

Evidence Summary:  
Public health interventions in  
response to substance misuse  
(drugs) to support parents,  
their children and young  
people up to 25 years

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<b>Contents</b>	<b>Page no.</b>
<b>1. Introduction</b>	<b>2</b>
The rationale and process for identifying and summarising evidence of effectiveness	
<b>2. Evidence summaries</b>	<b>7</b>
Pregnancy, maternal health, parenting and child outcomes	
Substance affected families	
Parenting programmes	
Vulnerable and disadvantaged young people	
Prevention of onset of drug use	
School-based interventions	
Media campaigns	
Secondary prevention	
<b>3. Evidence statements</b>	<b>52</b>
<b>4. References</b>	<b>108</b>

## Introduction

### The rationale and process for identifying and summarising evidence of effectiveness

Evidence of effectiveness from research studies helps us to identify areas for effective action. While the outcomes of individual primary studies are important, these may be atypical, and potentially biased. Such issues may only become apparent when studies are repeated or interventions rolled out on a wider scale.

Evidence and evidence-informed recommendations from systematic reviews and reviews of reviews seek to reduce bias by providing an overview of the findings of a number of studies. These form the basis of 'highly processed evidence', for example practice guidelines, produced by organisations such as the National Institute for Health and Care Excellence (formerly the National Institute for Health and Clinical Excellence) (NICE). While we acknowledge that other sources of evidence may be available, because of time constraints and in the interests of quality assurance, the evidence presented here is primarily 'highly processed evidence' as opposed to primary outcome studies.

Due to inevitable gaps in strong scientific evidence, the feasibility and desirability of adopting a purely evidence-based approach to health improvement and reducing health inequalities are limited. Activities that lack a strong evidence base may have important contributions to make to the overall impact as part of a package of interacting activities. In judging whether to include certain possible activities it may be useful to draw on the NHS Health Scotland approach, whereby plausible theory and ethical principles are used to guide decision-making, in addition to the available evidence (see Tannahill, A. 'Beyond evidence – to ethics: a decision-making framework for health promotion, public health and health improvement.' *Health Promotion International* 2008;23:380–90 at <http://heapro.oxfordjournals.org/cgi/reprint/23/4/380>).

### Context

Problem drug use is typically chaotic and unpredictable, with harmful health and social consequences common. It is strongly associated with socio-economic deprivation and other factors that may affect parenting capacity.

Parental problem drug use can, and often does, compromise children's health and development at every stage from conception, infancy and onwards through adolescence. Adverse consequences for children are typically multiple and cumulative, including a wide range of emotional, cognitive, behavioural and other psychological problems (ACMD, 2006).

This evidence summary focuses on the effectiveness of public health interventions in response to substance misuse (drugs) to support parents, their children and young people up to 25 years. This briefing presents an overview of highly processed evidence related to public health interventions in response to drug misuse to support children and families affected, and to reduce the risk

of harm. Consideration of this evidence should also take account of the existing policy context, legislation and current practices in Scotland.

Interventions may seek to target non-users, in order to prevent or delay the onset of drug use (primary prevention); existing users, with a view to reducing the harms associated with drug use (secondary prevention); or both, to address drugs use problems. However, this summary will not consider the pharmacological treatment or clinical interventions of problem drug use as this is beyond the role of nursing practice.

This evidence overview was undertaken between June 2012 and July 2013. The evidence reviewed here has been drawn from 22 sources that are fully cited in the reference section of this document. It has been drawn from the following key sources:

- one review of effectiveness evidence informing the development of NICE Public Health Guidance Intervention 4: *Community-based interventions to reduce substance misuse among vulnerable and disadvantaged children and young people*
- four Cochrane Collaboration Reviews
- 17 systematic reviews/review of reviews.

Where appropriate, the evidence is grouped by subheadings taken from the reviews. A summary of the evidence is provided and linked to the related evidence statement(s). These evidence statements have been derived from the full reviews and, in most instances, to ensure the integrity of the information presented and with the permission of the authors the text has been reproduced word for word from the original source in the evidence statements section.

Due to the additional and specific complexities experienced during pregnancy as a result of substance misuse, this briefing should be read in conjunction with the evidence summary *Pregnancy and complex social factors*, which includes reference to substance misuse. This is available from:

[www.mnic.nes.scot.nhs.uk/children,-young-people-families/promoting-health-addressing-inequality/evidence-base.aspx](http://www.mnic.nes.scot.nhs.uk/children,-young-people-families/promoting-health-addressing-inequality/evidence-base.aspx) (under heading 'Public Health').

This publication presents a summary of the highly processed evidence related to the provision of additional support during pregnancy to improve the use of antenatal care services among women who experience complex social factors. Additional support means that which is offered over and above routine care.

Other key sources of information and guidance which contextualise the evidence presented here include the following:

## Documents that are specific to Scotland:

### Drugs

#### **The Scottish Government (updated 2013). *Getting Our Priorities Right (GOPR)***

Updated good practice guidance for all agencies and practitioners working with children, young people and families affected by problematic alcohol and/or drug use. Available from: [www.scotland.gov.uk/Publications/2013/04/2305/0](http://www.scotland.gov.uk/Publications/2013/04/2305/0)

#### **Scottish Government (2008) *The Road to Recovery: A New Approach To Tackling Scotland's Drugs Problem***

The national strategy focuses on recovery but also looks at prevention, treatment and rehabilitation, enforcement and protection of children. Available from:

[www.scotland.gov.uk/Publications/2008/05/22161610/0](http://www.scotland.gov.uk/Publications/2008/05/22161610/0)

#### **Advisory Council on the Misuse of Drugs (ACMD) (2006) *Hidden Harm***

This reports the findings of the Advisory Council on the Misuse of Drugs (ACMD) inquiry on children of problem drug users in the UK. Available from: [www.gov.uk/government/publications/amcd-inquiry-hidden-harm-report-on-children-of-drug-users](http://www.gov.uk/government/publications/amcd-inquiry-hidden-harm-report-on-children-of-drug-users)

#### **Social Services Knowledge Scotland (website)**

To find and share resources for staff providing support to people affected by problem drug or alcohol use, along with information for service users, their carers and families, please visit the alcohol and drugs area on the Social Services Knowledge Scotland (SSKS) website.

The site seeks to reflect recent policy, evidence and good practice in relation to alcohol and drugs, and is intended to encourage the sharing of learning amongst national agencies, ADPs and services working throughout Scotland.

Available here: [www.ssk.org.uk/topics/drugs-and-alcohol.aspx](http://www.ssk.org.uk/topics/drugs-and-alcohol.aspx)

### Early Years

#### **The Scottish Government (2011). *A New Look at Hall 4: The Early Years: Good Health for Every Child***

This guidance sets out the way forward for the successful delivery of Health for All Children (Hall 4) in the early years. The Health for All Children document, (also known as 'Hall 4'), offers guidance to support the implementation of the recommendations of the Royal College of Paediatrics & Child Health's fourth review of routine child health checks, screening and surveillance activity. The review examined the evidence for existing child health surveillance and screening activity, including the purpose, content and timing of interventions. It also took into account the impact of social, economic and environmental factors on children's health.

Available from: [www.scotland.gov.uk/Publications/2011/01/11133654/0](http://www.scotland.gov.uk/Publications/2011/01/11133654/0)

#### **The Scottish Government (2011). *A Refreshed Framework for Maternity Care in Scotland***

The refreshed framework is designed to address all care from conception, throughout pregnancy and during the postnatal phase. The term 'maternity care' in this document is intended to refer to any NHS service that provides maternity care to women and their babies, including care provided by midwives, obstetricians, general practitioners, anaesthetists, paediatricians, neonatologists, health visitors, pharmacists, optometrists, dentists and allied health professionals.

Effective collaboration and communication between all of these disciplines and services, and particularly between primary care, public health nursing and maternity services; is essential for person-centred, safe and effective maternity care.

Available from: [www.scotland.gov.uk/Publications/2011/02/11122123/0](http://www.scotland.gov.uk/Publications/2011/02/11122123/0)

**The Scottish Government (2008). *The Early Years Framework*.**

*The Early Years Framework* defines early years as pre-birth to 8 years old in recognition of the importance of pregnancy in influencing health, social, emotional and cognitive outcomes for children and families. The Framework, which is based on principles of early intervention and the tailored delivery of services, outlines the steps that the Scottish Government, local partners and practitioners in Early Years services need to take to maximise positive opportunities for children so that they get the best start in life.

Available from: [www.scotland.gov.uk/Publications/2009/01/13095148/2](http://www.scotland.gov.uk/Publications/2009/01/13095148/2)

**The Scottish Government (2008) *A guide to Getting it right for every child (2008)*.**

'Getting it right for every child' (GIRFEC) is the national cross-cutting programme which outlines an approach to working with children and families in Scotland. Based on individual need, the wellbeing of the child is placed at the centre of the approach, which establishes the principle of giving all children and young people the best possible start in life as a priority for all services.

GIRFEC builds upon the universal services of health and education and sets out a national programme of transformational change to ensure that each child is: safe; healthy; active; nurtured; achieving; respected; responsible; and included. These principles inform or influence choices and action across a wide range of roles and contexts.

As a national approach to meeting the needs of all children and young people, GIRFEC is the vehicle to deliver the other key national action plans and frameworks in the early years.

Available from: [www.scotland.gov.uk/Topics/People/Young-People/childrenservices/girfec](http://www.scotland.gov.uk/Topics/People/Young-People/childrenservices/girfec)

**Guidance**

In 2007 the National Institute for Health and Care Excellence (formerly the National Institute for Health and Clinical Excellence) (NICE) published *Public Health Guidance Intervention 4: Community-based interventions to reduce substance misuse among vulnerable and disadvantaged children and young people*. Available from: <http://guidance.nice.org.uk/PH4>

Additional information that is relevant to the Scottish context is provided in the NHS Health Scotland Commentary on NICE *Public Health Intervention Guidance on community-based interventions to reduce substance misuse among vulnerable and disadvantaged children and young people* (December 2007). Available from: [www.healthscotland.com/documents/2381.aspx](http://www.healthscotland.com/documents/2381.aspx)

## **Europe**

European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) Thematic Papers (2013): *North American drug prevention programmes: are they feasible in European cultures and contexts?* Available from: [www.emcdda.europa.eu/publications/thematic-papers/north-american-drug-prevention-programmes](http://www.emcdda.europa.eu/publications/thematic-papers/north-american-drug-prevention-programmes)

EMCDDA Selected Issue (2012): *Pregnancy, childcare and the family: key issues for Europe's response to drugs.* Available from: [www.emcdda.europa.eu/publications/selected-issues/children](http://www.emcdda.europa.eu/publications/selected-issues/children)

EMCDDA (2009) Eurosurveillance Review: Drugs & Pregnancy – challenges for public health. Available from: [www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19142](http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19142)

EMCDDA Best practice portal:

The best practice portal is a resource for professionals, policymakers and researchers in the drug field. The portal provides information on the available evidence on drug-related prevention, treatment and harm-reduction, focusing on the European context.

Specific thematic modules:

'Prevention interventions for families'. Available from: [www.emcdda.europa.eu/best-practice/prevention/families](http://www.emcdda.europa.eu/best-practice/prevention/families)

'Prevention interventions for school students'. Available from: [www.emcdda.europa.eu/best-practice/prevention/school-children](http://www.emcdda.europa.eu/best-practice/prevention/school-children)

## **International**

### ***United Nations Convention on the Rights of the Child***

*The UN Convention on the Rights of the Child* is an international human rights treaty which grants all children and young people a comprehensive set of rights. The Convention comprises 54 articles that cover different aspects of childhood, rights and freedoms. All children and young people up to the age of 18 years are entitled to all rights in the Convention. Some groups of children and young people, for example those living away from home, and young disabled people, have additional rights. The UNCRC was ratified by the UK Government on 16 December 1991.

Available from: [www.unicef.org/crc/](http://www.unicef.org/crc/)

Articles 9:1, 19 and 27 are relevant here, (see: [www.ohchr.org/EN/ProfessionalInterest/Pages/CRC.aspx](http://www.ohchr.org/EN/ProfessionalInterest/Pages/CRC.aspx)).



## Evidence summaries

### Home visits during pregnancy and after birth for women with an alcohol or drug problem

#### Context

This summary provides an overview of the evidence included in a recent Cochrane review by Turnbull and Osborn, *Home visits during pregnancy and after birth for women with an alcohol or drug problem* that was published in 2012. This review is available from: [www.thecochranelibrary.com](http://www.thecochranelibrary.com)

The main aim of the review was to establish the effects of home visits during pregnancy and/or after birth in response to women with a drug or alcohol problem. The reviewers searched the Cochrane Pregnancy and Childbirth Group's Trials Register, CENTRAL, MEDLINE, EMBASE, CINAHL and PsycINFO, supplemented by searches of citations from previous reviews and trials and contact with experts.

Studies using random or quasi-random allocation of pregnant or postpartum women with a drug or alcohol problem to a home visiting intervention were included along with trials that enrolled high-risk women, 50% of whom were reported to use drugs or alcohol. Findings derived from seven studies, are summarised below.

The reader should note the following:

- The reviewers advise that it has not been possible to differentiate the nature of the home-based interventions, i.e. whether they were non-judgemental and supportive, or directive in nature.
- None of the studies provided specific home-based drug and alcohol interventions, although three studies (Dakof et al., 2003; Grant et al., 1996; and Quinlivan et al., 2000), reported linking clients to out of home drug and alcohol treatment services.
- Of the seven included studies, six provided home visits only in the postnatal period and compared home visits with no home visits.
- In four of the seven studies visits were made by nurse practitioners.

