco use: The evidence for school-based programs alone was inconclusive. Nine good/high-quality studies on school-based intervention were available, of which only two reported clearly positive intervention effects. The results of the seven remaining studies were inconclusive or even indicated that the intervention effects had been unfavourable. Differences in smoking rates between intervention groups varied considerably across studies, ranging from -3.8% (i.e., favouring intervention groups) to 5.4% (i.e., favouring control groups). The results of the meta-analysis carried out as part of

			this review provide no evidence for the long-term effectiveness of school-based interventions. These findings were similar for lifetime, 30-day and regular smoking. Delivery: One study found evidence that culturally adapting the approach and materials of an intervention to the needs of specific population groups was more effective than standardised strategies. The limited number of studies did not allow conclusions with regard to the effectiveness of number of sessions or use of booster sessions.
Pan 2009 Title: A Multivariate Approach to a Meta-Analytic Review of the Effectiveness of the D.A.R.E. Program Meta-analysis Quality: Acceptable	Personal and social skills education (middle childhood) Middle childhood Early adolescence School USA	20 controlled studies (level of randomisation not reported) 14 studies had a follow-up time of 12 months or more	Drug use: This review indicated that the effects of the D.A.R.E. program on drug use were homogeneous but less than small. The unweighted mean effect size for any drug use was Cohen's d = 0.05 (ranging from -0.08 to 0.36) (including tobacco use, alcohol use, marijuana or other illicit drug use). Alcohol use: Please see information on drug use. Tobacco use: Please see information on drug use.
Roe 2005 Title: Drug prevention with vulnerable young people: A review Systematic review Quality: Acceptable	Personal and social skills education (middle childhood) Middle childhood Early adolescence Adolescence Family School USA (8), Canada (1)	9 evaluation studies with control or comparison groups 3 studies had a follow-up of 12 months or more	Drug use: In school settings, life-skills training has been found to be effective (at least in the short term). Universal school-based interventions involving life-skills training could have effects on the most high-risk young people, although most of the studies failed to find significant outcomes. Combination of interventions at different levels (universal and targeted) had additional benefits compared with the universal or the targeted initiative by themselves. Therefore, while universal interventions can affect the substance use of high-risk groups of young people, additional targeted components can increase the

			effectiveness of such universal programmes. Providing appropriate information is effective in altering young people's awareness of the dangers of drugs but does not inevitably change behaviour. The results of this review indicate that with vulnerable young people, life-skills training works better than the provision of drug knowledge in changing drug-using behaviour. The results of interventions involving counselling as the central component were mixed. Delivery: The authors conclude that across different settings the 11–13 age range appeared to be a crucial period for intervention with vulnerable young people. They describe this as a time when high-risk young people start to experiment with drugs, which appears to be a few years earlier than the onset of drug use amongst the general population.
Schröer-Günther 2011 Title: Primary Tobacco Prevention in China - A Systematic Review Systematic review Quality: Good	Personal and social skills education (middle childhood) Middle childhood Early adolescence Adolescence Adulthood School China	7 RCTs Only one study had a follow-up of 12 months or more but it measured only knowledge and attitudes; of the studies that measured smoking behaviours, the maximum follow-up was 6 months (in 2 studies)	Tobacco use: The evidence for the effectiveness of smoking prevention interventions in China is weak, partly due to methodological limitations of the studies. Of the five studies that measured smoking behaviour, only two studies found significant differences between intervention and control groups at post-intervention. Two studies conducted a follow-up at 6 months. One found no significant effects, and the other found a significant effect on smoking initiation, but not on the smoking rate. Baseline characteristics of intervention and control group in this study were significantly different, such that no distinct effect of the program could be verified. Delivery:

			With regard to the wider range of smoking prevention and cessation programmes included in this review, the authors conclude that interventions applying health promotion techniques were more often successful than interventions that were only based on health education.
Skara 2003 Title: A review of 25 long-term adolescent tobacco and other drug use prevention program evaluations Systematic review Quality: Acceptable	Personal and social skills education (middle childhood) Middle childhood Early adolescence Adolescence School USA (12), Canada (2), Australia, England, Italy, The Netherlands, Norway	19 studies (11 experimental, 8 quasi-experimental) Only studies with a long-term follow-up of at least 24 months were included in this review (follow-up ranged from 24 to 144 months)	Drug use: This review of long-term tobacco and drug use prevention intervention studies published indicates that school- and community-based programs were effective in preventing or reducing adolescent cigarette, alcohol, and marijuana use across follow-up periods ranging from 2 to 15 years. Seven studies had measured alcohol and/or other drug use. Six studies showed effectiveness in reducing marijuana use at initial follow-ups but not at the final assessment. Alcohol use: Six studies showed effectiveness in reducing alcohol at initial follow-ups, and of these, three studies also found significant differences in alcohol consumption between intervention and control groups at the final assessment. Tobacco use: Of the 19 school-based studies in this review, more than half (10 studies) found significant and sustained reductions on a variety of smoking outcomes over multiple time points. This included one study with a long follow-up of 15 years. One study found no significant differences at the initial 6 month follow-up but at the 48 month follow-up the intervention group reported significantly less use. In 5 studies, intervention and control groups differed significantly at the initial follow-ups, but these differences disappeared by the time of the final assessment. Three studies found no differences between intervention and control groups

			at any time. This included the study with the longest follow-up (144 months). Delivery: Results indicated that program effects were less likely to decay among studies that delivered booster programming sessions as a supplement to the program curricula.
Soole 2008 Title: School-Based Drug Prevention Programs: A Review of What Works Systematic review / Meta-analysis Quality: Acceptable	Personal and social skills education (middle childhood) Middle childhood Early adolescence Adolescence Family School Community Media Multi-setting Countries not specified	58 controlled trials (including RCTs); meta-analysis based on 12 studies Follow-up not reported	Drug use: The authors report that there were a number of significant findings, with four of the six meta-analyses conducted producing significant mean effect sizes. Further, all analyses produced mean effect sizes in the desired direction, suggesting overall program effectiveness. The meta-analyses assessing the impact of school-based drug prevention programs on marijuana use provided significant results both in the short-term (d. = .136, 95% CI = .035–.237, p < .01) and the long-term (d. = .219, 95% CI = .071–.367, p < .01). Overall, these results suggest that, in the short term, around 54% of control participants performed worse than treatment participants, while in the long term around 58% of participants performed worse than treatment participants. Similarly, the meta-analyses assessing the impact of prevention programs on all illicit drug use (i.e. marijuana and other illicit drugs) also provided significant results both in the short-term (d. = .141, 95% CI = .042–.24, p = < .01) and the long-term (d. = .208, 95% CI = .087–.329, p = < .001). In both the marijuana and all drug analyses, results suggest that prevention programs not only have an immediate impact on self-reported drug use, but that this impact persists into the long term. Overall, these results

			suggest that around 56% of control participants performed worse in terms of short-term illicit drug use than treatment participants, while around 58% of control participants performed worse in terms of long-term drug use compared to treatment participants. The authors also explored the self-reported drug use outcomes for other categories of illicit drugs only, including cocaine and amphetamines (but excluding marijuana). The two treatment comparison contrasts contributing to each meta-analysis produced non-significant findings both for short-term and long-term other illicit drug outcomes. Delivery: The authors conclude that interactive programs adopting either social influence or competency enhancement components appear to be the most effective approach to school-based drug prevention. Further, more intensive programs appear to increase program effectiveness, and universal programs that are delivered in the middle school years may be slightly more effective. Generic skills training programs appear to have more impact on reducing or preventing harder drug use than marijuana use, and their effectiveness may be restricted to low-risk youths. The analysis suggests that the inclusion of booster sessions and multifaceted drug prevention programs have little impact on preventing illicit drug use among school-aged children.
Spoth 2008 Title: Preventive Interventions Addressing Underage Drinking: State of the Evidence and Steps Toward Public Health Impact	Personal and social skills education (middle childhood) Middle childhood Early adolescence Adolescence	14 programmes in 26 reports (study designs not reported consistently) 12 programmes were followed up at 12 months or more post-baseline; a follow-up period of at	Alcohol use: The review findings indicate that school-based prevention interventions can reduce early initiation of alcohol use and progression of use in the young adolescent and adolescent years. Most elementary school interventions have

Review of reviews and primary studies Quality: Acceptable	School USA, Australia, Norway, Netherlands (countries not consistently reported)	least 6 months was an inclusion criterion	shown effects only on the risk precursor of aggressive behavior and not on alcohol use. Although a few classroom intervention trials have monitored their samples through the middle-school period and demonstrated effects on alcohol use (e.g., Classroom Centered Intervention), most studies have not been funded for a sufficient period to demonstrate whether there are direct effects on alcohol use. Numerous interventions exist that have shown effects on the delay of initiation of use during the middle and early high school periods. With regard to the high school years, the review authors found only one intervention (Project Toward No Drug Abuse) that could be classified as "most promising" and one (Athletes Training and Learning to Avoid Steroids) that could be classified as having "mixed or emerging" evidence in reducing the rate of drinking. The latter was limited in that it focused only on high school football players and not on the general population. Mediators: A number of interventions for younger children have shown significant reductions in aggression and disruption (e.g., I Can Problem Solve, Promoting Alternative Thinking Strategies, Second Step, and Good Behavior Game). Delivery: Interventions that have shown effects typically address the following: role-playing that provides practice in the use of new skills, a broad focus on life skills, support to improve emotional regulation, a focus on positive peer relationships and, with youths, provision of accurate norms for alcohol and substance use, plus instruction in peer refusal skills.
Thomas 2006	Personal and social skills education	94 RCTs (23 classed as high-	Tobacco use:

Title: School-based programmes for preventing smoking Cochrane review	(middle childhood) Middle childhood Early adolescence Adolescence Family School Community Multi-setting USA (66), Canada (6), Netherlands (5), Italy (3), Australia (2), Germany (2), Norway (2), UK (2), Finland (1), France (1), Spain (1), India (1), Mexico (1), one multi-country study (Denmark, Finland, the Netherlands, Portugal, Spain, UK)	quality) Follow-up of six months or more was an inclusion criterion, follow-up period not reported consistently (at least 30 studies had follow-up of 12 months or more)	Twenty-three high quality studies addressed the issue of whether school programmes to prevent tobacco are more effective than minimal or no intervention. The authors conclude that there is no strong evidence for offering school-based programmes that provide information only. The high quality study on information-giving alone reported a significant effect of the intervention (odds ratio [OR] 0.61; 95% confidence interval [CI] 0.41 to 0.91). Studies that compared an information curriculum with other models of delivery showed the information curricula to be either less effective or detected no difference. Due to the limited number of rigorous studies, it is difficult to exclude a beneficial effect of information about tobacco alone, but there is little positive evidence available to support this intervention. The majority of studies drew on a social influences models. Although half of the best quality studies regarding this type of approach found short-term effects on children's smoking behaviour, there is conflicting evidence about the effects of such programmes, and the highest quality and longest trial (the Hutchinson Smoking Prevention Project) found no long-term effects from 65 lessons over eight years. There was limited evidence for the effects of interventions that included developing generic social competence, and for those with a multi-modal approach that included community initiatives. Three of the four high quality multi-modal interventions showed a positive significant effect. It is possible that combining social influences models with other components, such as community interventions and generic social competence training may improve effectiveness. However, these interventions have not been subject to the same rigorous evaluation as the social influences approach. In addition,

			there are few data from direct comparisons to suggest how large an increment might be achieved.
Prevention education based on personal and social skills and social influence (early adolescence & adolescence)			
Bühler 2008 Title: Prevention of substance abuse (EMCDDA Insights Nr 7) Review of reviews and primary studies Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Pre-natal and early childhood Middle childhood Early adolescence Adolescence School Most included reviews originated from the USA.	16 reviews Follow-up not consistently reported	Drug use: - Interactive school-based programmes have preventive effects on consumption behaviour (for tobacco, alcohol, cannabis and other illicit drugs). Based on two meta-analyses, interactive programmes show between .1 and .2 and up to .3 mean weighted effect size. - Long-term percentage differences between treatment group and control group (all approaches, based on a systematic review: treatment group 6–12 % absolute less than the control group) Alcohol use: Please see information on drug use. Tobacco use: Please see information on drug use. Other risky behaviours: - School-based preventive programmes have less effect on consumption behaviour than they do on risk factors such as dropping out of school, truancy and other forms of problem behaviour. Delivery: - School-based programmes that implement the concepts of social influence and life skills are effective and equally effective for all substances. - Additional components of general relevance to the school as a field of intervention improve effectiveness. - Non-interactive programmes are not effective: information-giving alone; emotional education alone; transmission of values and decision-making alone; and DARE-type programmes. - Smaller interactive programmes (with fewer participants) are more effective. - Interactive programmes are effective

			for ethnic minorities. - Interactive programmes are the most effective for younger pupils (up to and including age 11). - A substance-specific prevention focus is preferable in relation to tobacco but is not a determining factor in relation to alcohol. - Inclusion of substance-specific content such as information about short-term and long-term negative consequences; standard setting on the basis of school surveys and media analyses; and commitment to abstinence are all determining factors for effectiveness. - Programmes that include training in the ability to say 'no' are effective. - Programmes of moderate intensity and duration are more effective. - Programmes that include refresher sessions are more effective. - Involving peers as mediators increases the effectiveness of school-based programmes.
Champion 2012 Title: A systematic review of school-based alcohol and other drug prevention programs facilitated by computers or the Internet Systematic review Quality: Good	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Early adolescence Adolescence School Computer/Internet Australia, USA, Canada, UK, Netherlands	12 RCTs on 10 programmes Follow-up data of 12 months or more (maximum 34 months) is reported for 5 out of 10 programmes.	Drug use: Only one programme targeted illicit drugs (cannabis). This program was associated with a significant reduction in the frequency of cannabis use at 6-month follow-up with a small effect size (0.19). Alcohol use: All four trials that measured alcohol consumption were associated with some reduction in alcohol use at post intervention and/or follow up. Effect size (ES) was small at post intervention (ES 0.09) and similarly modest at follow up (ES 0.16–0.38 and odds ratio 0.36–0.71). Two trials were associated with positive outcomes relating to the frequency of binge drinking. Tobacco use: Five trials targeted tobacco and three were associated with some reduction in smoking. In one trial, there was only a

			small effect at post intervention and in another the intervention was only effective at reducing cigarette use among nonsmokers at baseline. A third trial was associated with a medium effect at the 18-month follow up. Delivery: The review suggests that effective ingredients might include normative education, resistance skills and reducing positive expectancies, as well as parenting components. It was also noted that effective programmes had 4-12 sessions, whereas a programme with only 3 session showed no effects. However, a moderator analysis was not conducted and the number of trials was too small to make any definite conclusions.
Dobbins 2008 Title: Effective practices for school-based tobacco use prevention Review of reviews Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Early adolescence Adolescence School Countries not reported	12 reviews Follow-up not clear	Tobacco use: Overall, findings demonstrated that school-based tobacco use prevention interventions are effective in reducing smoking behavior, initiation, and intention to smoke, at least in the short term. However, these effects were not maintained until age 18 in the absence of ongoing intervention. Smoking behavior was reported in 11 of the 12 reviews. Six reviews reported a positive effect, two reported promising effects but did not reach statistical significance, and three reported no effect. Significant effects diminished over time. Initiating smoking was measured in 3 reviews. Two of the reviews reported a positive effect and the third reported a promising effect. Delivery: Interventions found to be effective included school curricula, social norms and influences training, social reinforcement and refusal skills training, and cognitive skill enhancement (self-esteem, decision making, self-control,

			and coping skills). Interventions associated with positive effects included educational sessions on social norms and reinforcement training, peer- and adult-led support groups, and media campaigns.
Faggiano 2005 Title: School-based prevention for illicit drugs' use Cochrane review	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Middle childhood Early adolescence Adolescence School USA (30), Canada (1), UK (1)	32 controlled studies (29 RCTs and three controlled prospective studies) (marijuana use: 19 studies; inhalants use: 3 studies; drugs use: 10 studies; hard drugs use: 6 studies) Approximately half of the included studies had a follow-up at 12 months or more (up to 10 years in one study).	Drug use: The authors conclude that skills based programs appear to be effective in deterring early-stage drug use. RCTs indicated that, compared to usual curricula, skills based interventions lowered drug use (RR 0.81; CI 95% 0.64 to 1.02), marijuana use (RR 0.82; CI 95% 0.73 to 0.92) and hard drug use (RR 0.45; CI 95% 0.24 to 0.85). No statistically significant results emerged from other study designs.
Faggiano 2008 Title: The effectiveness of a school-based substance abuse prevention program: 18-Month follow-up of the EU-Dap cluster randomized controlled trial Cluster-RCT Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Early adolescence Adolescence School Austria, Belgium, Germany, Greece, Italy, Spain and Sweden	Intervention group: 3547 pupils (baseline), 2811 (last follow-up) (79%) (across three intervention groups) Control group: 3532 (baseline), 2730 (last follow-up) (77%) Follow-up at 15 months post-intervention	Drug use: According to the authors, this study indicates that the school curriculum "Unplugged", based on a comprehensive social influence approach, had persistent positive effects over 18 months for alcohol abuse and for cannabis use, but not for cigarette smoking. Persisting beneficial program effects were found for frequent cannabis use in the past 30 days (POR = 0.74; 0.53–1.00). The number-need-to-treat (NNT) to prevent one additional event was 46 for frequent cannabis use. Alcohol use: Persisting beneficial program effects were found for episodes of drunkenness (any, adjusted prevalence odds ratio (POR) = 0.80; 0.67–0.97; frequent, POR = 0.62; 0.47–0.81). The NNT to prevent one additional event was 26 for any drunkenness. Tobacco use: Daily cigarette smoking was not affected by the program (although it was at the short-term follow-up). Baseline non-smokers that participated in the program progressed in tobacco

			consumption to a lower extent than those in the control condition, but no difference was detected in the proportion of quitters or reducers among baseline daily smokers.
Fletcher 2008 Title: School Effects on Young People's Drug Use: A Systematic Review of Intervention and Observational Studies Systematic review Quality: Good	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Early adolescence School USA, Netherlands, Australia, UK, Sweden	13 studies (4 intervention studies, 9 observational studies) All studies had a follow-up of 12 months or more	Drug use: The authors conclude that intervention studies provide some evidence that there is a causal association between, on the one hand, modifying the school environment to increase student participation, improve relationships, promote a positive school ethos, and address disaffection and truancy and, on the other hand, reduce student drug use and other risk behaviors, especially for boys. The Aban Aya study reported that, 4 years after the start of the intervention, there was a 34% reduction in the rate of increase of a combined measure of alcohol, tobacco, and cannabis use for boys in the intervention group compared to the comparison group. Boys at D.A.R.E. plus schools reported a significantly lower rate of "growth" in the use of drugs other than cannabis, and intentions to use these drugs, compared to the comparison group, after 2 years of the intervention. The other two interventions did not have a significant effect on drug use. Alcohol use: Three studies reported rates of smoking and drinking separately for young people's drug use. All three suggested that the interventions had a protective effect on these outcomes. Tobacco use: Please see information on drug and alcohol use. Delivery: Intervention studies suggest that action to improve ethos and support student engagement can be effective in reducing drug use. Observational studies also

			suggest that positive ethos and overall levels of strong school relationships and engagement are associated with lower rates of drug use, and that, at the individual level, negative behaviors and attitudes relating to school are also associated with drug use.
Foxcroft 2011 Title: Universal school-based prevention programs for alcohol misuse in young people Cochrane review	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Middle childhood Early adolescence Adolescence School USA, Canada, Australia, Europe (Austria, Belgium, Greece, Italy, Spain, Sweden, Netherlands, Norway, Germany), India, Swaziland	53 RCTs (46 cluster-randomised, 7 individually randomised) At least 23 studies had a follow-up of 12 month or more post-intervention	Alcohol use: The authors conclude that certain psychosocial and developmental alcohol misuse prevention in schools can be effective. The authors divided the studies into 1) programs targeting specifically prevention or reduction of alcohol misuse (n=11) and 2) generic programs with wider focus for prevention (e.g., other drug use/abuse, antisocial behavior) (n=19). The review authors found studies that showed no effects of the preventive program, as well as studies that demonstrated statistically significant effects. Six of the 11 trials evaluating alcohol-specific interventions showed some evidence of effectiveness compared to a standard curriculum, whereas five found no significant effects. In 14 of the 39 trials evaluating generic interventions, the program interventions demonstrated significantly greater reductions in alcohol use either through a main or subgroup effect, and 24 trials did not found statistically significant effects. Gender, baseline alcohol use, and ethnicity modified the effects of interventions. Results from the remaining 3 trials with interventions targeting cannabis, alcohol, and/or tobacco were inconsistent. Most commonly observed positive effects across programs were for drunkenness and binge drinking. Delivery: Effective programmes included the Life Skills Training Program, the Unplugged program, and the Good Behaviour

			Game.
Gates 2006 Title: Interventions for prevention of drug use by young people delivered in non-school settings Cochrane review	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Adolescence Adulthood Community USA	2 RCTs Both studies had a follow-up of only 3 months	Drug use: There is a lack of evidence concerning the effectiveness of non-school based interventions in preventing or reducing drug use by young people. The two studies of education and skills training included in this review did not find any differences between the intervention and control groups.
Jackson 2012 Title: Interventions to prevent substance use and risky sexual behaviour in young people: a systematic review Systematic review Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Early adolescence Adolescence Adulthood School South Africa (2), USA (1), Namibia (1)	4 studies (3 RCTs, 1 controlled trial) At least 2 studies had a follow-up of 12 months or more	Drug use: In this review, none of the four included studies provided clear evidence of effectiveness concerning programmes that target substance use and sexual health. In HealthWise, a leisure, life-skills and sexual education programme implemented among children aged approximately 14 years, past-month alcohol use, heavy alcohol use and heavy smoking were reduced significantly in the intervention group compared with the control group (OR 0.71, 95% CI 0.91–0.56; OR 0.63, 95% CI 0.83–0.45 and OR 0.71, 95% CI 0.91–0.56, respectively) for both genders. There was no significant difference in past-month cannabis use, and past-month smoking was reduced significantly among girls only. Stepping Stones is primarily a sexual health programme. There was no difference between intervention and control groups regarding alcohol or illicit drug use. My Future is My Choice was based in Namibian schools and focused on knowledge-giving, communication skills and decision-making around substance use and sexual health. Alcohol use was significantly lower in the intervention than control groups for females (14% versus 32, P<0.01) but *higher* in the intervention group for males (77% versus 57%, P <0.05). Project ALERT

			aimed to develop personal and social skills for increasing competence and resistance to drug use pressures. The effect on substance use was evaluated in two different cohorts, including a 6 year follow-up. Although there were short-term reductions in cannabis, tobacco and alcohol use, the long-term follow-up of the second cohort indicated that these were not sustained after 6 years, suggesting that the impact of the intervention did not continue once the classroom lessons had stopped. Alcohol use: Please see information on drug use. Tobacco use: Please see information on drug use. Other risky behaviours: With regard to sexual health, the HealthWise programme found no significant difference in sexual intercourse. Stepping Stones was effective in reducing herpes simplex virus-2 infection incidence for both genders (OR for all subjects 0.67, 95% CI 0.47–0.97), but there was no difference in human immunodeficiency virus (HIV) infection, correct condom use, having casual partners, or pregnancy. The evaluation of My Future is My Choice found no significant differences in condom use between intervention and control groups. Abstinence was greater among baseline female (but not male) virgins (25% versus 13%; P <0.05) in the intervention group. In Project ALERT, the short-term cohort was followed-up in young adulthood for effects on sexual risk behaviour, but the methodological quality of this long-term study was rated as weak because of selection bias and high attrition, and the authors highlight that the results should be interpreted cautiously. At a mean age of 21, sex with multiple partners and drug-related unprotected sex were reduced

			significantly in the intervention group (OR 0.78, 95% CI 0.66–0.92 and OR 0.81, 95% CI 0.67–0.98, respectively), but there was no effect on inconsistent condom use (OR 1.01, 95% CI 0.87–1.16). Delivery: The authors conclude in this review, which included different types of interventions, that the most promising interventions addressed multiple domains (individual and peer, family, school and community) of risk and protective factors for risk behaviour. Programmes that addressed just one domain were generally less effective in preventing multiple risk behaviour.
Jones 2006 Title: A review of community-based interventions to reduce substance misuse among vulnerable and disadvantaged young people Systematic review of reviews and primary studies Quality: Good	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Middle childhood Early adolescence Adolescence School Countries not specified	20 studies (10 RCTs, 9 controlled non-randomised trials, 1 controlled before and after study) 10 studies had a follow-up of 12 months or more	Drug use: The evidence with regard to school based interventions and life skills training was considered inconclusive/mixed. There was evidence to suggest that schools-based Life Skills Training (LST) or generic life skills, on their own or in combination with other approaches, are not effective in reducing substance misuse in the long term. Three RCTs indicate that when delivered as a stand alone intervention, LST or generic life skills may produce medium, but not short or long term, reductions in substance use. There was evidence from one RCT to suggest that this effect on substance use may be strongest in girls. Seven trials suggested that school-based LST or generic life skills in combination with other approaches, including parent workshops, staff training or mentoring, has no effects on substance use outcomes in the short, medium or long term compared to no intervention. However, there was evidence from two controlled non-randomised trials to suggest that delivering generic life skills with family components can produce

			both immediate and medium term reductions in alcohol use and frequency, but only immediate effects on the frequency of cannabis use. One RCT indicates that female-targeted peer support can be effective at producing medium term reductions in substance use in younger participants, but not older students. There was evidence from two trials to suggest that curricula addressing other risky behaviours (e.g. violence, sexual activity) have no indirect immediate or medium term effects on substance use outcomes.
Lemstra 2010 Title: A systematic review of school-based marijuana and alcohol prevention programs targeting adolescents aged 10–15 Systematic review Quality: Good	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Early adolescence Adolescence School USA	6 RCTs A follow-up period of 12 months or more was an inclusion criterion in this review	Drug use: With regard to marijuana, the review found that long-term school-based marijuana and alcohol prevention programs that utilized comprehensive program content resulted in a mean absolute reduction of 7 days of marijuana usage per month among adolescents aged 10–15 years old in comparison to no exposure. The results for knowledge only marijuana prevention could not be assessed as there was only one study and statistical pooling requires at least two studies. Alcohol use: With regard to alcohol, the review found that long-term school-based marijuana and alcohol prevention programs that utilized comprehensive program content resulted in a mean absolute reduction of 12 days of alcohol usage per month among adolescents aged 10–15 years old in comparison to no exposure. Programs that utilized knowledge only program content resulted in a mean absolute decrease of 2 days of alcohol usage per month in comparison to no exposure. Delivery: The authors conclude that the most effective primary prevention programs for reducing marijuana and alcohol use

			among adolescents aged 10–15 years in the long-term were comprehensive programs that included anti-drug information combined with refusal skills, self-management skills and social-skills training. However, a moderator analysis was not carried out.
McGrath 2006 Title: Drug use prevention among young people: a review of reviews Review of reviews Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Middle childhood Early adolescence Adolescence School USA	4 reviews (2 meta-analyses, 2 systematic reviews) Follow-up not reported in detail although most studies appear to have had a follow-up of 12 months or more	Delivery: The review suggests that interactive approaches in universal school-based drug prevention programmes are more effective than non-interactive approaches in reducing drug use. Peer educators may contribute to the effectiveness of drug prevention programmes, although they may not produce positive effects per se. There is good evidence for the effectiveness of programmes based on social influences approaches, although the authors note that some social influence interventions may be more effective than others. The authors also found some evidence to support the efficacy of life skills training when added to social influence programmes. One review reported that there was no convincing evidence to indicate that intensive school programmes (10 or more lessons) were more effective than non-intensive ones.
Moreira 2009 Title: Social norms interventions to reduce alcohol misuse in University or College students Cochrane review	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Adolescence Adulthood School Computer/Internet USA (19), New Zealand (3)	22 RCTs 6 studies had a follow-up of 12 months or more	Alcohol use: Overall, this systematic review suggests that individual and personalised normative interventions over the immediate and medium term appear to reduce alcohol use, misuse and related problems amongst university or college students. The review authors grouped social norms interventions into five subtypes according to delivery mode: (i) mailed feedback, (ii) web feedback, (iii) individual feedback (iv) group face-to-face feedback and (v) a social marketing campaign. Interventions delivered using the web or computer, or in individual