A summary of the reviewed evidence is provided, and with the permission of the authors evidence statements have been generated from the original text.

#### Evidence summary

##### The nature of the included studies

Only one of the seven studies included antenatal home visiting. However, as this was confined to two visits in the two weeks prior to delivery by a community health nurse, this was not considered to be a significant antenatal intervention.

[See evidence statement 1](#)

##### The impact of home visiting on drug- and alcohol-related outcomes

Evidence indicates that overall, home visiting did not increase the retention of

mothers in substance misuse treatment programmes, nor decrease their illicit drug or alcohol use.

[See evidence statement 2](#)

### **Home visiting and the impact on pregnancy and puerperium outcomes**

There was insufficient evidence about antenatal home visiting interventions and their impact on pregnancy outcomes to enable comment.

[See evidence statement 3](#)

### **The impact of home visiting on infant/child outcomes**

Evidence from several studies indicated that home visiting had no impact upon breastfeeding, primary immunisation completion, nor the keeping of infant-related health appointments of drug-using mothers. Home visiting did not impact upon cognitive outcomes at 3 years, although an increase in psychomotor delay was reported. Longer-term outcomes related to the child's school years or enhanced life skills were not fully reported.

[See evidence statement 4](#)

### **The impact of home visiting on psychosocial outcomes**

Evidence from three studies indicated that home visiting had no impact upon maternal depression, the need for children to be taken into care or infant death. Home visiting resulted in a reduction in the need to access child protection services and a significant decrease in the non-use of postpartum contraception. Longer-term outcomes were not reported.

[See evidence statement 5](#)

### **The impact of home visits for less than six months**

Evidence from one study suggests that home visiting provided for less than six months enhanced enrolment in a drug treatment programme and retention in a programme at four weeks, but not at 90 days.

[See evidence statement 6](#)

### **The impact of prolonged home visits for at least six months**

Evidence from six studies demonstrated the lack of impact of prolonged home visits upon mother's infant health-related appointment-keeping. Overall, home visiting for at least six months had no significant impact upon the drug treatment behaviour of mothers. One study reported a reduction in the use of child protection services while others indicated a significant reduction in maternal stress scores related to parenting. Another indicated an increase in maternal use of postpartum contraception.

[See evidence statement 7](#)

### **The impact of the frequency of a home visiting intervention**

#### **The impact of at least weekly home visits**

Evidence from four studies showed that weekly home visiting did not have a significant impact on continued drug use. Although one study indicated greater initial enrolment in drug treatment programmes and improvement in treatment retention at four weeks, this was not sustained at 90 days (and thus reflected earlier findings from another study). Weekly home visiting did not impact upon

programme retention at six months. Weekly home visiting did not improve the keeping of child-related primary healthcare appointments, nor did it impact upon child outcomes.

One study showed that the use of child protection services was reduced among mothers who were visited weekly at home and another indicated reduced maternal scores indicating reduced stress and risk related to potential child abuse.

[See evidence statement 8](#)

### **The impact of less than weekly home visits**

Evidence from three studies suggest home visits that were less frequent than weekly did not impact upon continued maternal substance misuse and retention in treatment. Less than weekly home visits did not impact upon breastfeeding or a mother's completion of childhood vaccination schedules by six months.

Less than weekly home visiting had no impact on maternal depression nor aspects of child behaviour. One study reported a reduction in child neglect and removal to care and a reduction in maternal failure to use postpartum contraception.

[See evidence statement 9](#)

### **The impact of home visits by nurses**

In four studies nurses provided home visits. There was no evidence of effectiveness on maternal drug use or treatment-seeking behaviours, although one study reported an increase in maternal use of contraception. Two studies found no difference in failure to breastfeed or in risk of incomplete vaccination schedule at six months.

Study findings suggested no difference in improving appointment schedules for infant primary care or maternal depression, and only just significant differences in reducing child behavioural problems. One study reported a small reduction in neglect and enforced care. Another reported a significant reduction in the child abuse potential while others found no difference in the number of infant deaths.

[See evidence statement 10](#)

### **The impact of home visits by trained social workers**

No study reported using trained social workers to provide home visits.

[See evidence statement 11](#)

### **The impact of home visits by trained counsellors**

One US-based study reported on a goal-orientated programme administered by trained 'black' specialists with prior experience in drug treatment services. Findings indicated a significant reduction in failure to enrol in a drug treatment programme and a significant reduction in failure of retention in treatment at four weeks, but this was not sustained at three-month follow-up.

[See evidence statement 12](#)

**The impact of home visits by trained lay workers**

Findings from two studies of home visits by trained lay workers indicated no difference in substance misuse, nor engagement in drug treatment programmes. No differences related to child outcomes were found, although the need for child protection services was significantly reduced.

[See evidence statement 13](#)

**The impact of home visits by a multidisciplinary team**

No study reported using a multidisciplinary team to provide home visits.

[See evidence statement 14](#)

**The impact of home visits providing a developmental intervention**

Three US-based studies provided a developmental intervention as a component of the home visiting programme. None of these demonstrated a significant impact on the maternal and child outcomes with the exception of reduced involvement of child protection services, and a reduced risk of child abuse.

[See evidence statement 15](#)

The focus of the studies identified in this review were of postnatal home visits of women with substantial substance misuse problems. The authors note that the intensity and duration of interventions may have been insufficient to demonstrate the impact of home visiting interventions. Findings indicate that home visits do not improve the drug or alcohol use of new mothers. However, methodological limitations, including extensive loss to follow-up, may limit the generalisability of study findings.

The implications for practice noted by the authors include that, given the complex psychosocial problems experienced by pregnant and postpartum women who use drugs and alcohol, trained social workers have the potential to address multiple issues such as housing, access to care and advocacy needs. Furthermore, a multidisciplinary team approach is recommended as it may involve using a case management model to enable a better response to the individual needs and circumstances of pregnant women with an alcohol or drug problem.

Turnbull and Osborn (2012) conclude that while brief intensive interventions by trained counsellors may encourage treatment attendance in the short term, there is insufficient evidence to recommend the routine use of home visits, any particular model of home visits or any specific home interventions for women with a drug or alcohol problem.

**Integrated programmes for mothers with substance use issues****Context**

This summary provides an overview of the evidence from Milligan et al. (2010) *Maternal substance use and integrated treatment programs for women with substance abuse issues and their children: a meta-analysis*.

This paper examines the impact of integrated treatment programmes on maternal substance use outcomes.

Milligan et al. (2010) state that integrated addiction treatment programmes, as well as addressing women's substance use problems, aim to respond to physical, social, and mental health needs and the child's needs through prenatal services; parenting programmes; childcare and other child-centred services. They offer a theoretical rationale for such approaches by describing that integrated treatment programmes may enhance the impact of substance use treatment in reducing barriers to engagement and retention in treatment, combining effects by address multiple problems and increasing motivation to reduce substance use through parenting and child development services.

Twenty-two studies, dated from 1992 to 2008, of mostly low quality were included in the review.

This evidence summary should be read in conjunction with the summaries for the following three papers:

1. Niccols et al. (2010) *Maternal Mental Health and Integrated Programs for Mothers With Substance Abuse Issues.*
2. Niccols et al. (2012) *Integrated programs for mothers with substance abuse issues: A systematic review of studies reporting on parenting outcomes.*
3. Niccols et al. (2012) *Integrated programs for mothers with substance abuse issues and their children: A systematic review of studies reporting on child outcomes.*

## **Evidence summary**

### **The impact of integrated programmes on maternal substance use**

There is evidence from multiple low- to moderate-quality studies that integrated treatment programmes for women with substance misuse problems are effective in reducing drug and alcohol use.

One moderate-quality study found women who had participated in integrated treatment programmes were more likely than those not in treatment to have negative urine toxicology tests during pregnancy. One low-quality study found women who had participated in integrated treatment were less likely to be using drugs or alcohol at the time of birth compared with women not in treatment.

Several low-quality studies found a decrease in the severity of substance misuse and days of use by women in integrated treatment programmes.

These results were measured against the possibility that some data may have been missing and multiple variables that may have affected results were assessed. Results were not affected. Milligan et al. (2010) note that analyses may have been underpowered due to missing data and as all studies could not be included in all analyses.

[See evidence statement 1](#)

### **Studies comparing integrated programmes to non-integrated programmes**

Evidence from multiple low- to moderate-quality studies indicates no difference in improved outcomes for women who participate in integrated substance misuse treatment programmes compared with non-integrated treatment programmes. Measures included urine toxicology screens and self-reported abstinence. Although some positive effects were found in relation to reduced substance use in favour of integrated treatment programmes, results were not statistically significant.

[See evidence statement 2](#)

Milligan et al. (2010) conclude that these findings are consistent with other research that has shown that substance use treatment programmes are generally effective in reducing substance use. In surmising the lack of difference between results for integrated versus non-integrated treatment programmes, they suggest that the measures used to assess the substance use outcomes of women may not have fully reflected changes made by women due to the complexity of substance use, for example the quantity of use or patterns of use (i.e. reductions, not solely abstinence).

The authors further highlight limitations encountered in conducting the review including the limited availability of studies incorporating a comparison group against which to compare results of the intervention, the low quality of studies and missing information/ data.

### **Integrated programmes for mothers with substance use issues: maternal mental health**

#### **Context**

This summary provides an overview of the evidence from Niccols et al. (2010) *Maternal Mental Health and Integrated Programs for Mothers With Substance Abuse Issues*.

Funded by the Canadian Institute of Health Research (CIHR), the importance of synthesising research in this area was identified given the recognition for treatment programmes to address women's physical, social and mental health needs as well as their child's needs; the increased funding provided for integrated programmes; growth of programmes being developed; and the number of evaluations now completed. The literature search was extensive across published research, technical reports and unpublished data.

The authors focused on the impact on maternal mental health of integrated programmes for pregnant or parenting women with substance use problems. A meta-analysis of relevant studies was conducted. Programmes had to include at least one substance use treatment and at least one child (aged under 16 years) treatment service (e.g. prenatal care, childcare or parenting classes). Only five studies of low to moderate quality were identified for inclusion in the review.

This evidence summary should be read in conjunction with the summaries for the following three papers:

1. Milligan et al. (2010) *Maternal substance use and integrated treatment programs for women with substance abuse issues and their children: a meta-analysis.*
2. Niccols et al. (2012) *Integrated programs for mothers with substance abuse issues: A systematic review of studies reporting on parenting outcomes.*
3. Niccols et al. (2012) *Integrated programs for mothers with substance abuse issues and their children: A systematic review of studies reporting on child outcomes.*

### **Evidence summary**

#### **The effect of integrated programmes on maternal mental health**

No evidence was found to enable assessment of the impact of integrated addiction programmes on maternal mental health compared with no treatment. [See evidence statement 1](#)

#### **Comparing integrated programmes to non-integrated programmes**

There was evidence from four of the five available studies of low to moderate quality undertaken since 1999 to suggest that integrated programmes are slightly more effective at one year follow-up in improving maternal mental health when compared with non-integrated programmes for women who are pregnant or parenting with substance use problems.

[See evidence statements 2 and 3](#)

Niccols et al. (2010) conclude that findings from this review suggest that integrated programmes offer a small advantage over non-integrated programmes in improving maternal mental health, possibly by addressing women's parenting needs, their children's needs and their role as mothers. They cite Luther et al. (2007) in defining this as encouraging in terms of the preventive potential in response to many vulnerable children.

### **Integrated programmes for mothers with substance use issues: parenting outcomes**

#### **Context**

This summary provides an overview of the evidence from Niccols et al. (2012) *Integrated programs for mothers with substance abuse issues: A systematic review of studies reporting on parenting outcomes.*

This review focused on parenting outcomes and was part of a wider systematic review of integrated substance misuse programmes. Specific research questions were 1) Are integrated programmes more effective than addiction treatment-as-usual in improving parenting outcomes? and 2) Are some integrated programme characteristics associated with better parenting outcomes than others?

The authors define integrated programmes as substance abuse treatment programmes that provide comprehensive services which address substance abuse as well as maternal and child wellbeing through prenatal services, parenting programmes, childcare and/or other child-centred services in one setting.

This evidence summary should be read in conjunction with the summaries for the following three papers:

1. Milligan et al. (2010) *Maternal substance use and integrated treatment programs for women with substance abuse issues and their children: a meta-analysis.*
2. Niccols et al. (2010) *Maternal Mental Health and Integrated Programs for Mothers With Substance Abuse Issues.*
3. Niccols et al. (2012) *Integrated programs for mothers with substance abuse issues and their children: A systematic review of studies reporting on child outcomes.*

### **Evidence summary**

#### **The impact of integrated programmes compared with addiction treatment-as-usual in improving parenting outcomes**

There is evidence from three low- to moderate-quality studies that integrated programmes for mothers with substance misuse issues are marginally more effective in improving parenting outcomes in the short term than treatment-as-usual. It is worth noting that these integrated programmes specifically added a relational psychotherapy intervention to substance misuse treatment.

One further low-quality study did not find any difference in improvements in the involvement of child protection services between integrated treatment programmes and treatment-as-usual.

[See evidence statement 1](#)

#### **The impact of specific integrated programme characteristics on better parenting outcomes**

Evidence from several studies reporting on parenting outcomes suggests that residential programmes are more effective than outpatient programmes for mothers with substance misuse issues and that including a maternal mental health service improves effectiveness of programmes.

The authors provide additional details on three studies. One study (Kern et al., 2004), of unknown quality, indicates evidence that reducing mothers' depressive symptoms improves parenting competence, isolation, attachment and role. Another study (Knight and Wallace, 2003) found that if children reside in the treatment facility with their mothers this improves the likelihood of mothers retaining custody at the end of treatment. A further low-quality study (Suchman et al., 2010 and 2011) found that attachment-based parenting interventions showed greater improvements among mothers' caregiving behaviour, functioning and sensitivity when compared with parent education-only intervention at the end of three months treatment period; however no difference between the groups was found at six-week follow-up.



[See evidence statement 2](#)

Niccols et al. (2012) conclude that the available evidence suggests that integrated programmes are associated with more favourable parenting skills outcomes compared with treatment as usual, although improved effects were small and no differences were found between groups in relation to their involvement with child protection services. The authors note that these findings have positive implications for interventions aimed at minimising the risks to parenting and to improve associated outcomes for children of women with substance abuse issues.

While Niccols et al. (2012) report that these findings are consistent with other reviews of substance abuse treatment for women, they note the following limitations of the review: sample sizes were small, available data on clients, interventions and parenting outcomes was limited (which did not permit analysis of specific programme characteristics that may influence positive treatment outcomes). In addition, measures were self-reported rather than observational, with few comparison group studies, and study quality was not high (and it was not known whether this was due to study design or reporting of study quality elements).

## **Integrated programmes for mothers with substance use issues: child outcomes**

### **Context**

This summary provides an overview of the evidence from Niccols et al. (2012) *Integrated programs for mothers with substance abuse issues and their children: A systematic review of studies reporting on child outcomes*.

The paper outlines maternal substance abuse as a serious problem for child welfare and that comprehensive, integrated services may offer an effective solution to the barriers, risks and potential negative outcomes experienced by both women and their children.

The authors defined integrated programmes as being substance abuse treatment that provides comprehensive services that address substance use as well as maternal and child wellbeing through prenatal services, parenting programmes, childcare or other child-centred services in a centralised setting. This systematic review of relevant studies focused on the impact of such integrated programmes on child outcomes (child development, growth, and emotional and behavioural functioning).

Three research questions were identified in this paper, as follows: i) What is the impact of integrated programmes on child outcomes from intake to post-test? ii) Are integrated programmes more effective than no treatment in improving outcomes for children? iii) Are integrated programmes more effective than non-integrated programs in improving outcomes for children?

The literature search included online bibliographic databases for relevant

studies, reference lists of these studies, relevant journals and grey literature. In the study characteristics Niccols et al. (2012) report that 13 studies of low to moderate quality were included in the review. Over half of all participants in many studies did not complete the treatment programme, which may have affected the study results.

This evidence summary should be read in conjunction with the summaries for the following three papers:

1. Milligan et al. (2010) *Maternal substance use and integrated treatment programs for women with substance abuse issues and their children: a meta-analysis.*
2. Niccols et al. (2010) *Maternal Mental Health and Integrated Programs for Mothers With Substance Abuse Issues.*
3. Niccols et al. (2012) *Integrated programs for mothers with substance abuse issues: A systematic review of studies reporting on parenting outcomes.*

## **Evidence summary**

### **The impact of integrated programmes on child outcomes from intake to post-test**

There is evidence from six low-quality studies that integrated programmes for mothers with substance use issues positively affect outcomes for children. Developmental test scores for infants of 6 to 24 months improved among those whose mothers participated in integrated programmes. Emotional and behavioural functioning also improved in the two studies that reported on this outcome.

[See evidence statement 1](#)

### **The impact of integrated programmes compared with no treatment in improving outcomes for children**

There is evidence from two studies (one low quality, one moderate quality) that developmental scores and growth parameters (weight, length and head circumference) improve for infants of 3, 6 and 12 months whose mothers participate in integrated programmes compared with infants of mothers with substance use issues but not in treatment, notably evidence suggests that scores are similar to those for infants of non-users. Evidence from one study supports the effectiveness of integrated programmes for poly-drug-using adolescent mothers, and one study of women who refused treatment.

[See evidence statement 2](#)

### **The impact of integrated programmes compared with non-integrated programmes in improving outcomes for children**

There is limited evidence from three studies (one of low quality and two of moderate quality) to suggest slightly greater effectiveness of integrated programmes on child developmental and emotional/ behavioural functioning compared with non-integrated approaches for mothers with substance use issues.

[See evidence statement 3](#)

Niccols et al. (2012) conclude that integrated programmes for women with

substance abuse issues and their children are associated with a positive impact on child development, growth, emotional and behavioural functioning. They suggest that such an intervention could therefore reduce the risks to children of substance-using mothers, offering long-term benefit to their health and social outcomes.

## **Prevention for children from substance-affected families**

### **Context**

The summary below provides evidence from Broning et al. (2012) *Selective prevention programs for children from substance-affected families: a comprehensive systematic review*. The aim of the paper was to provide further evidence on prevention programmes designed specifically for children with a substance-using parent. Child outcomes are the focus of this review (e.g. child functioning, child substance-use) as well as family attributes such as family cohesion.

The literature search for relevant studies was conducted across scientific databases for the period 1994 to 2009. Of the 13 included studies, 9 primary prevention programmes were evaluated. The target age of participants was 0–17 years and all studies were conducted in the United States. Three intervention types were identified: school (four programmes with no parental involvement), community-based (one programme) and family-oriented intervention (four programmes) – with the latter also reporting outcomes for parents as well as the child participants. The design and methodology of included studies were assessed as being of mostly good or very good quality (8 of 13).

The most frequent outcomes measured were knowledge, self-worth, coping skills and social behaviour.

### **Evidence summary**

#### **Own reduction of substance consumption or abstinence**

No evidence of effectiveness was found in relation to reduced substance use or abstinence among study participants in the three studies that reported against this outcome. One good-quality study reported no reduction in consumption among the prevention programme participants but did find an increase in the control group's consumption. In the one family-based long-term study, of very good quality, no effects were noted. With both the programme participant and control groups, substance consumption was found to be elevated compared with other population samples. In this same study, the risk of girls developing substance use disorder (SUD) in adolescence or young adulthood was elevated, whereas for males this risk was significantly reduced.

[See evidence statement 1](#)

#### **Improvement in coping strategies, social behaviours and self-worth**

There is good evidence of effectiveness across a range of studies of improvements in coping strategies for stressful and difficult times, and

pro-social behaviours among adolescents from substance-affected families who participate in targeted primary prevention interventions. Evidence in relation to self-worth was inconsistent across five US-based studies of mixed quality (with the better quality studies revealing no effects).

[See evidence statements 2–4](#)

### **Programme-related knowledge**

There was good evidence of improved levels of knowledge about alcohol, drugs, addiction, and their effects on families following the school-based interventions.

[See evidence statements 5](#)

### **Unexpected findings/ negative effects**

The author's note evidence of unexpected findings and unintended consequences or negative effects from the programmes.

The authors cite two good-quality studies where additional components such as mentorships were included, yet findings were inconsistent. In two further studies, one of good quality and one of low quality, findings related to changes in levels of loneliness or isolation reported were inconsistent. One other good-quality study unexpectedly found increases in medical complaints and diminished social integration for boys among programme participants. Positive effects were also found among the control group in one study, but this was not reported in all programmes.

[See evidence statement 6](#)

In their discussion of the findings of the review, Broning et al. (2012) conclude that although school, community and family-based interventions showed positive results in improving positive behaviours, coping skills and feelings among high-risk children and thus are effective in reducing substance use problems, studies remain small in number so findings are really only preliminary among this target population. They also note that as study participants were largely under the age of 12, many may not have yet consumed substances and this could explain the lack of reported reductions in substance use. While they note the mixed results do not permit the most promising primary prevention programme characteristics to be determined, the authors point to the value of integrating both parents and children from substance-affected families to achieve success.

## **Parenting programmes for prevention of substance misuse among under 18-year-olds**

### **Context**

This summary is an overview of evidence of effectiveness of parenting programmes in preventing or reducing drug use from a systematic review conducted by J. Petrie et al. (2007) *Parenting programmes for preventing tobacco, alcohol and drugs misuse in children under 18*.

The review's aim was to assess the effectiveness of parenting programme in preventing or reducing use, misuse or abuse of drug, alcohol or tobacco by children under the age of 18 compared with no intervention or other interventions.

A literature search of online databases was conducted and studies of parents with children under 18 in randomised control trials (RCTs), controlled trials and controlled before/ after (CBA) studies were included. Data extraction, analysis and quality assessment was assured by two reviewers. The reader should note that most of the 20 studies in this review took place almost exclusively in the United States and all were published over 10 years ago.

While the format of the parenting interventions varied widely, they could be grouped into three categories: i) in primary school, ii) focused on transition between primary and secondary school, and iii) secondary school and among adolescents. The evidence from the nine studies that reported on a combination of substance misuse behaviours (as opposed to solely alcohol- or tobacco-related behaviours) is summarised below.

## **Evidence summary**

### **Primary school interventions**

Only one controlled low-quality study included results related to drug consumption (Hawkins et al., 1999, *Preparing for the drug free years programme PDFY*). This study looked at the effect of behaviour management training for teachers and parents and social skills training for children on tobacco, alcohol and drug use. No evidence of effectiveness was found in reducing substance use at graduation when compared with the control group. However, improved academic achievement and reduced problem behaviours were reported among study participants.

[See evidence statement 1](#)

### **Transition from primary to secondary school**

Three moderate-quality studies focused on the prevention of tobacco, alcohol and drug use among children aged 11 to 13, i.e. at the transition stage between primary and secondary school, with activities involving and engaging parents. All three found a significant effect on reducing marijuana use. Two programmes involved homework activities designed to engage parents and the third intervention involved multiple parent–child sessions.

A further study of moderate quality targeted children with aggressive behavioural problems who were considered at risk of developing substance misuse problems or later social exclusion. The programme offered group-based parenting skills training either alone or alongside the classroom programme. Evidence of effectiveness on drug use was reported from group-based parenting skills training in both intervention approaches. The classroom-only programme was not successful in reducing substance use or problem behaviours.

[See evidence statement 2](#)

### **Adolescent programmes**

Four studies all conducted in the United States school system reported on interventions that focused on teenagers. One low-quality study reported outcomes separately for girls and boys and focused on resistance to drug abuse. The results showed no effect in girls' substance misuse, but among boys use reduced in both the school-based and the school-based-plus-parent involvement interventions. It is worth noting that results were strongest in the latter group which included homework tasks involving parents.

One poor-quality study that evaluated coping skills training with teenagers and their parents found that the addition of a parenting programme to the classroom-based intervention had a negative effect and increased the use of drugs (and alcohol) compared with a classroom-only based programme that proved effective at two-year follow-up.

Two good-quality studies reported a moderate reduction in the initiation of marijuana use from the addition of a parenting programme (evening sessions with their children and communication skills) to school-based life skills interventions.

[See evidence statement 3](#)

Petrie et al. (2007) conclude that despite the diverse nature of the studies, overall the evidence suggests that parenting programmes can be effective in reducing substance misuse in children. In addition, they highlight that the most effective interventions were those with pre-teen and early adolescent children. A key feature of these successful interventions was that the focus was not solely on the issue of substance use; rather the focus was on family relationships, social skills and personal responsibility, with parental engagement and commitment also important to success. Notably, programmes found to be least effective did not include active parental involvement.

Implications noted for practice include the need for programme staff to be sensitive to the needs of parents in order to ensure their motivation and involvement. Importantly, the transition from primary to secondary school appears to be the optimal time to intervene.

### **Community-based interventions to reduce substance misuse among vulnerable and disadvantaged young people**

#### **Context**

This summary provides an overview of *A review of community-based interventions to reduce substance misuse among vulnerable and disadvantaged young people* by Jones et al. (2006) of the National Collaborating Centre for Drug Prevention, Centre for Public Health, Liverpool John Moores University. This review was commissioned by NICE to inform Public Health Guidance 4 *Community based interventions to reduce substance misuse among vulnerable and disadvantaged young people* (NICE, 2007).

The summary below is synthesised from the evidence review rather than the

guidance as this is based on the studies of effectiveness using robust transparent quality-assured methodological processes of reviewing the evidence.

‘Substance misuse’ is herein defined as intoxication by – or regular excessive consumption of and/ or dependence on – psychoactive substances, leading to social, psychological, physical or legal problems. It includes problematic use of both legal and illegal drugs (including alcohol when used in combination with other substances).

The term ‘reduce substance misuse’ as used in NICE PH4 includes reducing the prevalence of drug misuse in the population. It should be taken to cover the prevention of substance misuse, not just a reduction in an individual’s consumption levels.

Community-based interventions are defined as interventions or small-scale programmes delivered in community settings, such as schools and youth services, and aim to change the risk factors for the target population.

Additional information that is relevant to the Scottish context is provided in the NHS Health Scotland Commentary on NICE Public Health Intervention Guidance 4 (December 2007): Available from: [www.healthscotland.com/documents/2381.aspx](http://www.healthscotland.com/documents/2381.aspx)

## **Evidence summary**

### **1. Young people with multiple risk factors (general at-risk)**

#### **Comparison of interventions delivered in community-based interventions and youth programme settings**

There is good evidence from one review to suggest that multicomponent community-based approaches with comprehensive programmes are more effective for high-risk youth at preventing, delaying, or reducing drug use than school and community programmes alone.

There is inconsistent evidence of mixed quality about the effectiveness of community-based interventions targeting high-risk youth. The evidence suggests that there are no overall effects of these programmes on the use of illicit drugs, tobacco or alcohol, mental health or behavioural outcomes in the immediate to long term. However, there is some evidence that they may produce reductions in use among existing users.