			face-to-face sessions, appeared to reduce alcohol misuse. Significant effects were more apparent for short-term outcomes (up to three months). However, there was some evidence of effect continuing through to medium-term follow-up from four to sixteen months, particularly for web/computer feedback. The evidence was less convincing for group face-to-face sessions. Mailed and group feedback were on the whole no different than with the control intervention. Two large studies showed contradictory results for a social marketing campaign. Detailed results: - Peak Blood Alcohol Content (BAC): Significant reduction with Web/computer feedback (WF) (SMD-0.77 95%CI -1.25 to -0.28), two studies, 198 participants. No significant effect of mailed feedback (MF) or individual face-to-face feedback (IFF). - Drinking Frequency: Significant reduction with WF (SMD -0.38 95%CI -0.63 to -0.13), two studies, 243 participants and IFF (SMD -0.39 95% CI -0.66 to -0.12), two studies, 217 participants. No significant effect of MF. - Drinking Quantity: Significant reduction with WF (SMD -0.35 95% CI -0.51 to -0.18), five studies, 556 participants and group face-to-face feedback (GFF) (SMD -0.32 95% CI -0.63 to -0.02) three studies, 173 participants. No significant effect of MF or IFF. - Binge drinking: Significant reduction with WF (SMD -0.47 95% CI -0.92 to -0.03) one study, 80 participants, IFF (SMD -0.25 95% CI -0.49 to -0.02) three studies, 278 participants and GFF (SMD -0.38 95% CI -0.62 to -0.14) four studies, 264 participants. No significant effect for MF. Delivery:

			The intensity of the intervention differed between trials as did the control intervention, which was no intervention, educational leaflets or an alcohol educational session. Individual face-to-face feedback typically involved social norms feedback as just one aspect of a broader motivational interviewing intervention.
Müller-Riemenschneider 2008 Title: Long-Term Effectiveness of Behavioral Interventions to Prevent Smoking among Children and Youth Meta-analysis Quality: Good	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Middle childhood Early adolescence Adolescence School UK, Australia, USA, Canada, Netherlands, Germany, Ireland, China	14 RCTs (8 included in meta-analysis) A follow-up of 12 months or more was an inclusion criterion; follow-up of included studies ranged from 12 months to 60 months.	Tobacco use: The evidence for school-based programs alone was inconclusive. Nine good/high-quality studies on school-based intervention were available, of which only two reported clearly positive intervention effects. The results of the seven remaining studies were inconclusive or even indicated that the intervention effects had been unfavourable. Differences in smoking rates between intervention groups varied considerably across studies, ranging from -3.8% (i.e., favouring intervention groups) to 5.4% (i.e., favouring control groups). The results of the meta-analysis carried out as part of this review provide no evidence for the long-term effectiveness of school-based interventions. These findings were similar for lifetime, 30-day and regular smoking. Delivery: One study found evidence that culturally adapting the approach and materials of an intervention to the needs of specific population groups was more effective than standardised strategies. The limited number of studies did not allow conclusions with regard to the effectiveness of number of sessions or use of booster sessions.
Pan 2009 Title: A Multivariate Approach to a Meta-Analytic Review of the	Prevention education based on personal and social skills and social influence (early adolescence & adolescence)	20 controlled studies (level of randomisation not reported) 14 studies had a follow-up time of	Drug use: This review indicated that the effects of the D.A.R.E. program on drug use were homogeneous but less than small. The

Effectiveness of the D.A.R.E. Program Meta-analysis Quality: Acceptable	 Middle childhood Early adolescence School USA	12 months or more	unweighted mean effect size for any drug use was Cohen's d = 0.05 (ranging from -0.08 to 0.36) (including tobacco use, alcohol use, marijuana or other illicit drug use). Alcohol use: Please see information on drug use. Tobacco use: Please see information on drug use.
Porath-Waller 2010 Title: A Meta-Analytic Review of School-Based Prevention for Cannabis Use Meta-analysis Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Adolescence School USA (13), Canada (1), Spain (1)	15 trials (experimental or quasi-experimental design with a control group) Follow-up not reported	Drug use: The results from the set of 15 studies indicated that these school-based programs had a positive impact on reducing students' cannabis use (d = 0.58, CI: 0.55, 0.62, statistically significant) compared to control conditions. There was considerable variability in the magnitude of effect sizes across the set of studies, ranging from –0.50 to 2.90. Delivery: The moderator analysis indicated that programs incorporating elements of several prevention models were significantly more effective than were those based on only a social influence model. Programs that were longer in duration (≥15 sessions) and facilitated by individuals other than teachers in an interactive manner also yielded stronger effects. The results also suggested that programs targeting high school students were more effective than were those aimed at middle-school students.
Ranney 2006 Title: Tobacco Use: Prevention, Cessation, and Control Systematic review of reviews and primary studies Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Early adolescence Adolescence School USA (5), the Netherlands (2),	10 RCTs, 2 reviews 7 of the primary studies had a follow-up of 12 months or more	Tobacco use: The authors conclude that sufficient evidence was found for short-term effects (less than 2 years) of school-based prevention programs on smoking behaviour. Interventions implemented in a single school year or conducted over multiple school years produced mixed results in 10 school-based studies. Evidence suggested that prevention measures conducted in

	Australia (1), Canada (1), Norway (1), UK (1)		schools have positive short-term effects but insufficient evidence for long-term effects.
Reavley 2010 Title: Prevention and early intervention to improve mental health in higher education students: a review Review of reviews and primary studies Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Adolescence Adulthood School Community Media Countries not reported	Number of studies not reported Follow-up not reported	Alcohol use: The authors conclude that for interventions to prevent or intervene early for alcohol misuse, evidence of effectiveness is strongest for brief motivational interventions and for personalized normative interventions delivered using computers or in individual face-to-face sessions. There is some evidence that cognitive–behavioral/skill-based interventions are effective. However, more and better quality research is needed. Social norms marketing (SNM) campaigns using mass media have mixed evidence of effectiveness. Some environmental interventions may have benefit, but further work is needed. Information-based approaches are not effective.
Roe 2005 Title: Drug prevention with vulnerable young people: A review Systematic review Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Middle childhood Early adolescence Adolescence Family School USA (8), Canada (1)	9 evaluation studies with control or comparison groups 3 studies had a follow-up of 12 months or more	Drug use: In school settings, life-skills training has been found to be effective (at least in the short term). Universal school-based interventions involving life-skills training could have effects on the most high-risk young people, although most of the studies failed to find significant outcomes. Combination of interventions at different levels (universal and targeted) had additional benefits compared with the universal or the targeted initiative by themselves. Therefore, while universal interventions can affect the substance use of high-risk groups of young people, additional targeted components can increase the effectiveness of such universal programmes. Providing appropriate information is effective in altering young people's awareness of the dangers of drugs but does not inevitably change behaviour. The results of this review indicate that

			with vulnerable young people, life-skills training works better than the provision of drug knowledge in changing drug-using behaviour. The results of interventions involving counselling as the central component were mixed. Delivery: The authors conclude that across different settings the 11–13 age range appeared to be a crucial period for intervention with vulnerable young people. They describe this as a time when high-risk young people start to experiment with drugs, which appears to be a few years earlier than the onset of drug use amongst the general population.
Schröer-Günther 2011 Title: Primary Tobacco Prevention in China - A Systematic Review Systematic review Quality: Good	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Middle childhood Early adolescence Adolescence Adulthood School China	7 RCTs Only one study had a follow-up of 12 months or more but it measured only knowledge and attitudes; of the studies that measured smoking behaviours, the maximum follow-up was 6 months (in 2 studies)	Tobacco use: The evidence for the effectiveness of smoking prevention interventions in China is weak, partly due to methodological limitations of the studies. Of the five studies that measured smoking behaviour, only two studies found significant differences between intervention and control groups at post-intervention. Two studies conducted a follow-up at 6 months. One found no significant effects, and the other found a significant effect on smoking initiation, but not on the smoking rate. Baseline characteristics of intervention and control group in this study were significantly different, such that no distinct effect of the program could be verified. Delivery: With regard to the wider range of smoking prevention and cessation programmes included in this review, the authors conclude that interventions applying health promotion techniques were more often successful than interventions that were only based on

			health education.
Skara 2003 Title: A review of 25 long-term adolescent tobacco and other drug use prevention program evaluations Systematic review Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Middle childhood Early adolescence Adolescence School USA (12), Canada (2), Australia, England, Italy, The Netherlands, Norway	19 studies (11 experimental, 8 quasi-experimental) Only studies with a long-term follow-up of at least 24 months were included in this review (follow-up ranged from 24 to 144 months)	Drug use: This review of long-term tobacco and drug use prevention intervention studies published indicates that school- and community-based programs were effective in preventing or reducing adolescent cigarette, alcohol, and marijuana use across follow-up periods ranging from 2 to 15 years. Seven studies had measured alcohol and/or other drug use. Six studies showed effectiveness in reducing marijuana use at initial follow-ups but not at the final assessment. Alcohol use: Six studies showed effectiveness in reducing alcohol at initial follow-ups, and of these, three studies also found significant differences in alcohol consumption between intervention and control groups at the final assessment. Tobacco use: Of the 19 school-based studies in this review, more than half (10 studies) found significant and sustained reductions on a variety of smoking outcomes over multiple time points. This included one study with a long follow-up of 15 years. One study found no significant differences at the initial 6 month follow-up but at the 48 month follow-up the intervention group reported significantly less use. In 5 studies, intervention and control groups differed significantly at the initial follow-ups, but these differences disappeared by the time of the final assessment. Three studies found no differences between intervention and control groups at any time. This included the study with the longest follow-up (144 months). Delivery: Results indicated that program effects