There is evidence from one good-quality study to suggest that motivational interviewing with video feedback has no effect upon delinquent, home or school behaviours and may actually decrease the young person’s perception of control over the consequences of their individual actions. One low-quality study suggests that after-school programmes can produce long-term reductions in delinquent behaviours.

Educational and skills-focused interventions may produce short- to long-term

increases in drug-related knowledge and attitudes, but there is inconsistent evidence about the effectiveness of youth work programmes in reducing substance use behaviours for young people at risk.

There is mixed evidence relating to the impact of case management interventions on outcomes for families. There is good evidence from one review to suggest that a community-based, family case management intervention can increase positive parenting skills in families with young children considered at risk. However, there is mixed evidence to suggest that a community-based programme including early intervention and case management services has no effect on family functioning or on substance use in the medium to long term; yet can produce short- to medium-term increase in substance use knowledge.

[See corresponding evidence statements 1–10; 13, 14 and 18](#)

### **Family-based interventions**

There is very good evidence to suggest that family-based interventions (including a tiered approach incorporating family support; specific and non-specific programmes; or school-based parent or family-focused programmes) can be effective in achieving a variety of positive outcomes, including long-term reductions in substance use and long-term improvements in parenting skills.

However evidence also suggests that family-based interventions have no effect on parents' stress levels, family conflict or adolescent refusal skills. Additionally, there is inconsistent evidence about the long-term effectiveness of these programmes on child development.

[See corresponding evidence statements 15, 16, 17](#)

For related outcomes such as school attendance, refusal skills or attitudes, aspirations or problem behaviours there is mixed-quality inconsistent evidence about the effectiveness of multi-component (i.e. combining school, family, youth services and/ or community-based) interventions in response to vulnerable or disadvantaged young people.

[See corresponding evidence statement 19](#)

### **School-based interventions**

There is good evidence to suggest that school-based life skills interventions, on their own or in combination with other approaches, are not effective in reducing substance misuses in the long term. There is inconsistent evidence about the effectiveness of such programmes in changing attitudes and knowledge relating to substance use.

There is good evidence to suggest that some school-based educational and skills interventions can produce long-term improvements in young people's educational skills and positive social behavioural outcomes, and parents' family-based care-giving.

There is inconsistent evidence about the effectiveness of school-based counselling and therapy on behavioural and social functioning in young people, and some evidence suggests these interventions can lead to potentially



harmful outcomes in young people.

[See corresponding evidence statements 20–25](#)

## **2. Black and minority ethnic populations**

### **School-based interventions**

There is inconsistent evidence about the impact of school-based programmes for minority youth in relation to a range of outcomes, including their effectiveness in reducing substance use. Similarly, the evidence about risk and protective factors related to substance use, such as refusal skills is inconsistent.

[See corresponding evidence statement 26 and 27](#)

### **Community-based interventions**

There is insufficient and inconsistent evidence about the overall effects of community-based interventions targeting minority youth in relation to both reducing substance use and on risk and protective factors related to substance use in minority populations.

[See corresponding evidence statements 28 and 29](#)

### **Family-based interventions**

There is inconsistent evidence about the effectiveness of family-based interventions in changing substance-use behaviours in populations of mixed ethnicities. However, there is evidence to suggest that family-based interventions can have a positive impact on some secondary outcomes such as child participation in family meetings, school bonding and regulated communication parenting in predominantly African-American families in the immediate short term.

[See corresponding evidence statements 30 and 31](#)

### **Other interventions**

There is insufficient and inconsistent evidence to determine whether multi-component programmes targeting young minority populations are effective in reducing substance use or in reducing related risk factors.

There is evidence from two reviews to suggest that interventions incorporating cultural values are no more effective in reducing substance misuse than interventions that do not. However, one of these reviews does suggest that incorporating refusal skills training in drug prevention programmes improves effectiveness in reducing substance misuse.

[See corresponding evidence statements 32–34, 37](#)

There is insufficient evidence to determine the effectiveness of specialised early educational interventions including a preschool curriculum on reducing substance-use behaviours, years of education and engagement in skilled labour, or on criminal behaviours.

There is insufficient evidence to determine the effectiveness of mentoring on the long-term impacts in relation to substance use, attitudes to substance use, self-worth, peer-relations or parental relationships.

[See corresponding evidence statements 35, 36, 38, 39 and 40](#)

### **3. Young people with families with substance-using members**

#### **Multicomponent interventions**

There is good consistent evidence that combining treatment programmes with parenting interventions has no additional effect on children's drug use, behavioural outcomes or school/family factors in the short-, medium- or long-term. There is, however, some evidence to suggest that parenting programmes in combination with drug treatment can improve parental problem-solving, parenting practices and depression, as well as help stabilise or reduce parental use of drugs in the short to medium term.

[See corresponding evidence statements 41, 42 and 43](#)

#### **Home visitation**

There is evidence from one good-quality study to suggest that in the long-term there is no difference in substance use or improved outcomes of adolescent dysfunctional behaviours between children with drug-using mothers who receive home visitation as infants and those who do not. This study's findings did suggest, however, that in the long-term there are fewer arrests and convictions among these children.

There is insufficient evidence from two studies (one good-quality and one low-quality) to determine whether home visitation may produce positive effects on children's developmental progress and insufficient evidence from the same two studies to determine the effects of home visitation on parental drug use. Evidence from the good-quality study suggests that home visitation does not produce long-term increases in the number of mothers who are drug-free compared with no home visits. Evidence from both the studies suggests home visitation has no effect on parenting stress or their child abuse potential compared with no visits.

[See corresponding evidence statements 44, 45 and 46](#)

#### **Behavioural/ skills-based interventions**

There is insufficient and inconsistent evidence to determine whether behavioural or skills training interventions for young people with substance-using parents or siblings are effective in reducing substance use, and reducing risk and improving protective factors.

[See corresponding evidence statements 47 and 48](#)

#### **Other interventions**

There is insufficient and inconsistent evidence to determine whether interventions targeting young pregnant or parenting adolescents are effective in reducing drug-use behaviour or in improving secondary outcomes related to knowledge, attitudes, education and employment.

There is limited evidence from one study to suggest that high levels of engagement of mothers in outreach programme may be linked to improved pro-social behaviour in their children.

[See corresponding evidence statements 49, 50 and 51](#)

## **4. Young substance users**

### **Brief intervention or motivational interviewing**

There is insufficient and inconsistent evidence to determine the medium- to long-term effect of motivational interviewing or brief intervention on substance misuse, although short-term positive effects are reported.

There is evidence from one study to suggest that additional support to enhance brief interventions can have a positive effect on attendance at community treatment agencies and on psychological wellbeing among young substance misusers compared with usual hospital treatment.

[See corresponding evidence statements 52 and 53](#)

### **Family therapy**

There is consistently strong evidence to suggest that following treatment family therapy is more effective at reducing substance use and improving social behaviours in young people than other types of group therapy interventions.

However, there is good evidence to suggest that the use of family therapy is no more effective than other therapy approaches in improving school or family factors in the immediate- or medium-term.

[See corresponding evidence statements 54 and 55](#)

### **Counselling or therapy sessions for adolescents**

There is insufficient evidence to determine the types of counselling and behaviour therapy interventions that are effective in reducing substance use or related risk behaviours in young substance users. However, evidence from one study suggests that five sessions of combined motivational interviewing and cognitive behavioural therapy are equally effective compared with twelve sessions in achieving reduced substance use in the medium-term.

[See corresponding evidence statements 56 and 57](#)

### **Other interventions**

Preliminary evidence suggests that skills training for parents is effective in producing immediate reductions in cannabis use among young substance users compared with no intervention. Parenting skills training has also been shown to have an immediate effect on parental coping, but not on other measures of family functioning.

There is insufficient evidence to determine whether contingency-based management programmes with parent and child components are effective in reducing substance use or related risk factors in young users.

[See corresponding evidence statements 59–62](#)

## **5. Young people with behavioural and aggressive problems**

### **Multicomponent programmes**

There is good evidence that multicomponent parent and child programmes targeting children with behavioural and aggressive problems are effective in reducing substance misuse and problem behaviours. Multicomponent

programmes also produce long-term improvements in social skills, academic achievements and parental discipline compared with no intervention.  
[See corresponding evidence statements 63 and 64](#)

### **Single component programmes**

There is insufficient and inconsistent evidence to determine the effectiveness of a modified version of Life Skills Training (LST) on substance use or knowledge and attitudes.

[See corresponding evidence statements 65 and 66](#)

## **6. Young offenders**

### **Counselling or behavioural therapy**

There is evidence from one good-quality study to suggest that multisystemic therapy may be more effective than 'usual services' at reducing 'soft' drug use by young offenders in the immediate-term, and is more effective than individual focused counselling in tackling reoffending.

[See corresponding evidence statements 67 and 68](#)

### **Educational or skills-based programmes**

There is inconsistent evidence from largely low-quality studies about the effectiveness of educational and skills-based interventions (such as a modified version of Life Skills Training, or a combined anti-violence and values clarification programme) in improving substance-use skills and behaviours among young offenders in the short term. There is insufficient evidence about the effectiveness of educational or skills-based programmes compared with no intervention in reducing school problems or reducing illegal or violent offences.

[See corresponding evidence statements 69 and 70](#)

### **Other (multicomponent interventions and juvenile drug courts)**

There is insufficient evidence to determine the effectiveness of multi-component interventions or juvenile drug courts for young offenders in reducing substance use or related risk factors.

[See corresponding evidence statement 71, 72 and 73](#)

## **7. School dropouts, truants and underachievers**

### **Educational/ skills-based interventions**

There is mixed-quality evidence, all from the USA to suggest that a classroom-based social influence intervention is effective in producing very short-term improvements in substance-related attitudes and knowledge and positive medium-term effects on 'hard drug use' among youth in alternative education provision. However, long-term evidence of effectiveness is inconsistent.

Evidence from two good-quality studies indicates that the addition of a community-based component does not improve effectiveness of education or skills-based interventions in reducing substance use. This evidence also suggests that programmes are more effective when delivered by a health educator rather than as a self-instruction programme.

There is inconsistent evidence about the effectiveness of skills-based interventions in preventing or reducing substance use in students identified as being at risk of school dropout, yet some evidence suggested these programmes are effective at improving grades in the short term. Effects on school absences are less clear.

There is evidence from one good-quality study to suggest that a programmed intervention approach (four units that included self-esteem, decision-making, personal control and interpersonal communication) has no effect on grades, school connectedness or anger. In addition, there is evidence to suggest that in the short term the intervention may decrease bonding among peers and increase peer high-risk behaviours.

[See corresponding evidence statement 74 and 75](#)

### **Multicomponent interventions**

There is insufficient evidence to determine whether multicomponent interventions are effective in preventing or reducing substance use or related risk factors in students identified as being at risk of school dropout, truants or students in alternative education.

[See corresponding evidence statement 76 and 77](#)

### **8. Other populations**

There is insufficient evidence to determine the effectiveness of interventions in reducing substance use and related risk factors in specific populations such as among high sensation seekers, homeless young people, children of divorce, institutionalised youth, abused females and latchkey students.

[See corresponding evidence statement 78–86](#)

The above evidence informed the recommendations in NICE's Public Health Guidance 4 *Community based interventions to reduce substance misuse among vulnerable and disadvantaged young people*, available here:

<http://guidance.nice.org.uk/PH4>

Recommendations in the Guidance include:

- the need for local-area-based strategies to be developed and implemented to reduce substance misuse among vulnerable and disadvantaged young people aged under 25
- the use of screening and assessment tools to improve the identification of this target population
- offering a family-based programme of structured support and offering the children group-based behavioural therapy before and during the transition to secondary school.

A good deal of the evidence reviewed was insufficient or inconsistent in its findings to enable firm conclusions to be reached in relation to the effectiveness of programmes in preventing drug use among vulnerable and disadvantaged young people. However, below is a brief summary concluding the effective findings detailed above from this review in relation to community-based interventions to reduce substance misuse among sub-populations at risk:

Among young people with multiple risk factors, evidence suggests that multi-component community-based approaches and family-based interventions are effective in improving substance misuse behavioural outcomes.

Among black and minority ethnic populations most evidence is insufficient or inconsistent. Evidence from one review does, however, suggest that incorporating refusal skills training in drug prevention programmes improves effectiveness in reducing substance use.

Parenting interventions in combination with drug treatment are effective in improving parenting skills and reducing parental drug use in families with drug use problems. Good evidence, however, suggests that home visitation makes no difference to a number of child and parental outcomes among families with substance-using members.

Among young substance users there is strong evidence that family therapy following treatment is effective in reducing substance use and improving social behaviours. Skills training for parents are effective in reducing cannabis use among young substance users and in improving parental coping.

Among young people with behavioural and aggressive problems multi-component parent and child programmes have been found to be effective on a range of child outcomes.

For young offenders, multisystemic therapy can be effective at reducing soft drug use and reducing reoffending.

### **Motivational interviewing interventions for adolescent substance use behaviour change**

#### **Context**

This summary provides an overview of evidence from Jensen et al. (2011) *Effectiveness of Motivational Interviewing Interventions for Adolescent Substance Use Behaviour Change: A Meta-Analytic Review*.

The aim of the review was to summarise the effectiveness of motivational interviewing interventions used to promote adolescent substance-use behaviour change and to ascertain whether treatment gains were maintained after the conclusion of the intervention.