			were less likely to decay among studies that delivered booster programming sessions as a supplement to the program curricula.
Soole 2008 Title: School-Based Drug Prevention Programs: A Review of What Works Systematic review / Meta-analysis Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Middle childhood Early adolescence Adolescence Family School Community Media Multi-setting Countries not specified	58 controlled trials (including RCTs); meta-analysis based on 12 studies Follow-up not reported	Drug use: The authors report that there were a number of significant findings, with four of the six meta-analyses conducted producing significant mean effect sizes. Further, all analyses produced mean effect sizes in the desired direction, suggesting overall program effectiveness. The meta-analyses assessing the impact of school-based drug prevention programs on marijuana use provided significant results both in the short-term (d. = .136, 95% CI = .035–.237, p < .01) and the long-term (d. = .219, 95% CI = .071–.367, p < .01). Overall, these results suggest that, in the short term, around 54% of control participants performed worse than treatment participants, while in the long term around 58% of participants performed worse than treatment participants. Similarly, the meta-analyses assessing the impact of prevention programs on all illicit drug use (i.e. marijuana and other illicit drugs) also provided significant results both in the short-term (d. = .141, 95% CI = .042–.24, p = < .01) and the long-term (d. = .208, 95% CI = .087–.329, p = < .001). In both the marijuana and all drug analyses, results suggest that prevention programs not only have an immediate impact on self-reported drug use, but that this impact persists into the long term. Overall, these results suggest that around 56% of control participants performed worse in terms of short-term illicit drug use than treatment participants, while around 58% of control participants performed worse in terms of long-term drug use compared to treatment participants.

			The authors also explored the self-reported drug use outcomes for other categories of illicit drugs only, including cocaine and amphetamines (but excluding marijuana). The two treatment comparison contrasts contributing to each meta-analysis produced non-significant findings both for short-term and long-term other illicit drug outcomes. Delivery: The authors conclude that interactive programs adopting either social influence or competency enhancement components appear to be the most effective approach to school-based drug prevention. Further, more intensive programs appear to increase program effectiveness, and universal programs that are delivered in the middle school years may be slightly more effective. Generic skills training programs appear to have more impact on reducing or preventing harder drug use than marijuana use, and their effectiveness may be restricted to low-risk youths. The analysis suggests that the inclusion of booster sessions and multifaceted drug prevention programs have little impact on preventing illicit drug use among school-aged children.
Spoth 2008 Title: Preventive Interventions Addressing Underage Drinking: State of the Evidence and Steps Toward Public Health Impact Review of reviews and primary studies Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Middle childhood Early adolescence Adolescence School USA, Australia, Norway, Netherlands (countries not consistently reported)	14 programmes in 26 reports (study designs not reported consistently) 12 programmes were followed up at 12 months or more post-baseline; a follow-up period of at least 6 months was an inclusion criterion	Alcohol use: The review findings indicate that school-based prevention interventions can reduce early initiation of alcohol use and progression of use in the young adolescent and adolescent years. Most elementary school interventions have shown effects only on the risk precursor of aggressive behavior and not on alcohol use. Although a few classroom intervention trials have monitored their samples through the middle-school period and demonstrated effects on alcohol use (e.g., Classroom Centered

			Intervention), most studies have not been funded for a sufficient period to demonstrate whether there are direct effects on alcohol use. Numerous interventions exist that have shown effects on the delay of initiation of use during the middle and early high school periods. With regard to the high school years, the review authors found only one intervention (Project Toward No Drug Abuse) that could be classified as "most promising" and one (Athletes Training and Learning to Avoid Steroids) that could be classified as having "mixed or emerging" evidence in reducing the rate of drinking. The latter was limited in that it focused only on high school football players and not on the general population. Mediators: A number of interventions for younger children have shown significant reductions in aggression and disruption (e.g., I Can Problem Solve, Promoting Alternative Thinking Strategies, Second Step, and Good Behavior Game). Delivery: Interventions that have shown effects typically address the following: role-playing that provides practice in the use of new skills, a broad focus on life skills, support to improve emotional regulation, a focus on positive peer relationships and, with youths, provision of accurate norms for alcohol and substance use, plus instruction in peer refusal skills.
Thomas 2006 Title: School-based programmes for preventing smoking Cochrane review	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Middle childhood Early adolescence Adolescence	94 RCTs (23 classed as high-quality) Follow-up of six months or more was an inclusion criterion, follow-up period not reported consistently (at least 30 studies had follow-up of 12 months or more)	Tobacco use: Twenty-three high quality studies addressed the issue of whether school programmes to prevent tobacco are more effective than minimal or no intervention. The authors conclude that there is no strong evidence for offering school-based programmes that provide

	Family School Community Multi-setting USA (66), Canada (6), Netherlands (5), Italy (3), Australia (2), Germany (2), Norway (2), UK (2), Finland (1), France (1), Spain (1), India (1), Mexico (1), one multi-country study (Denmark, Finland, the Netherlands, Portugal, Spain, UK)		information only. The high quality study on information-giving alone reported a significant effect of the intervention (odds ratio [OR] 0.61; 95% confidence interval [CI] 0.41 to 0.91). Studies that compared an information curriculum with other models of delivery showed the information curricula to be either less effective or detected no difference. Due to the limited number of rigorous studies, it is difficult to exclude a beneficial effect of information about tobacco alone, but there is little positive evidence available to support this intervention. The majority of studies drew on a social influences models. Although half of the best quality studies regarding this type of approach found short-term effects on children's smoking behaviour, there is conflicting evidence about the effects of such programmes, and the highest quality and longest trial (the Hutchinson Smoking Prevention Project) found no long-term effects from 65 lessons over eight years. There was limited evidence for the effects of interventions that included developing generic social competence, and for those with a multi-modal approach that included community initiatives. Three of the four high quality multi-modal interventions showed a positive significant effect. It is possible that combining social influences models with other components, such as community interventions and generic social competence training may improve effectiveness. However, these interventions have not been subject to the same rigorous evaluation as the social influences approach. In addition, there are few data from direct comparisons to suggest how large an increment might be achieved.
Thomas 2008 Title: Population tobacco control	Prevention education based on personal and social skills and social influence (early adolescence &	84 studies (variety of study designs, mostly econometric analyses and cross-sectional before	Tobacco use: The authors conclude that population-level tobacco control interventions have

interventions and their effects on social inequalities in smoking: systematic review Systematic review Quality: Good	adolescence) Pre-natal and early childhood Middle childhood Early adolescence Adolescence Adulthood School Community Workplace Media US, Canada, New Zealand, Australia, Finland, UK, Sweden, Netherlands, Spain, France, Israel, Hong Kong, South Africa, Taiwan	and after studies) Follow-up not consistently reported	the potential to benefit more disadvantaged groups and thereby contribute to reducing health inequalities. Smoking restrictions in schools may be more effective in girls. Concerning access restrictions, restrictions on sales to minors may be more effective in girls and younger children.
West 2004 Title: Project D.A.R.E. Outcome Effectiveness Revisited Meta-analysis Quality: Acceptable	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Early adolescence Adolescence School USA	11 studies with experimental or quasi-experimental design 7 studies had a follow-up of 12 months or more	Drug use: This review indicates that the D.A.R.E. programme is ineffective. The overall weighted effect size for the included D.A.R.E. studies was extremely small (correlation coefficient=0.011; Cohen d=0.023; 95% confidence interval=−0.04, 0.08) and nonsignificant (z=0.73, NS). The authors note, however, that the evaluations considered in this review refer to an earlier version of the DARE programme, as evaluations of the revised version were not yet available.
Wiehe 2005 Title: A systematic review of school-based smoking prevention trials with long-term follow-up Systematic review Quality: Good	Prevention education based on personal and social skills and social influence (early adolescence & adolescence) Early adolescence Adolescence School USA	8 RCTs All studies had a follow-up period of 12 months or more (inclusion criterion)	Tobacco use: Among the 8 studies included in this review, none of the differences were statistically significant in any individual study except for one (Botvin's Life Skills Program). This study showed statistically significant results, suggesting that school-based intervention effects resulted in decreased monthly smoking prevalence at 12th grade or age 18. The review authors argue that it is possible that the Life Skills Program is effective and others are not because it used a relatively high degree of interaction and

			participation. Because there are a limited number of studies with long-term follow-up data and considerable variation in their intervention methodology, the authors were unable to conclude whether differences in study outcomes are the result of differences in program content, program intensity, program delivery, or the methodological rigor of analysis. The pooled risk difference estimate from the random-effects meta-analysis was 0.61 (95% confidence interval, -4.22 to 3.00). Measures of statistical heterogeneity mirrored evidence of clinical heterogeneity (Q 5,031, p .001), suggesting the summary measure is difficult to interpret due to the large, unexplained between-study variability.
Policies to keep children in school			
Lucas 2008 Title: Financial Benefits for Child Health and Well-Being in Low Income or Socially Disadvantaged Families in Developed World Countries Campbell review	Policies to keep children in school Pre-natal and early childhood Middle childhood Early adolescence Adolescence Family USA (8), Canada (1)	9 RCTs All studies had a follow-up period of 12 months or more post-randomisation (post-intervention periods not reported)	Drug use: The study did not report any drug use outcomes. Mediators: The authors conclude that the current evidence does not allow to state unequivocally whether financial benefits to poor families delivered as an intervention are effective at improving child health or wellbeing in the short term. No effect was observed on child health, measures of child mental health or emotional state. Non-significant effects favouring the intervention group were seen for child cognitive development and educational achievement, and a non-significant effect favouring controls in rates of teenage pregnancy. The conclusions were limited by the fact that most of the studies had small effects on total household income and that while no conditions were attached to how money was spent, all studies included strict conditions for receipt of payments. The

			review authors highlight particular concerns in some studies that sanctions and conditions (such as working hours) placed on families may increase family stress.
Petrosino 2012 Title: Interventions in Developing Nations for Improving Primary and Secondary School Enrollment of Children: A Systematic Review Campbell review	Policies to keep children in school Middle childhood Early adolescence School Studies were conducted in 27 different nations, with Kenya (12), India (9), Bangladesh (6), Colombia (5) and Jamaica (5) the most common. More than half of studies were conducted in the poorest developing nations.	73 trials (52 RCTs and 21 quasi-experimental studies) 57 studies had follow-up periods of 12 months or more	Drug use: The study did not report any drug use outcomes. Mediators: The review indicates that interventions to get children into school and keep them there have, on average, positive effects. The authors note that this is also true of learning outcomes reported within those same studies. Approximately 38 substantively different interventions were tested across the 73 included studies; broadly, Conditional Cash Transfers (N=13), funding or grants to communities (N=5), school breakfasts or lunches (N=5), or remedial education or tutoring (N=5) were the most common. Across all interventions, the average effect size was positive in direction for all outcomes, and was largest for enrollment (d=.18; 95% CI[.13-.24]), attendance (d=.15, 95% CI [.10-.20]), progression (d=.13, 95% CI [.08-.18]), math (d=.16, 95% CI [.10-.23]) and language (d=.18, 95% CI [.12-.25]) outcomes. Examining only outcomes of enrollment and attendance (n=59), studies that focused on new schools and other infrastructure interventions (d=.44, 95% CI [.40-.47]) reported the largest average effects. Collectively, the average treatment effect was positive (d=.18; 95% CI [.13-.24]), and ranged from -.14 to .82. The results were not uniform across every study; there was large variation in programs, participants, settings and designs, and significant heterogeneity was found in the main analyses. Although effects could be considered small, according to

			the review authors they represent 3-9% increases in positive outcomes compared to the control/comparison group in the studies.
Prenatal and infancy visitation			
Kitzman 2010; Olds 2010 Title: Enduring Effects of Prenatal and Infancy Home Visiting by Nurses on Children: Follow-up of a Randomized Trial Among Children at Age 12 Years (Kitzman 2010); Enduring Effects of Prenatal and Infancy Home Visiting by Nurses on Maternal Life Course and Government Spending: Follow-up of a Randomized Trial Among Children at Age 12 Years (Olds 2010) RCT Quality: Acceptable	Prenatal and infancy visitation Pre-natal and early childhood Family Health sector USA	Intervention group: 228 (baseline), 191 (last follow-up) (84%) Control group: 515 (baseline), 422 (last follow-up) (82%) Follow-up at 12 years (10 years post-intervention)	Drug use: The authors conclude that the Nurse-Family Partnership (NFP) reduced children's use of substances. By the time the firstborn child was 12 years of age, those visited by nurses, compared with those in the control group, reported fewer days of having used cigarettes, alcohol, and marijuana during the 30-day period before the 12-year interview (0.03 vs 0.18, P=.02). In the 30-day period preceding the 12-year interview, nurse-visited children, compared with controls, were less likely to have used cigarettes, alcohol, or marijuana (odds ratio, 0.31; P=.04), to have used fewer of these substances (incidence ratio, 0.22; P=.02) and to have used these substances for fewer days (incidence ratio, 0.15; P=.02). Alcohol use: Please see information on drug use. Tobacco use: Please see information on drug use. Mediators: The authors conclude that the Nurse-Family Partnership (NFP) improved maternal life course and reduced government spending among children through age 12 years. By the time the firstborn child was 12 years old, nurse-visited mothers compared with control subjects reported less role impairment owing to alcohol and other drug use (0.0% vs 2.5%, P = .04), longer partner relationships (59.58 vs 52.67 months, P = .02), and greater sense of mastery (101.04 vs 99.60, P = .005). During this 12-year period, government spent less per year on food stamps, Medicaid, and

			Aid to Families with Dependent Children and Temporary Assistance for Needy Families for nurse-visited than control families ($8772 vs $9797, P = .02); this represents $12 300 in discounted savings compared with a program cost of $11 511, both expressed in 2006 US dollars. No statistically significant program effects were noted on mothers' marriage, partnership with the child's biological father, intimate partner violence, alcohol and other drug use, arrests, incarceration, psychological distress, or reports of child foster care placements. Other risky behaviours: No statistically significant program effects were found on children's externalizing or total behavioral problems.
School policies and culture			
Fletcher 2008 Title: School Effects on Young People's Drug Use: A Systematic Review of Intervention and Observational Studies Systematic review Quality: Good	School policies and culture Early adolescence School USA, Netherlands, Australia, UK, Sweden	13 studies (4 intervention studies, 9 observational studies) All studies had a follow-up of 12 months or more	Drug use: The authors conclude that intervention studies provide some evidence that there is a causal association between, on the one hand, modifying the school environment to increase student participation, improve relationships, promote a positive school ethos, and address disaffection and truancy and, on the other hand, reduce student drug use and other risk behaviors, especially for boys. The Aban Aya study reported that, 4 years after the start of the intervention, there was a 34% reduction in the rate of increase of a combined measure of alcohol, tobacco, and cannabis use for boys in the intervention group compared to the comparison group. Boys at D.A.R.E. plus schools reported a significantly lower rate of "growth" in the use of drugs other than cannabis, and intentions to use these drugs, compared to the comparison group, after 2 years of the

			intervention. The other two interventions did not have a significant effect on drug use. Alcohol use: Three studies reported rates of smoking and drinking separately for young people's drug use. All three suggested that the interventions had a protective effect on these outcomes. Tobacco use: Please see information on drug and alcohol use. Delivery: Intervention studies suggest that action to improve ethos and support student engagement can be effective in reducing drug use. Observational studies also suggest that positive ethos and overall levels of strong school relationships and engagement are associated with lower rates of drug use, and that, at the individual level, negative behaviors and attitudes relating to school are also associated with drug use.
Goldberg 2007 Title: Outcomes of a Prospective Trial of Student-Athlete Drug Testing: The Student Athlete Testing Using Random Notification (SATURN) Study Cluster-RCT Quality: Acceptable	Alcohol and drug testing Adolescence School USA	Intervention group: 653 pupils (baseline), 197 (last follow-up) (30%) Control group: 743 (baseline), 249 (last follow-up) (34%) Follow-up over the period of 2 years post-randomisation (4 assessments, precise follow-up times not reported)	Drug use: The study indicates that drug testing is not effective in reducing past-month use. At the end of the initial school year and after two full school years, student-athletes at schools that had implemented a drug and alcohol testing (DAT) policy reported less drug use during the past year ($p < .01$) compared to athletes at the deferred policy schools. Combining past year drug and alcohol use, student-athletes at DAT schools reported less use only in the short term ($p < .05$), but by the end of the second school year there was no significant effect. No DAT deterrent effects were evident for past *month* use during any of four follow-up periods in student self-reports. Alcohol use: Please see information on drug use.

			Other risky behaviours: The authors note that drug testing was accompanied by an increase in some risk factors for future substance use. DAT athletes across all assessments reported less athletic competence ($p < .001$), less belief authorities were opposed to drug use ($p < .01$), and indicated greater risk-taking ($p < .05$). At the final assessment, DAT athletes believed less in testing benefits ($p < .05$) and less that testing was a reason not to use drugs ($p <.01$).
Moreira 2009 Title: Social norms interventions to reduce alcohol misuse in University or College students Cochrane review	School policies and culture Adolescence Adulthood School Computer/Internet USA (19), New Zealand (3)	22 RCTs 6 studies had a follow-up of 12 months or more	Alcohol use: Overall, this systematic review suggests that individual and personalised normative interventions over the immediate and medium term appear to reduce alcohol use, misuse and related problems amongst university or college students. The review authors grouped social norms interventions into five subtypes according to delivery mode: (i) mailed feedback, (ii) web feedback, (iii) individual feedback (iv) group face-to-face feedback and (v) a social marketing campaign. Interventions delivered using the web or computer, or in individual face-to-face sessions, appeared to reduce alcohol misuse. Significant effects were more apparent for short-term outcomes (up to three months). However, there was some evidence of effect continuing through to medium-term follow-up from four to sixteen months, particularly for web/computer feedback. The evidence was less convincing for group face-to-face sessions. Mailed and group feedback were on the whole no different than with the control intervention. Two large studies showed contradictory results for a social marketing campaign. Detailed results: - Peak Blood Alcohol Content (BAC): Significant reduction with

			Web/computer feedback (WF) (SMD-0.77 95%CI -1.25 to -0.28), two studies, 198 participants. No significant effect of mailed feedback (MF) or individual face-to-face feedback (IFF). - Drinking Frequency: Significant reduction with WF (SMD -0.38 95%CI -0.63 to -0.13), two studies, 243 participants and IFF (SMD -0.39 95% CI -0.66 to -0.12), two studies, 217 participants. No significant effect of MF. - Drinking Quantity: Significant reduction with WF (SMD -0.35 95% CI -0.51 to -0.18), five studies, 556 participants and group face-to-face feedback (GFF) (SMD -0.32 95% CI -0.63 to -0.02) three studies, 173 participants. No significant effect of MF or IFF. - Binge drinking: Significant reduction with WF (SMD -0.47 95% CI -0.92 to -0.03) one study, 80 participants, IFF (SMD -0.25 95% CI -0.49 to -0.02) three studies, 278 participants and GFF (SMD -0.38 95% CI -0.62 to -0.14) four studies, 264 participants. No significant effect for MF. Delivery: The intensity of the intervention differed between trials as did the control intervention, which was no intervention, educational leaflets or an alcohol educational session. Individual face-to-face feedback typically involved social norms feedback as just one aspect of a broader motivational interviewing intervention.
Reavley 2010 Title: Prevention and early intervention to improve mental health in higher education students: a review Review of reviews and primary studies	School policies and culture Adolescence Adulthood School Community Media	Number of studies not reported Follow-up not reported	Alcohol use: The authors conclude that for interventions to prevent or intervene early for alcohol misuse, evidence of effectiveness is strongest for brief motivational interventions and for personalized normative interventions delivered using computers or in individual face-to-face sessions. There is