Following a comprehensive online literature search for relevant peer-reviewed studies, 21 research papers about motivational interviewing with participants aged 12–21 were included in the review. Many of the studies reported on the effectiveness of interventions in response to the use of multiple substances, including marijuana, alcohol, and tobacco, while a few examined the use of street drugs such as cocaine and methamphetamines. The authors provided no information on study quality. Only a third of studies assessed outcomes beyond six months.

Motivational interviewing across the included studies was delivered by a range of professionals. In the majority of studies, the delivery of motivational interviewing was as a one-off brief intervention, the remainder comprised two to nine sessions and nearly all offered it as a discrete behaviour change (treatment) intervention.

## **Evidence summary**

### **Overall effect size and follow-up analyses**

This review found motivational interviewing interventions to be effective for substance-use behaviour change among adolescents, although the quality of studies included was not reported.

The sustainability of positive effects was assessed using follow-up data but this was provided by only half the studies included in the review. Follow-up ranged from one month to two years and the review authors categorised this into two groups greater or less than six months follow-up. This limited evidence of unknown quality suggests that at both these time intervals motivational interviewing was effective for adolescent substance-use behaviour change over time.

[See evidence statements 1 and 2](#)

Jensen et al. (2011) note that the review findings are consistent with previous analysis in studies by others (e.g. Burke et al., 2003; Rubak et al., 2005) demonstrating the effectiveness of MI targeting substance-use behaviours among adults. They go further to suggest that this is particularly noteworthy given that the majority of the study interventions for adolescent substance-use behaviour change were a single session and were delivered by non-graduate-level trained practitioners.

As a study limitation the authors state that the demographics of participants in the included studies suggest that the findings are most generalisable to interventions conducted in the community and that adolescents with clinical diagnoses may require more robust interventions.

## **Motivational interviewing for adolescent substance use: a review of the literature**

### **Context**

This summary provides an overview of evidence from a recent review *Motivational interviewing for adolescent substance use: a review of the literature* (Barnett et al., 2012).

This review considered the evidence of motivational interviewing interventions as an approach to address adolescent substance use. Motivational interviewing (MI) is defined in the review as a client-centred counselling style directed at exploring and resolving ambivalence about changing personal behaviours (from Miller and Rollnick, 2002). Substance use included alcohol, tobacco, marijuana, hard drugs, or any combination. Participants had to be

aged under 18 and a half.

The aim of the review was four-fold: to 1) update existing relevant reviews, 2) review the ability of different intervention formats to influence outcomes, 3) review the effectiveness of different intervention designs to influence outcomes, 4) explore different theory-based mechanisms of change.

In total, 39 studies were included in the review, 23 of which targeted 'marijuana', 'substance use' or 'other drugs'. Settings varied, including educational, medical, community-based services or treatment centres, and young offender institutions.

Dates of the included studies ranged from 1998 to 2011. The above meta-analytic review by Jensen et al. (2011) is included as part of these studies.

The reader should note that the corresponding Centre for Reviews and Dissemination (University of York) critical appraisal abstract<sup>1</sup> for this review states that the reliability of conclusions is unclear due to a lack of assessment of study quality and concerns about the analysis methods.

## **Evidence summary**

### **Overall programme results**

There is evidence of effectiveness from multiple studies of unknown quality that motivational interviewing can reduce substance use among adolescents.

[See evidence statement 1](#)

### **Results from comparison of intervention format**

There is limited evidence that group-based motivational interviewing is effective in reducing adolescent substance use. Interventions delivered to individuals also largely showed evidence of effectiveness. Evidence from one study using a combination approach of group and individual motivational interviewing found evidence of effectiveness in increasing levels of abstinence from marijuana use. Studies included in this review are of unknown quality in design and a variety of delivery approaches were reported – face to face, by telephone or in combination. Face-to-face interventions appear to be most effective in reducing substance use among adolescents. There is insufficient evidence to determine if telephone-only interventions are effective.

[See evidence statement 2](#)

### **Results of comparing different treatment modalities**

Few studies compared different modalities of delivery of MI for adolescent substance use. There is insufficient evidence to determine the effectiveness of telephone MI compared with face-to-face delivery as an aftercare approach.

There is limited evidence of effectiveness from two studies (one focused on alcohol only) of unknown quality that delivering MI interventions to adolescents with their parents can reduce substance use.

<sup>1</sup>See [www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?AccessionNumber=12012043718&UserID=0](http://www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?AccessionNumber=12012043718&UserID=0)



There is limited evidence from one study among urban adolescents to suggest that feedback following MI intervention for adolescent substance use is more effective than assessment alone, and that face-to-face feedback further improves outcomes compared with computer-based feedback. Decreases in alcohol consequences, aggression and violence were found at three months among adolescent participants and these were maintained at six months among the group who had received face-to-face feedback.

There is insufficient evidence from one large-scale trial of unknown quality to comment on effectiveness of a school-based substance misuse prevention programme alone compared with the prevention programme with additional MI booster sessions.

[See evidence statement 3](#)

### **Results of adolescent specific MI adaptation**

Although the evidence goes beyond that which is relevant for public health one study of unknown quality considered the impact of motivational interviewing provided to the parents of hospitalised psychiatric adolescents. This was deemed to be more effective at reducing substance misuse than brief advice, although the impact was not shown to be effective in relation to smoking cessation.

On the other hand when motivational interviewing was provided in a school setting over three conditions (classroom-only, classroom plus three booster MI sessions, and an assessment-only control) the motivational interviewing did not in itself impact upon substance misuse among participants.

[See evidence statement 4](#)

### **Results of comparison of intervention design; Results of MI with feedback; and results of MI with additional features**

Intervention designs included in the review were MI delivered alone (MIO); MI delivered with feedback (MIF); MI delivered with another intervention (MI+); or MI delivered with feedback and another intervention (MIF+).

There is evidence of effectiveness from all intervention designs. Although study quality is unknown and there was only a small number of studies of each intervention design, where comparisons between interventions were reported there was very little difference in the positive outcomes achieved in relation to reducing substance use among adolescents.

Across the included studies the review found no difference in positive outcomes from the addition of feedback to MI interventions or additional programmes compared with MI interventions alone to reduce adolescent substance use.

[See evidence statement 5–7](#)

### **Potential theory-based mechanisms of change**

Evidence of effectiveness of MI interventions in improving attitudes was reported in multiple studies of unknown quality, for example in relation to understanding and perceptions of risk. Evidence in relation to some attitudinal

measures was, however, less conclusive, for example readiness or intention to change and participation in additional treatment.

Evidence of effectiveness in relation to improvements in behaviours from MI interventions were also reported in multiple studies of unknown quality in relation to improved drug refusal skills and self-monitoring, as well as reduced dependence and other risky behaviours.

[See evidence statement 8](#)

Barnett et al. (2012) conclude that in the comparison of different modalities, improved outcomes may be influenced by involving parents; there is no difference between telephone or in-person follow-up; and face-to-face feedback is favourable to computer-based feedback. However, the authors suggest that a further review is required to determine the relationship between the design, format and other delivery characteristics of MI interventions, such as number and length of sessions, setting, and target population.

## **Mentoring adolescents to prevent drug and alcohol use**

### **Context**

This summary provides an overview of the evidence from a recent Cochrane review, *Mentoring adolescents to prevent drug and alcohol use* by Thomas RE, Lorenzetti D, Spragins W. (2011).

The aim of the review was to assess the effectiveness of mentoring interventions of any kind to prevent drug and alcohol use by adolescents. Mentoring is defined in the paper, by the Center for Substance Abuse Prevention 2000, as a supportive relationship in which one person offers support, guidance and concrete assistance to the partner, based on the sharing of experience and expertise without expectation of personal gain by the mentor.

Following a robust electronic search four relatively old studies were included, all of which were from the United States and included a high proportion of minority and disadvantaged adolescents. Multiple outcomes were considered, including abstinence, alcohol/ drug use and reduced alcohol/ drug use, no progression in use of alcohol/ drugs and not being involved in alcohol- or drug-related aggression or accidents.

Findings derived from these four studies are summarised below. All four studies reported on interventions using formal mentoring, with organisations using formal criteria to recruit, train and supervise mentors and follow up the outcomes of mentoring activities.

### **Evidence summary**

#### **Drug use**

There is inconsistent evidence from three studies about the effectiveness of mentoring in relation to drug use among adolescents aged 13 to 18 years. While one US-based study reported a reduction in the use of illegal drugs

among the mentored group at 18 months follow-up, two other US-based studies found no significant difference between the intervention and control group in their use of marijuana.

[See evidence statement 1](#)

### **Substance use (drugs and alcohol)**

Evidence from one study of uncertain quality reported no effect of a curriculum and community service intervention plus mentoring on substance use when compared with no intervention.

Evidence from this same study indicates that 'exceptional mentoring' resulted in pupils' better reactions in situations involving drug use and had improved knowledge about substance abuse.

[See evidence statement 2](#)

In conclusion, Thomas et al. (2011) highlight that none of the studies demonstrated a low risk of results being distorted; therefore it was not possible to attribute the efforts of the mentoring activities to reduced drug use.

However, studies in the review included known factors associated with effective mentoring programmes such as: ongoing training of mentors, monitoring of implementation, structured activities for mentors, expectations of frequent contact and parent support (see Dubois 2002 cited by Thomas et al., 2011). While no harms were recorded, the benefit of the resources invested in programmes may be modest, given that only one study found a significant difference in reducing drug use among participants following involvement in the mentoring programme.

## **Prevention: the effects of interventions to prevent substance use among adolescents**

### **Context**

The summary below provides an overview of *The Effects of Interventions to Prevent Substance Use Among Adolescents: A Systematic Review* by Karki et al. (2012).

The aim of the review was to describe and evaluate the effects of interventions used to prevent or reduce substance use among adolescents under 18 years of age. The selection criteria was restricted to articles published between 2007 to 2010.

The reader should note that 23 of the 27 included studies were conducted in the United States, and most interventions focused on multiple substances including alcohol, drugs and tobacco. The studies were categorised into five types: (1) family-based, (2) individual-based, (3) school-based, (4) community-based and (5) combined interventions.

The authors note some pragmatic limitations of their review including that no specific quality appraisal tool was used, rather the research group assessed

the studies against inclusion criteria. Also the literature search was limited to papers that were published in English and that were available from the University of Eastern Finland library.

The evidence from studies that included drugs misuse (not solely alcohol or tobacco) is presented below.

The reader should be aware that it has not been possible to present the evidence from this review in a way that is consistent with the other evidence summaries. The full reference for this article is Karki S, Pietila A-M, Lansimies-Antikainen H, Varjoranta P, Pirskanen M and Laukkanen E. The effects of interventions to prevent substance use among adolescents: A Systematic Review. *Journal of Child and Adolescent Substance Abuse* 2012; 21(5) 383–413 [www.tandfonline.com/doi/abs/10.1080/1067828X.2012.724276](http://www.tandfonline.com/doi/abs/10.1080/1067828X.2012.724276)

## **Evidence summary**

### **Family-based interventions**

Although of unknown quality, there is consistent evidence to suggest that family-based interventions are effective in reducing substance misuse among adolescents.

Two studies reported that computer-based gender-specific programmes focusing on mother–daughter relationships improved communication skills and parental monitoring resulting in reduced substance misuse and improved refusal skills among girls (Schinke, Cole and Fang, 2009; Schinke, Fang and Cole, 2009). Such interventions also lowered their future intentions to use.

Runaway adolescents – a targeted ecologically based family therapy programme significantly reduced substance misuse in both boys and girls among runaway adolescents, compared with other interventions in which a reduction of substance misuse was only found among boys (Slesnick and Prestopnik, 2009).

There is evidence from two studies that the ‘Strengthening Families Program’ reduced substance misuse (Spoth, Trudeau et al., 2008,; Spoth et al., 2009). In addition, one of these studies reported that, across a range of ages, the programme reduced the exposure to drug use among participants.

### **Individual-based intervention**

There is some evidence from two US-based studies of unknown quality to suggest that motivational interviewing can have positive effects on substance-misuse-related behaviours. One study (Baer et al., 2008) found that participants in favour of change achieved greater levels of abstinence compared with participants with no desire or ability to change. Another study (Grenard et al., 2007) found that motivational interviewing improved readiness to change, although participants did not achieve significant levels of change in relation to substance use in the past month.

There is also evidence from one study that a Canadian internet-based (gender-

specific to girls only) prevention programme can reduce substance use with positive outcomes sustained at six months among participants (Schwinn et al., 2010). Self-efficacy and beliefs were also increased in the intervention group.

### **Community-based intervention**

There is inconsistent evidence from three studies of community-based interventions, moreover the evidence suggests that any positive effects from community programmes are not sustained at one year (Clark et al., 2010; Edelen et al., 2010; Tebbes et al., 2007).

One Australian study found that a religious school provided more protective factors against substance use compared with state school students (Jones and Rossiter, 2009).

### **School-based intervention**

There is inconsistent evidence from three studies, two skills-based programmes (Anderson and Moore, 2009; Spoth, Trudeau et al., 2008) and one computer-based (Newton et al., 2009) about the effectiveness of school-based interventions aimed at improving knowledge and attitudes related to substance use.

One study found a decrease in cannabis use among participants of a computer-based intervention at six month follow-up (Newton et al., 2009). A further study of a life skills and consequences of drug use programme did see an impact on existing cannabis users, but reported no effect among non-users both in the past 30 days and at one year follow-up (Sloboda et al., 2009). Another study using cognitive misperception information did not report a reduction in prevalence of substance use but rather an effect on hard drug use in the previous 30 days among participants (Sun et al., 2008).

### **Combined interventions**

Although of unknown quality there is consistent evidence to suggest that combined interventions are effective in reducing cannabis use.

One US study focused on adolescents compared cognitive behavioural therapy (CBT) and multidimensional family therapy (MDFT) and found that MDFT achieved a greater reduction in severity of problem substance use and other drugs, as well as enhancing abstinence and minimal substance use (Liddle et al., 2008).

One combined programme that included ecological family therapy, motivational enhancement and community reinforcement approach showed that adolescents' lack of motivation to change substance use was predicted by negative family environment, depressive symptoms and the severity of the problem (Slesnick et al., 2009). However, motivation to change was not affected by gender, race or ethnicity.

Evidence from a study of Life Skills Training (LST) intervention and combined LST and Strengthening Families Program found significant effects in reducing all substance initiation outcomes (related to alcohol, drunkenness, cigarettes and marijuana) (Spoth, Trudeau et al., 2008). Additionally at follow-up both

interventions showed a significant rate of change for frequency of cannabis use, and poly-substance use.

One US-based randomised control study combined motivational enhancement therapy (MET), cognitive behavioural therapy (CBT), abstinence-based contingency management and family management for marijuana use or dependence (Stanger et al., 2009). Findings showed that integrating contingency management with MET/CBT enhanced abstinence during treatment and was sustained longer among participants compared with the control group.

Karki et al. (2012) conclude by offering some characteristics of success in the effects of interventions. Studies of family-based interventions suggest that involving parents and adolescents is the most effective way to reduce substance misuse among under-18-year-olds. Limited effects were noted regarding individual-based interventions, but computer-based programmes appeared to be the most effective, with motivational interviewing promoting positive outcomes.

For school-based interventions, providing information on alcohol, tobacco and marijuana to adolescents is cited as the most effective way to reduce or prevent substance use and a computer-based intervention was again found to be an effective delivery method. The authors list the following from one review as the suggested characteristics for school-based interventions: a clear theoretical and conceptual basis; combined psycho-educational and skills-building components; trained staff and teachers; timely evaluation; maintain fidelity in delivery; effective design; careful consideration of exposure to intervention; support from all stakeholders; clear written policies and maintenance of programme.

The authors note that multiple studies reported that combined interventions were effective in reducing substance use among adolescents, with the involvement of parents and improving the family environment as being the most effective approach.

## **Interventions to prevent substance use and risky sexual behaviour in young people**

### **Context**

The summary below provides evidence from Jackson et al. (2011) *Interventions to prevent substance use and risky sexual behaviour in young people: a systematic review*. This review was carried out under the auspices of the Scottish Collaboration for Public Health Research & Policy.

Given the evidence that risk behaviours may cluster, and often share underlying determinants that protect people or predispose them to risk, this paper aimed to determine the impact of intervention programmes on substance use and sexual risk behaviour and to identify promising approaches to

reducing multiple risk behaviours in young people.

Following a literature search (using online databases and reference lists of identified papers) 13 studies were included in the review, all of which adopted a universal rather than targeted approach to prevention. The 13 included studies reported alcohol, tobacco or illicit drug use and risky sexual behaviours during adolescence or young adulthood (age 11 to 25 years), and most were from North America. The evidence overview below focuses solely on drug use outcomes.

Programmes were implemented with young people aged from approximately 5 to 25 years in single or multiple settings, with the majority implemented at least in part in secondary schools. Four studies followed participants for more than three years. The authors note that attrition rates were generally high.

The reader should be informed further expansion drawing on the evidence from this systematic review is provided by Jackson et al. (2012) *An overview of prevention of multiple risk behaviour in adolescence and young adulthood*. To help inform future interventions and strategies this secondary paper offers discussion on other wider influences that also need to be addressed through broader social policy change.

## **Evidence summary**

### **School-based curriculum-focused interventions**

Four programmes are cited by the authors, of which three moderate-quality studies made specific mention regarding drug-use outcomes. There is no evidence of effectiveness from these three studies (two based in South Africa and one the United States) on drug use. Although one demonstrated short-term reductions in cannabis use, this was not sustained when followed up six years later. In addition, there was no difference reported in other substance use (alcohol and tobacco) and risky sexual behaviour outcomes (such as past-month sexual intercourse, casual partners, HIV infection, correct condom use, pregnancy) from the school-based curriculum-focused interventions.

[See evidence statements 1–3](#)

### **School-based curriculum-focused programmes with additional components**

One study reported no evidence of effectiveness on problem substance use among both boys and girls.

[See evidence statement 4](#)

### **Whole-school or multi-setting programmes**

Evidence from studies of multi-component programmes remains inconclusive. Two studies with a four-year follow-up found inconsistent results – one reported evidence of effectiveness among boys (but not girls); and one found no significant difference in substance use yet did see a reduction in marked risky behaviour (a measure the authors describe as a composite variable of substance use, anti-social behaviour and sexual intercourse).

A further study found no effect in past month cannabis use at two-year follow-up from a multi-component programme. When an intensive classroom-based curriculum element was added, cannabis use was reduced.

Evidence from one primary-school-based study with long-term outcomes, suggests no effectiveness on cannabis use at any follow-up time point – at ages 18, 21 and 24 years.

[See evidence statements 5–8](#)

### **Community-based interventions**

One study found evidence of effectiveness on cannabis use at three years follow-up from a community-based intervention empowering young people.

[See evidence statement 9](#)

### **Non-school based intervention or family programmes**

The evidence of effectiveness on illicit drug use is inconsistent and limited. One family-based programme found a reduction in the past 90-day illicit drug use at three-year follow-up among participants compared with the control group. A social influence programme focusing on decision-making among young black American youth found no effect in the prevalence of illicit drug use after two years. However, when a booster session was included at six and ten months, drug use significantly reduced.

[See evidence statements 10 and 11](#)

Jackson et al. (2011) conclude by noting that due to the limited number of studies and the mixed evidence of impact, it is difficult to draw firm conclusions regarding the most effective approach to reducing multiple risk behaviour. They highlight that the programmes that impacted upon both substance use and sexual risk behaviour involved complex interventions targeting more than one domain of risk or protective factors.

## **Interventions for the prevention of drug use by young people delivered in non-school settings**

### **Context**

This summary provides an overview of evidence from the Cochrane review *Interventions for prevention of drug use by young people delivered in non-school settings* (Gates et al., 2006).

This review considers the evidence of interventions in non-school settings, to prevent or reduce drug use in under-25-year-olds, and to identify whether type and setting of the intervention affects drug use outcomes among young people.

Seventeen single studies that involved four types of intervention were identified: (1) motivational interviewing; (2) brief intervention; (3) education or skills training and (4) family interventions and multi-component community interventions.

This review was included in the evidence that informed NICE PH4 Guidance



(NICE, 2007) about community based interventions to reduce substance misuse among vulnerable and disadvantaged young people. However, as the evidence review was broader in its scope than the remit of the NICE a full summary of the evidence is included here.

All 17 studies included control groups. Study dates were from 1996 to 2004. All but two of the studies were conducted in the United States. Primary and secondary prevention interventions were included. However, outcome measures were restricted to actual drug-use behaviours, not knowledge and attitudes related to drug use.

### **Evidence summary**

#### **Results of studies of education and skills training interventions**

There is limited evidence of effectiveness of education and skills training on drug use; however, findings from two papers of unclear quality (one targeting high-risk women and one young Mexican-American women) suggest no difference in reducing drug use.

[See evidence statement 1](#)

#### **Results of studies of family interventions**

Evidence from multiple good-quality studies suggests that family-based programmes have no effect on drug use. However, there is some evidence from two US-based studies of unclear quality that family-based programmes for pre-teen adolescents can have positive effects on cannabis use in the medium to long term compared with no intervention, although the low numbers of participants at follow-up may have impacted on the reported results.

[See evidence statement 2](#)

#### **Results of studies of brief intervention or motivational interviewing**

There is limited evidence from two mixed-quality studies on the effects of brief intervention or motivational interviewing on drug use. However, findings from two papers (one in primary care and one in an educational setting) suggest positive results in the short term, with one study based in further education colleges reporting reductions in the quantity and frequency of cannabis use.

[See evidence statement 3](#)

#### **Results of studies of multi-component community interventions**

There is evidence of mixed quality about the impact of a community-based programme on drug use. Limited evidence from two US-based studies indicates that in addition to school-based interventions, a community programme may reduce substance use in the short to medium term.

[See evidence statement 4](#)

In conclusion, Gates et al. (2006) highlight a lack of evidence on whether non-school-based interventions are effective. In addition, each of the interventions were too different to draw any firm conclusions about what is effective in preventing or reducing drug use among young people. The authors therefore suggest further research to determine whether any specific non-school-based intervention can be recommended for implementation.

## School-based interventions to prevent illicit drug use

### Context

This summary provides an overview of evidence from a Cochrane review of *School based prevention for illicit drugs' use* by Faggiano et al. (2005). The aim of the review was to evaluate the effectiveness of interventions versus usual curricular activities or versus a different school-based intervention against two objectives:

1. Giving specific knowledge, developing specific skills or promoting change in attitudes and behaviours.
2. Reducing the incidence of first-time usage, frequency and amount of illicit substances used and prevalence of users among primary or secondary school pupils.

Only experimental or quasi-experimental studies were included and after extensive database searches, 32 studies in total were selected as meeting inclusion criteria. Nearly all studies (28 of 32) were conducted in the United States and most focused on 11- to 13-year-olds. Follow-up was mostly conducted immediately following the intervention. The majority of studies were assessed to be of moderate quality in design.

The reader should note that although the review was published in 2011, the included studies date from 1981 to 2003. In addition, findings are also presented in the review by: Faggiano et al. (2008) *School-based prevention for illicit drugs use: A systematic review*, *Preventive Medicine* 46, 385–396.

### Evidence summary

#### Effects of interventions – all comparisons

No studies reported any evidence of effectiveness of school-based interventions in relation to assertiveness, attitudes towards drugs and intention to use drugs.

[See evidence statement 1](#)

#### Effects of knowledge-based interventions versus usual curricula

Results from three studies of knowledge-only interventions showed evidence of effectiveness in improving drug-related knowledge but not the decision-making skills of school children. However, another study found that the use of drugs was not reduced as a result of knowledge-based interventions.

[See evidence statement 2](#)

#### Effects of skills-based interventions versus usual curricula

Overall from the moderate quality studies included in this review, the effect of skills-based intervention on drug knowledge, decision-making skills, peer resistance and self-esteem was positive compared with curriculum-only programmes when measured at different follow-up periods, from one to three years. The design quality of studies that found no difference for drug knowledge following skills-based intervention is unclearly reported in the

review.

At follow-up, most studies reporting on the use of drugs found skills-based interventions to have a positive effect, although it should be noted some inconsistencies were highlighted specifically in relation to marijuana use. Some of the included studies of skills-based programmes were over 20 years old.

[See evidence statements 3a and 3b](#)

#### **Effect of skills-based intervention versus knowledge-based intervention**

Evidence from two moderate-quality studies showed no difference in effect on self-efficacy or self-esteem of skills-based versus knowledge-based programmes. Furthermore, one of these studies found that at two years follow-up, the information only intervention improved results in relation to marijuana knowledge more effectively than the skills enhancement programme. Decision-making skills were not influenced by the skills-based intervention.

There is conflicting evidence from one low-quality US-based study comparing different programmes in relation to the effect of skills-based interventions on marijuana use at one- and two-year follow-up.

[See evidence statement 4](#)

#### **Effect of skills-based intervention versus affective-based intervention**

One study of moderate quality reported that self-efficacy improved more with skills-based interventions than with affective programmes (i.e. interventions focused on improving moods, feelings and attitudes) targeting psychological risk factors such as self-esteem, but not drug knowledge.

[See evidence statement 5](#)

#### **Effect of affective-based intervention versus usual curricula**

Evidence from two studies suggests that affective interventions are more effective than usual curricula in improving drug knowledge and decision-making skills.

In relation to drug use and behaviour outcomes, the evidence was mixed from four low-quality studies, with one reporting that the affective intervention group had significantly more marijuana use at one and two years follow-up.

[See evidence statements 6a and 6b](#)

#### **Effect of affective-based intervention versus knowledge-based programmes**

Affective interventions in two old studies of moderate quality improved decision-making skills, and in one further study knowledge was also shown to be slightly improved compared with knowledge-based interventions.

In this further study of moderate quality, affective interventions targeting psychological risk factors were not shown to influence self-efficacy compared with knowledge-based programmes.

[See evidence statement 7](#)

### **Effect of interactive interventions versus passive techniques**

Interactive interventions actively involve participants involved in activities using role plays, group discussion, etc. Passive interventions are defined as those using traditional instructive-only techniques.

Three studies provided evidence about interactive interventions. No effect was reported on drug knowledge, decision-making skills, self-esteem, self-efficacy or marijuana use. One of the studies, although of low quality, found a positive effect of interactive techniques in reducing hard drug use.

[See evidence statement 8](#)

### **Peer delivered interventions**

Three studies of moderate quality reported evidence of the effect of peer delivered interventions (compared with skills-based programmes). Marijuana knowledge, attitudes and use were all positively affected at post-test and follow-up in the interventions delivered by peers as opposed to those delivered by teachers.

Compared with interventions delivered by external educators, peer-led interventions improved the drug knowledge of young adolescents, but not other outcomes, such as their decision-making skills, self-esteem or self-efficacy.