Quality: Acceptable	Countries not reported		some evidence that cognitive–behavioral/skill-based interventions are effective. However, more and better quality research is needed. Social norms marketing (SNM) campaigns using mass media have mixed evidence of effectiveness. Some environmental interventions may have benefit, but further work is needed. Information-based approaches are not effective.
Thomas 2008 Title: Population tobacco control interventions and their effects on social inequalities in smoking: systematic review Systematic review Quality: Good	School policies and culture Pre-natal and early childhood Middle childhood Early adolescence Adolescence Adulthood School Community Workplace Media US, Canada, New Zealand, Australia, Finland, UK, Sweden, Netherlands, Spain, France, Israel, Hong Kong, South Africa, Taiwan	84 studies (variety of study designs, mostly econometric analyses and cross-sectional before and after studies) Follow-up not consistently reported	Tobacco use: The authors conclude that population-level tobacco control interventions have the potential to benefit more disadvantaged groups and thereby contribute to reducing health inequalities. Smoking restrictions in schools may be more effective in girls. Concerning access restrictions, restrictions on sales to minors may be more effective in girls and younger children.
Sports, leisure and alternative programmes			
Bühler 2008 Title: Prevention of substance abuse (EMCDDA Insights Nr 7) Review of reviews and primary studies Quality: Acceptable	Sports, leisure and alternative programmes Age not specified Setting not specified USA	1 review of 10 studies Follow-up not reported	Drug use: The only identified review in this review of reviews is from 1996 and indicated that there is little evidence for the effectiveness of 'alternative approaches' and little evidence indicating which approaches could be effective with which target groups. Delivery: The original review authors conclude from the individual studies: a) that the alternative approach appears to be the most effective with high-risk groups who lack adequate adult supervision and have little opportunity to structure their free time; b) that involving young people in the planning and

			implementation of these alternatives may increase levels of participation and effectiveness; c) that more intensive programmes are more effective; d) that skills training should be a component of such measures; and e) that alternatives as a component of a comprehensive project could serve to establish anti-consumption standards.
Jones 2006 Title: A review of community-based interventions to reduce substance misuse among vulnerable and disadvantaged young people Systematic review of reviews and primary studies Quality: Good	Sports, leisure and alternative programmes Age not specified Community USA, Switzerland, other countries not specified	11 studies (9 controlled non-randomised trials, 2 before and after studies) 6 studies had a follow-up of 12 months or more	Drug use: There was evidence from five trials of large multi-site evaluations of community based interventions targeting high-risk youth (comprising behavioural skills programmes, informational focused programmes, recreational focused programmes, and affective programmes) conducted in either Switzerland or the USA to suggest that there are no overall effects of these programmes on use of illicit drugs, tobacco or alcohol in the immediate to long term. There is inconsistent evidence from four trials about the effectiveness of community-based youth programmes for young people at-risk of substance use in reducing substance use outcomes; three trials indicate that community-based youth programmes for young people at-risk of substance use can reduce the use of illicit drugs, cannabis, and tobacco in the short to long term. However, one trial suggested that a community- based youth programme increased last month use of a variety of substances, particularly amongst girls. Alcohol use: Please see information on drug use. Tobacco use: Please see information on drug use.
Priest 2008 Title: Policy interventions	Sports, leisure and alternative programmes	n/a	Drug use: The authors found no controlled studies evaluating the effectiveness of policy

implemented through sporting organisations for promoting healthy behaviour change Cochrane review	Age not specified Community n/a		interventions used in sporting settings, i.e. organised through sporting organisations to increase healthy behaviours, attitudes, knowledge or the inclusion of health-oriented policies within the organisations. The study designs employed in evaluations of these policies typically have been case studies, thereby limiting our understanding of the effectiveness of such health promoting strategies.
Tobacco policies			
Bühler 2008 Title: Prevention of substance abuse (EMCDDA Insights Nr 7) Review of reviews and primary studies Quality: Acceptable	Tobacco policies Adolescence Adulthood Community Most included reviews originated from the USA.	5 reviews Follow-up not consistently reported	Tobacco use: - Higher tobacco prices reduce the prevalence and quantity of tobacco consumption. - Price elasticity for tobacco (price elasticity): 10 % price increase results in 3.7 % fewer smokers and a 2.3 % decline in consumption volume - Isolated measures to prevent the sale of tobacco to young people under the legal age do not reduce consumption. - A comprehensive long-term ban on the advertising of tobacco products has preventive effects on consumption behaviour.
Callinan 2010 Title: Legislative smoking bans for reducing secondhand smoke exposure, smoking prevalence and tobacco consumption Cochrane review	Tobacco policies Early adolescence Adolescence Adulthood Community Workplace USA (17), Scotland (8), Ireland (5), Italy (4), Spain (3), Norway (3), Finland (2), New Zealand (2), Canada (2), France (1), England (1), the Netherlands (1), Sweden (1)	50 studies (24 cohort follow up pre and post ban, 18 cross-sectional, 13 studies were quasi-experimental including a reference area) For smoking behaviour outcomes, only studies which reported follow up at least six months from the implementation of the ban were included; follow-up data not reported consistently	Tobacco use: The studies examined the effect of clean indoor air legislation implemented in countries, states and regional areas. With regard to smoking behaviours, there is limited evidence about the impact on active smoking. Less than half of the studies considered active smoking and of those that did there was little methodological consistency. Three measures were considered - smoking prevalence rates, measures of tobacco consumption and reported smoking cessation. These studies report either no change or a downward trend. There was no consistent evidence of a reduction in smoking prevalence attributable to the ban.

			With regard to other outcomes, introduction of a legislative smoking ban does lead to a reduction in exposure to passive smoking. Hospitality workers experienced a greater reduction in exposure to second-hand smoke (SHS) after implementing the ban compared to the general population. There was no change in exposure to secondhand smoke in private cars after implementing legislative smoking bans and no change in self-reported SHS exposure in the home. There is some evidence of an improvement in health outcomes, with the strongest evidence relating to admissions for acute coronary syndrome.
Hopkins 2001 Title: Reviews of Evidence Regarding Interventions to Reduce Tobacco Use and Exposure to Environmental Tobacco Smoke Community Guide review	Tobacco policies Early adolescence Adolescence Adulthood Community USA	8 studies (single or sequential cross-sectional surveys) Follow-up periods not reported consistently	Tobacco use: According to the Community Guide's rules of evidence, strong scientific evidence demonstrates the effectiveness of increasing the price of tobacco products on reducing tobacco use prevalence and consumption among both adolescents and young adults. The price elasticity of demand estimates in seven of eight studies demonstrate that increases in tobacco product price result in decreases in both the overall prevalence of tobacco product use and the quantity consumed. Increases in product price resulted in reductions in tobacco use in both adolescents and young adults. Tobacco use prevalence among adolescents (13-18 years old): a median decrease of 3.7% in tobacco use for every 10% increase in product price (8 studies); tobacco consumption among adolescents: a median decrease of 2.3% in tobacco consumption for every 10% increase in product price (6 studies).
Lovato 2011 Title: Impact of tobacco advertising and promotion on	Tobacco policies Middle childhood Early adolescence	19 longitudinal studies 17 studies had follow-up periods of 12 months or greater	Tobacco use: The authors found no trials of the impact of tobacco advertising and promotional activities on people taking

increasing adolescent smoking behaviours Cochrane review	Adolescence Community Media USA (11), Australia (2), England (2), Germany (2), Spain (2)		up smoking. However, there are longitudinal studies following nonsmokers and their exposure or receptivity to advertising and promotion in a variety of ways, including having a favourite advertisement or an index of receptivity based on awareness of advertising and ownership of a promotional item. In 18 of the 19 studies the nonsmoking adolescents who were more aware of tobacco advertising or receptive to it, were more likely to have experimented with cigarettes or become smokers at follow-up. Two studies reported an influence of advertising among girls, but not boys. Based on the strength and specificity of this association, evidence of a dose-response relationship, the consistency of findings across numerous observational studies, temporality of exposure and smoking behaviours observed, as well as the theoretical plausibility regarding the impact of advertising, the review authors conclude that tobacco advertising and promotion increases the likelihood that adolescents will start to smoke.
NCI 2008 Title: The Role of the Media in Promoting and Reducing Tobacco Use (Chapter 7: Influence of Tobacco Marketing on Smoking Behavior) Literature review Quality: Acceptable	Tobacco policies Middle childhood Early adolescence Adolescence Adulthood Community Media Cross-sectional studies: USA, Australia, UK, Norway, Germany, Czech Republic, Spain, Turkey, Hong Kong, Japan, Taiwan, Bangladesh, Gambia; longitudinal studies: USA, Australia, UK, Spain; econometric studies of advertising bans: more than 11 countries (102 countries in one study)	Relationship between cigarette marketing practices and adolescent smoking behavior: 68 studies (52 cross-sectional, 16 longitudinal); Advertising bans: 5 econometric studies Follow-up not applicable for surveys; where applicable, nearly all studies had a follow-up period of 12 months or more	Tobacco use: The authors conclude that the total weight of evidence demonstrates a causal relationship between tobacco advertising and promotion and increased tobacco use, as manifested by increased smoking initiation and increased per capita tobacco consumption in the population. The vast majority of cross-sectional studies found an association between exposure to cigarette advertising and adolescent smoking behavior, indicating a robust association. Strong and consistent evidence from longitudinal studies indicated that exposure to cigarette advertising influences non-smoking adolescents to initiate smoking and to move toward regular smoking.