[See evidence statement 9](#)

Faggiano et al. (2005) conclude by noting the limitations of the included studies, for example that there was very little evidence of long-term follow-up and that complex social structures known to influence teenage drug use, such as peers, family and social context were not considered in the studies. Nevertheless, the review reported consistent results and showed life-skills interventions to be the most effective in reducing drug use.

## **School-based prevention programmes facilitated by computer or the internet**

### **Context**

This summary provides evidence from *A systematic review of school-based alcohol and other drug prevention programs facilitated by computers or the internet* by Champion et al. (2013).

Ten programmes were identified in the 12 studies that were included in the review, dated between 2000 and 2011. Most studies were conducted in Australia and the USA. The intervention was internet-based in seven studies and delivered via CD-ROM in the other five studies.

The reader should note that alcohol and tobacco were largely the substances of focus; with only one study focusing exclusively on cannabis and three others considering cannabis use as well as alcohol and tobacco use. Most programmes adopted a social influence theory approach. All studies considered both boys and girls, who were aged 13 to 15 years.

The primary outcomes measured were alcohol and drug use, with other outcomes including knowledge, attitudes and intentions to use. Follow-up ranged from data collected immediately post-intervention or in the succeeding 6- to 34-month time period.

## **Evidence summary**

### **Drug use outcomes**

There is limited evidence from one good-quality study that an internet-based prevention programme delivered in school is effective in reducing cannabis use at six months follow-up.

[See evidence statement 1](#)

### **Knowledge and attitudes towards drugs**

There is consistent evidence from three mixed-quality trials that computer-based interventions improve drug-related knowledge. There is insufficient and inconsistent evidence about the effectiveness of computer-based interventions on strengthening negative attitudes towards cannabis among young adolescents.

[See evidence statement 2](#)

Characteristics of success noted by Champion et al. (2013) include the number of sessions (optimal levels between 4 and 12), with a booster session also beneficial, a social learning or social cognitive approach and the inclusion of a parenting component.

The findings of the review suggest that available studies indicate computer- and internet-based are potentially an effective model of delivery for prevention interventions. Champion et al. (2013) also conclude that these programmes are easy to use, and can be delivered as intended (i.e. have good implementation fidelity).

## **School-based intervention: D.A.R.E programme**

### **Context**

The evidence summarised below is taken from a review by Pan and Bai (2009) *A multivariate Approach to a Meta-Analytic Review of the Effectiveness of the D.A.R.E. Program*. The Drug Abuse Resistance Education (D.A.R.E.) programme is a US school-based programme aimed at 5- to 13-year-olds.

Programme objectives are to support students to resist peer pressure to experiment with drugs, tobacco and alcohol. It aims to reduce drug abuse through the provision of information to enable healthy decision-making. The two programme outcome measures are:

1. The reduction of drug use (which includes tobacco, alcohol, marijuana and other illicit drugs)
2. Improved psychosocial behaviour, which includes social skills (such as

peer-pressure resistance), self-esteem, attitudes towards drug use, attitudes towards police and family bonding.

The programme originated in 1983 and is normally delivered by a police officer. It is now widespread across the United States.

The authors report that the existing literature shows inconsistent results in relation to the programme's effectiveness, therefore the purpose of this review was to synthesise updated evaluation studies of the D.A.R.E. programme and to simultaneously synthesise all the outcomes, with reference to three specific research questions:

1. Did the effects of the D.A.R.E. programme on the outcomes vary across the studies?
2. What was the overall effect of the D.A.R.E. programme on the outcomes?
3. What study characteristics explained the variation of the effects of the D.A.R.E. programme on the outcomes?

Twenty US-based studies were included in the review, with follow-up ranging from directly after the interventions to ten years later. It was stated that studies were only included if a comparable control group was provided with a D.A.R.E. intervention group, however there was no information on study design quality or how drug use and psychosocial behaviour outcomes were measured.

## **Evidence summary**

### **School-based programme**

Evidence from all studies showed little difference among participants of the D.A.R.E. programme on both outcomes of interest, psychosocial behaviour and drug use.

There was a slightly larger impact on psychosocial behaviour (as defined above) so the authors performed an analysis to extract any study characteristics that were of influence. They found that a longer follow-up time and a more rigorous statistical method negatively affected results of the D.A.R.E. programme on psychosocial behaviour. However, a revised and updated version of the D.A.R.E. programme, together with more white and black student participants in the study, would mean that that the D.A.R.E. programme would have a greater effect on psychosocial behaviour.

[See evidence statement 1 and 2](#)

Pan and Bai (2009) conclude that the findings of their review support previous published evaluations and reviews of the D.A.R.E. school-based substance misuse prevention programme suggesting that it is not effective in reducing drug use among children. They suggest that tailoring the programme to cultural norms may be needed to improve its effectiveness, notably in implementing the programme outside the USA.

## School-based prevention for cannabis use

### Context

This summary provides an overview of *A Meta-Analytic Review of School-Based Prevention for Cannabis Use* by Porath-Waller et al. (2010).

The goal of this study was to update existing knowledge on school-based substance misuse prevention, from studies since 1999 about reducing cannabis use. Included studies focused on young people aged 12 to 19 years, with self-reported cannabis use as the outcome measure. Fifteen studies were found that met the selection criteria, 13 of which have been conducted in the United States.

It is worth noting that outcomes were self-reported and time to follow up was not stated.

The reader should note that the corresponding Centre for Reviews & Dissemination (University of York) critical appraisal abstract<sup>2</sup> for this review expresses caution in the interpretation of findings due to a lack of detail reported on study design quality, statistical data and outcome reporting of individual studies.

### Evidence summary

#### School-based programmes

There is evidence of unknown quality that school-based prevention programmes can be effective in reducing cannabis use among young people.

There is consistent evidence from multiple studies of unknown quality that programmes with a mixed-method approach, incorporating a variety of elements including affective (targeting self-esteem and values), providing information as well as social learning models were significantly more effective than social learning programmes alone.

There is consistent evidence from a range of studies to suggest the following intervention characteristics contribute towards successfully reducing cannabis use: targeting older adolescents (14+ years old); lengthier programme (sessions of 15 or more); facilitation by individuals other than the school teachers; an interactive rather than instructive approach. In addition evidence suggests that studies which assured all elements of the programme had been delivered were more effective in reducing rates of cannabis among youth.

[See evidence statement 1](#)

In their discussion of the results, one of the limitations highlighted by Porath-Waller et al. (2010) was the use of self-reported cannabis use as the outcome of interest, and given that this behaviour is illegal, the authors note this may have affected students' responses. In addition, most studies included post-test questionnaires, meaning that respondents would not have been able to remain

<sup>2</sup> See [www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?AccessionNumber=12010008134&UserID=0](http://www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?AccessionNumber=12010008134&UserID=0)

anonymous. It is likely that this would affect responses further. Porath-Waller et al. (2010) suggest that as an inexpensive policy option, prevention programmes are likely to be cost-effective compared with the social, health and judicial costs associated with cannabis (and other drug use).

## School-based prevention targeting adolescents aged 10–15

### Context

This summary provides an overview of *A systematic review of school-based marijuana and alcohol prevention programs targeting adolescents aged 10–15* by Lemstra et al. (2010).

The review had two objectives: 1) To determine if school-based marijuana and alcohol prevention programmes have long-term effectiveness in reducing marijuana and alcohol use among adolescents aged 10 to 15 years old, and 2) To review the effectiveness of knowledge-based interventions **compared with** comprehensive prevention programmes to better understand the seemingly inconsistent results of school-based prevention programmes found in the literature.

Knowledge-based programmes were defined as the provision of anti-drug information delivered in a school-setting. Comprehensive programmes were defined as the provision of anti-drug information combined with developing refusal skills, self-management skills and social skills.

Alcohol and marijuana usage outcomes were defined as number of days used in past 30 days pre- and post-intervention.

Six studies were included in the review – with three looking at alcohol and marijuana usage outcomes, and three looking only at alcohol usage. Half the studies examined knowledge-based programmes and half examined comprehensive-based programmes. Sample sizes were fairly large, ranging from 604 to 3,989. Follow-up in all studies included was at least one year. The authors described their review of methodological quality but did not provide data for any of the studies. All studies had been conducted in the USA.

Study characteristics varied. All but one of the six used an interactive educational technique, and delivery in three of the studies was by external educators, one study used administrators and teachers, one used teachers and peers, and one study used peers alone.

In their discussion Lemstra et al. (2010) highlight several limitations of the review, notably that the included studies did not measure mediating variables (such as age, gender, socio-economic status of participants) that would contribute to understanding how and why programmes work. In addition, only a few studies were included in the review. All studies relied on self-reported data rather than urine analysis and reported only on frequency of drug use not quantity of drugs used.



## Evidence summary

There is limited evidence to indicate the effectiveness of alcohol and marijuana prevention programmes compared with no intervention in schools for adolescents aged 10 to 15 years, measured at one year post-intervention. Specific details of the study quality are unknown. Comprehensive-based programmes were more successful in reducing the number of days of usage for alcohol, than knowledge-only programmes. For marijuana, the comprehensive-based programmes reduced use, however there was insufficient evidence for a comparison of outcomes with knowledge-only programmes.

[See evidence statement 1](#)

In their discussion Lemstra et al. (2010) advocate for a comprehensive approach to adolescent behaviour change. They suggest a need to address multiple health behaviours simultaneously in order to be successful, due to the interrelated and shared determinants that pre-dispose risks.

Lemstra et al. (2010) conclude by highlighting from their findings comprehensive programmes that are multi-faceted, combining knowledge, refusal skills, self-management skills and social skills, achieve longer-term effectiveness of preventing substance misuse than programmes focusing on knowledge alone.

## Media campaigns - The effectiveness of anti-illicit-drug public-service announcements

### Context

This overview provides a summary of *The effectiveness of anti-illicit-drug public-service announcements: a systematic review and meta-analysis* by Werb et al. (2011).

The objective of this review was to assess the impact of common media campaign strategies targeted at youth in effectively preventing use of illicit drugs. Primary outcomes of interest were the effectiveness in modifying intentions to use and/ or reducing self-reported use.

All but one of the eleven included studies were from the United States. Details of the quality of individual studies were not provided. Of the seven randomised control trials (RCTs), all but one evaluated only immediately after the intervention. The four observational studies' follow-up of participants took place between one to five years. The nature and content of the media campaigns varied across studies.

It is worth noting the authors state that findings of effectiveness in this review were largely restricted to sub-populations that had been identified as high sensation seekers – a personality trait characterised by the need for novel, complex, ambiguous and emotionally intense stimuli, and the willingness to take risks to obtain such stimulation. Such individuals are believed to be at

higher risk of drug use.

### **Evidence summary**

There is limited evidence from studies of unknown quality of the effectiveness of media campaigns targeted at youth to positively influence drug use. However, there is also evidence from several studies of unknown quality (five RCTs and one observational study) of non-significant and sometimes negative effects of media campaigns.

Evidence was inconsistent from one study of unknown quality that evaluated 30 anti-drug media campaigns. No details of the content of the different programmes were reported in the review. However, the evaluation found that among targeted individuals just over half the programmes were effective in reducing the intention to use drugs. Eight of the programmes did not alter study participants intentions and six programmes increased intention to use compared with those not exposed to the intervention. According to the study, the most effective of the public service announcements (PSAs) were addressing issues related to heroin and methamphetamine.

Although of unknown quality, the five least effective programmes reporting an increase in intention to use drugs, focused on marijuana use and on building self-esteem of viewers. A further study demonstrating no effect of media campaigns, found that individuals exposed to the 'gateway theory' (i.e. that marijuana use leads to the use of 'harder' drugs such as cocaine and heroin) reported significantly weaker anti-marijuana norms when compared with those not exposed to the intervention.

There is evidence from one study of unknown quality that group interaction in the form of online chat rooms following exposure to a media campaign, again weakened anti-marijuana beliefs.

Evidence from one five-year observational study, of unknown quality, of a national anti-drug media campaign suggests no significant effect on reducing levels of drug use among youth. Conversely, this study found that higher exposure to the campaign was associated with weaker anti-drug attitudes and beliefs.

[See evidence statement 1–5](#)

Werb et al. (2011) conclude that no significant benefit of media campaigns was found in their review and that no studies reported on their long-term effectiveness in modifying intention to use and reducing self-reported use among target populations. In several studies, harmful effects such as increased intentions to use and weakening of negative attitudes towards drugs were noted among youth exposed to the media campaigns.

## Secondary prevention – adolescent substance abuse group treatments.

### Context

The summary below provides an overview of Engle and Macgowan's *Critical Review of Adolescent Substance Abuse Group Treatments* (2009).

This paper reviews the evidence of effectiveness of group work in reducing adolescent substance use and offers recommendations for social work practice and research. Included studies involved young people between the ages of 11 and 20 years old who were currently using one or more substances.

Twelve studies that considered 13 treatment programmes were identified. Follow-up with participants ranged from post-test to seven months only. The reader should note all included studies were relatively old, carried out between 1992 and 2003.

Examples of the psychosocial group-based interventions include motivational enhancement therapy, cognitive behaviour therapy, 12-steps, supportive counselling, family and coping skills and psycho-educational therapy.

It is worth noting that in their description of group to non-group components and treatment settings, Engle and Macgowan (2009) assess that the lack of specified group treatment in the included studies makes attribution of positive outcomes to group activities uncertain.

The reader should note that the corresponding Centre for Reviews and Dissemination (University of York) critical appraisal abstract<sup>3</sup> for this review expresses caution in the conclusions due to a lack of detail about review methods and the included studies.