			Receptivity to, exposure to, or awareness of tobacco advertising significantly predicted smoking at follow-up. Many of these cross-sectional and longitudinal studies of the influence of marketing exposure measured and analyzed social influences along with tobacco marketing exposure. They generally found that marketing practices influence adolescent smoking even after controlling for peer and parental influences. The studies of tobacco advertising bans in various countries show that comprehensive bans reduce tobacco consumption. Banning advertising in a limited number of media has little or no effect. Limited advertising bans do not reduce the total level of advertising expenditure but simply result in substitution to the remaining non-banned media or to other marketing activities. Banning advertising in most or all available media can reduce tobacco consumption because, in these circumstances, the possibilities for substitution to other media are limited.
Ranney 2006 Title: Tobacco Use: Prevention, Cessation, and Control Systematic review of reviews and primary studies Quality: Acceptable	Tobacco policies Early adolescence Adolescence Adulthood Community Media One of the inclusion criteria was that studies were from "Developed countries: United States, Canada, United Kingdom, Western Europe, Australia, and New Zealand"	4 systematic reviews/meta-analyses, 1 cross-sectional study No follow-up in the primary study	Tobacco use: The authors note that previous systematic reviews investigating tobacco prevention among adolescents and young adults reported strong evidence of effectiveness for increasing the unit price of tobacco products and mass media campaigns that run concurrently with other interventions. Evidence of effectiveness was sufficient for restricting tobacco product distribution, regulating the mechanisms of sale, enforcing access-to-minors laws, and merchant education and training when conducted in conjunction with community mobilization. This review found only one primary study on regulating and enforcing youth access laws, which augments evidence from prior reviews but reported only on

			young people's perceptions of ease of access. The authors found no other research to add to existing evidence for population-based interventions.
Richardson 2009 Title: Preventing Smoking in Young People: A Systematic Review of the Impact of Access Interventions Systematic review of reviews and primary studies Quality: Acceptable	Tobacco policies Middle childhood Early adolescence Adolescence Community USA, Australia, New Zealand, UK, Sweden (studies conducted in developing countries were excluded)	20 studies (5 reviews, 14 cross-sectional studies, 1 non-randomised controlled trial) n/a (most included studies were cross-sectional)	Tobacco use: Only two studies addressed the impact of interventions on smoking behaviour. One systematic review addressing the impact of access restrictions on smoking prevalence found no difference in youth smoking in communities with youth access interventions and control communities; all four controlled studies included in that review reported merchant compliance with minimum age restrictions (i.e. asking for identification and not selling to persons underage) of 82% or higher, yet failed to demonstrate decreased smoking by young people. The other study identified in the review was a cross-sectional study which examined the differential effects of cigarette prices, clean indoor air laws, and youth access laws on smoking uptake among US high school students' it found that merchant compliance with youth access laws reduced the probability of youth being in higher stages of smoking uptake ($p<0.05$). Moreover, it showed that the impact of compliance was greater for those who were in later stages of uptake; at earlier stages of smoking uptake, cigarettes may be more often obtained from friends and other social sources. The review authors conclude that access restrictions may have little impact on young people’s smoking behaviour and that the impact of access restrictions on smoking behaviour may depend upon the stage of smoking uptake. Due to the low number of studies, however, it is not possible to draw definitive conclusions. Nearly all of the studies looked at the effect of interventions on illegal sales

			rather than individual smoking behaviour or prevention of uptake. In that regard, interventions that are multi-component in nature and with active and ongoing enforcement are the most successful. Specifically, findings revealed that combined, successive retail inspections, public prosecutions and awareness of minimum age restrictions decrease illegal sales of tobacco. Overall, the authors conclude that when access interventions are applied in a comprehensive manner, they can affect young people's access to tobacco. However, lack of enforcement and the ability of youth to acquire cigarettes from social sources may undermine the effectiveness of these interventions. Delivery: Evidence from four positively reviewed studies showed that site/setting does influence effectiveness of access restriction measures. In particular, the presence of self-service displays and unlocked vending machines may increase young people's ability to access tobacco products. The review also highlights the importance of compliance.
Stead 2005 Title: Interventions for preventing tobacco sales to minors Cochrane review	Tobacco policies Early adolescence Adolescence Community USA (22), Australia (8), UK (3), Canada (2)	35 studies (17 pre/post without a comparison group, 9 RCTs, 5 controlled trials, 2 trials partly randomised, 2 time series) Follow-up not consistently reported; 24 studies appear to have had a follow-up of 12 months or more	Tobacco use: Various interventions including warnings and fines for retailers who illegally make sales to underage youth were shown to reduce the proportion of retailers who are willing to sell tobacco during compliance checks. However, it was difficult to demonstrate a clear effect on young smokers' perceptions of how easily they can buy cigarettes, or on their smoking behaviour. Four of seven trials where smoking prevalence was compared against a control area found some evidence of an effect of intervention on youth smoking behaviour. One study found a lower smoking prevalence in those who were

			in 7th grade at baseline, but the effect was not sustained at the end of the 32 month study. There were no significant differences among the other age groups. Few of the communities studied in this review achieved sustained levels of high compliance. This may explain why there is limited evidence for an effect of intervention on youth perception of ease of access to tobacco, and on smoking behaviour. Delivery: Giving retailers information was less effective in reducing illegal sales than active enforcement and/or multicomponent educational strategies. One study showed that merchant participation in voluntary compliance programmes was low. There is evidence that interventions to educate retailers can improve compliance, but the successful interventions used a variety of strategies, including personal visits and mobilising community support. No strategy achieved complete, sustained compliance.
Thomas 2008 Title: Population tobacco control interventions and their effects on social inequalities in smoking: systematic review Systematic review Quality: Good	Tobacco policies Pre-natal and early childhood Middle childhood Early adolescence Adolescence Adulthood School Community Workplace Media US, Canada, New Zealand, Australia, Finland, UK, Sweden, Netherlands, Spain, France, Israel, Hong Kong, South Africa, Taiwan	84 studies (variety of study designs, mostly econometric analyses and cross-sectional before and after studies) Follow-up not consistently reported	Tobacco use: The authors conclude that population-level tobacco control interventions have the potential to benefit more disadvantaged groups and thereby contribute to reducing health inequalities. Concerning access restrictions, restrictions on sales to minors may be more effective in girls and younger children. With regard to pricing, increasing the price of tobacco products may be more effective in reducing smoking among lower-income adults and those in manual occupations, although there was also some evidence to suggest that adults with higher levels of education may be more price-sensitive. Young people aged under 25 are also affected by price increases, with some evidence that boys and non-

			white young people may be more sensitive to price. All 20 studies restricted to adolescents or college students found that these groups were sensitive to price and concluded that increasing the price of tobacco products would reduce youth smoking. The only study comparing children within different age groups found that those aged 17 or 18-years-old were more sensitive to price increases than those aged between 13 and 16-years-old. Four studies found that boys aged 13–18 were more sensitive to price than girls. All three studies which examined effects by ethnicity found that black or Hispanic adolescents were more affected by price increases than their white counterparts. No studies provided evidence about possible differential effects by parental income, occupation or educational level.
Workplace interventions			
Thomas 2008 Title: Population tobacco control interventions and their effects on social inequalities in smoking: systematic review Systematic review Quality: Good	Workplace Pre-natal and early childhood Middle childhood Early adolescence Adolescence Adulthood School Community Workplace Media US, Canada, New Zealand, Australia, Finland, UK, Sweden, Netherlands, Spain, France, Israel, Hong Kong, South Africa, Taiwan	84 studies (variety of study designs, mostly econometric analyses and cross-sectional before and after studies) Follow-up not consistently reported	Tobacco use: The authors conclude that population-level tobacco control interventions have the potential to benefit more disadvantaged groups and thereby contribute to reducing health inequalities. In relation to smoking restrictions, no strong evidence of differential effects was found for smoking restrictions in workplaces and public places, although those in higher occupational groups may be more likely to change their attitudes or behaviour.
Webb 2009	Workplace	10 studies (4 RCTs, 2 non-randomised trials, 3 randomized	Alcohol use: The authors conclude that there were

Title: A systematic review of work-place interventions for alcohol-related problems Systematic review Quality: Acceptable	Adulthood Age not specified Workplace USA (8), Australia (1), Sweden (1)	trials with no control groups, 1 time-series evaluation with comparison group) Follow-up not consistently reported	mixed results with regard to intervention effectiveness of work-place alcohol interventions. Only one study reported no statistically significant results. Seven studies reported significant reductions in various self-report measures of alcohol consumption or alcohol-related problems. One study reported significantly reduced consumption for women, but not for men. With regard to binge drinking, one study reported significantly reduced desire to binge drink, and another study reported significant decreases in binge drinking. One study found significantly increased perceptions of 'riskiness' of alcohol consumption, while another reported no significant effects on health beliefs. The literature review revealed few methodologically adequate studies of work-place alcohol interventions. Study designs, types of interventions, measures employed and types of work-places varied considerably, making comparison of results difficult. However, it appears from the evidence that brief interventions, interventions contained within health and life-style checks, psychosocial skills training and peer referral have potential to produce beneficial results.