### Evidence summary

#### Group-based treatment

There is good evidence from two studies that group therapy can produce better outcomes compared with other treatments in reducing substance use at follow-up. Other lower-quality studies also show positive outcomes immediately after the intervention.

Evidence from the effective interventions suggests certain characteristics of success for group-based treatment in tackling adolescent substance use. These include incorporating educational components, addressing individual psychosocial development and understanding of drug use, self-efficacy and skills training. This is in addition to responding to the group dynamic and specific personal experiences and employing a therapeutic approach specific for group settings.

Evidence from poor-quality studies that did not produce positive effects among adolescent participants suggests that fidelity in delivery of group-based

<sup>3</sup> See [www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?AccessionNumber=12010003189&UserID=0](http://www.crd.york.ac.uk/CRDWeb/ShowRecord.asp?AccessionNumber=12010003189&UserID=0)

treatment is important in achieving desired outcomes.

[See evidence statements 1 to 3](#)

In reviewing treatment factors reported in the studies Engle and MacGowan (2009) state that any number of participant characteristics or risk factors can relate to treatment outcomes. They suggest that using this information to identify what works for whom offers important considerations in the identification of clients and successful composition of groups. Group structures, processes, leadership and facilitator training were not well described in the studies. However, the authors highlight that in most studies practitioners had at least a master's degree, noting that the group leaders in the study with the poorest outcomes were the least educated. They also refer to an understanding of what they suggest is the 'sleeper effect', whereby long-term follow-up assessments may be needed to capture treatment effects not present at post-test.

Engle and MacGowan (2009) conclude that in order to succeed in achieving positive outcomes for participants, the importance of theory and an empirical basis in the delivery of group-based treatment must be emphasised.

## **Secondary prevention – community-based mutual aid for teens**

### **Context**

This summary provides evidence on psychosocial-based treatment interventions to prevent harm among adolescent drug users. The evidence summarised below is taken from *A Review of Alcoholics Anonymous/ Narcotics Anonymous Programs for Teens* (Sussman, 2010) that focused on teenagers as part of formal substance misuse treatment programmes.

The paper describes a community-based programme following clinical treatment of teenage inpatients affected by substance misuse, as this constitutes a public health intervention. The review paper and summary below do not report on clinical aspects of treatment that participants may have previously undertaken.

Recovery outcomes reported include the impact of attendance at informal 12-step community-based meetings, as part of formal substance misuse treatment programmes, on abstinence at follow-up.

The reader should note there is recognition among AA and NA members in the community that young people tend to be underrepresented and have infrequent attendance. They have higher drop-out rates compared with adults.

Of the 19 studies included in the review, two were from Canada and the remaining 17 were from the United States. The authors report that in all studies, in addition to 12-step meetings, it was clear that a variety of treatment modalities were involved. All studies examined only the outcomes for young people who completed treatment programme and most studies did not report outcomes for the young people who failed to complete the programme.

The quality of the studies is unclear from the review. Additionally, the reader should note that most of the included studies did not include a control group against which the intervention group could be compared.

## **Evidence summary**

### **Teen treatment outcomes**

There is evidence from multiple studies to suggest a 30 to 40% abstinent rate among youth participating in 12-step programmes. Follow-up ranged from three months to two years, so long-term outcomes are not reported.

Evidence suggests that using AA/NA as part of treatment for teenage substance misuse can achieve similar outcomes compared with other treatment methods. However, given that all studies focused only on the young people who completed the treatment programme, importantly, the author highlights that drop-out rates may in fact impact upon the overall effectiveness of the intervention.

[See evidence statements 1 and 2](#)

### **Effect of attendance at informal community-based AA/NA meetings**

There is consistent evidence of unknown quality to suggest that participation in informal community-based Alcoholics or Narcotics Anonymous (AA/NA) meetings positively influences the ability for treatment outcomes to be sustained.

There is evidence to suggest that frequent attendance at community-based AA/NA meetings considerably improves outcomes, with those who attend meetings two or three times more likely to achieve abstinence.

[See evidence statements 3](#)

Having noted in the introduction that teens are under-represented at AA/NA meeting, Sussman (2010) concludes by highlighting that to achieve the above desired results there is a need to improve involvement of teens at AA/NA meetings. Suggestions about how to increase teen participation include using positive outcomes to motivate their attendance; ensuring other members (adults) are welcoming to teens; and promoting teen meetings in community settings.

## Evidence statements

### Home visits during pregnancy and after birth for women with an alcohol or drug problem (Turnbull and Osborn, 2012)

#### Evidence statement 1: The nature of included studies

Seven studies (863 women) compared home visits with no home visits of women with a drug or alcohol problem. However, the greatest number of studies and women or babies contributing to meta-analysis for any individual outcome was three studies reporting outcomes for 379 individuals.

No eligible study provided home visits during pregnancy only. Six studies (Bartu 2006; Butz 1998; Dakof 2003; Grant 1996; Quinlivan 2000; Schuler 2000) compared home visits after delivery with no home visits. One study (Black 1994) provided home visits both during and after pregnancy. However, as only two antenatal visits were provided by a community health nurse for two weeks prior to delivery, this cannot be considered a significant antenatal intervention. Given that all studies provided home visits almost exclusively after delivery, subgroup analyses by timing of intervention are not reported separately.

#### Evidence statement 2: The impact of home visiting on drug and alcohol related outcomes

Four studies reported continued illicit drug or alcohol use, for which data from three studies (Bartu 2006; Butz 1998; Schuler, 2000) could be extracted for meta-analysis. Meta-analysis of three studies (Bartu 2006; Butz 1998; Schuler 2000) found no significant difference for continued illicit drug use (fixed-effect (FE) risk ratio (RR) 1.05, 95% confidence interval (CI) 0.89 to 1.24). There was substantial ( $I^2 = 64\%$ ) but not statistically significant heterogeneity between studies ( $P = 0.06$ ). Meta-analysis of three studies found no significant difference in continued alcohol use (FE RR 1.18, 95% CI 0.96 to 1.46). Black 1994 reported a logistic regression analysis for remaining drug free and found no significant difference (odds ratio 0.23, 95% CI 0.05 to 1.07 (author's analysis)). No study reported failure of stabilisation on methadone if opiate dependent or risk of maternal acquisition of HIV or hepatitis B or C post enrolment. No study provided a significant antenatal intervention so risk of neonatal abstinence syndrome is not reported. Two studies (Dakof, 2003; Schuler, 2000) reported failure to enroll in drug treatment programs, but with substantial ( $I^2 = 92\%$ ) and significant heterogeneity ( $P = 0.0005$ ). The random-effects (RE) model was therefore used to calculate the summary risk ratio (RERR 0.45, 95% CI 0.10, 1.94). Three studies reported failure of retention in a treatment program (Bartu, 2006; Black 1994; Dakof 2003). Dakof, 2003 reported a significant reduction in failure of retention in treatment at four weeks (RR 0.54, 95% CI 0.35 to 0.84) but no significant difference at 90 days (RR 0.93, 95% CI 0.69 to 1.25). Meta-analysis of three studies (Bartu 2006; Black 1994; Dakof, 2003) found no significant difference in failure of retention in a treatment program at latest time measured (FE RR 0.92, 95% CI 0.69 to 1.23). Other studies (Butz 1998; Grant 1996; Schuler 2000) did not report failure of retention in treatment or non-compliance with treatment in group of assignment.

**Evidence statement 3: Home visiting and the impact on pregnancy and puerperium outcomes**

As no study provided a significant antenatal intervention, we have not reported the risk of adverse pregnancy and delivery outcomes.

**Evidence statement 4: The impact of home visiting on infant/child outcomes**

As all studies were of predominantly after birth interventions, the risk of adverse neonatal outcomes is not reported. Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in not breastfeeding up to six months (FE RR 0.95, 95% CI 0.83 to 1.10). No studies reported the risk of vertical transmission of HIV, hepatitis B or C. Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in risk of incomplete vaccination schedule at six months (FE RR 1.09, 95% CI 0.91 to 1.32). Black 1994 reported no significant difference in failure to keep scheduled appointments for an infant primary care clinic (RR 0.84, 95% CI 0.42 to 1.66). Three studies (Black 1994; Grant 1996; Schuler 2000) used the Bayley Scales of Infant Development to assess infant development. Grant 1996 reported no significant difference in incidence of cognitive delay at three years using the Bayley MDI (RR 1.36, 95% CI 0.41 to 4.45), but an increase in incidence of psychomotor delay using the Bayley PDI of borderline statistical significance (RR 3.26, 95% CI 1.00, 10.59; risk difference (RD) 0.27, 95% CI 0.03 to 0.51). Meta-analysis of three studies (Black 1994; Grant 1996; Schuler 2000) found no significant differences in cognitive development (Bayley MDI: FE mean difference (MD) 2.89, 95% CI -1.17 to 6.95) or psychomotor development (Bayley PDI: FE MD 3.14, 95% CI -0.03 to 6.32). No study reported measures of school success including the need for special educational classes, retention in grade, competence in reading, writing, mathematics and general knowledge. Butz, 1998 reported a reduction in behavioural problems of borderline statistical significance (RR 0.46, 95% CI 0.21 to 1.01; RD -0.17, 95% CI -0.33 to -0.01). Butz, 1998 also reported no significant difference in the Child Behavioural Checklist total score at 18 months (MD -3.10, 95% CI -7.26 to 1.06). No study reported self-esteem, career aspiration, truancy or school completion. Long-term outcomes including teenage pregnancy, unemployment, not married, criminal behaviour, welfare assistance and suicide were not reported.

**Evidence statement 5: The impact of home visiting on psychosocial outcomes**

One study (Bartu 2006) reported no significant difference in maternal depression screen test positive: EPDS  $\geq$  12 at six months (RR 1.22, 95% CI 0.63 to 2.38). Two studies (Butz 1998; Quinlivan 2000) reported the risk of children not being in the care of their biological mother, with no significant difference (FE RR 0.83, 95% CI 0.50 to 1.39). There was substantial ( $I^2 = 63\%$ ) but not statistically significant ( $P = 0.1$ ) heterogeneity between studies. Quinlivan 2000 reported child abuse or neglect (non-accidental injury) with only one infant in the control group having this reported outcome, and a reduction in non-accidental injury and non-voluntary foster care of borderline statistical significance (RR 0.16, 95% CI 0.02 to 1.23; RD -0.08, 95% CI -0.16 to -0.01). No study reported risk of domestic violence. Schuler 2000 reported a

significant reduction in use of child protection services (RR 0.38, 95% CI 0.20 to 0.74). Metaanalysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in infant death (FE RR 0.70, 95% CI 0.12 to 4.16). Black 1994 reported a significant reduction in the Child Abuse Potential Inventory z-score (MD -0.90, 95% CI -1.61 to -0.19) and the child domain of the Parenting Stress Index z-score (MD -0.50, 95% CI -0.78 to -0.22), and no significant difference in the HOME score (MD 3.70, 95% CI -0.06 to 7.46). Quinlivan 2000 reported a significant reduction in no use of postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82). Longer-term outcomes were not reported.

**Evidence statement 6: The impact of home visits for less than six months**

One study (Dakof, 2003) provided less than six months of home visits. Dakof, 2003 reported a significant reduction in failure to enroll in a drug treatment program (RR 0.22, 95% CI 0.10 to 0.48) and a significant reduction in failure of retention in treatment at four weeks (RR 0.54, 95% CI 0.35 to 0.84), but no significant difference at 90 days (RR 0.93, 95% CI 0.69 to 1.25).

**Evidence statement 7: The impact of prolonged home visits for at least six months**

Six studies (Bartu 2006; Black 1994; Butz 1998; Grant 1996; Quinlivan 2000; Schuler 2000) provided prolonged home visits for periods of at least six months. Meta-analysis of three studies (Bartu 2006; Butz 1998; Schuler 2000) found no significant difference for continued illicit drug use (FE RR 1.05, 95% CI 0.89 to 1.24). There was substantial ( $I^2 = 64\%$ ) but not statistically significant heterogeneity between studies ( $P = 0.06$ ). Meta-analysis of three studies (Bartu 2006; Butz 1998; Schuler 2000) found no significant difference in continued alcohol use (FE RR 1.18, 95% CI 0.96 to 1.46). Black 1994 reported a logistic regression analysis for remaining drug free and found no significant difference (odds ratio 0.23, 95% CI 0.05 to 1.07 (author's analysis)). Schuler 2000 reported no significant difference in failure to enroll in a drug treatment program (RR 0.84, 95% CI 0.63 to 1.12). Meta-analysis of two studies (Bartu 2006; Black 1994) found substantial ( $I^2 = 75\%$ ) and statistically significant ( $P = 0.05$ ) heterogeneity between studies. Random effects model found no significant difference in failure of retention in a treatment program at latest time measured (RE RR 0.91, 95% CI 0.24 to 3.36). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in not breast feeding up to six months (FE RR 0.95, 95% CI 0.83 to 1.10). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in risk of incomplete vaccination schedule at six months (FE RR 1.09, 95% CI 0.91 to 1.32). Black 1994 reported no significant difference in failure to keep scheduled appointments for an infant primary care clinic (RR 0.84, 95% CI 0.42 to 1.66). Grant 1996 reported no significant difference in incidence of cognitive delay at three years using the Bayley MDI (RR 1.36, 95% CI 0.41 to 4.45) but an increase in incidence of psychomotor delay using the Bayley PDI of borderline statistical significance (RR 3.26, 95% CI 1.00 to 10.59; RD 0.27, 95% CI 0.03 to 0.51). Meta-analysis of three studies (Black 1994; Grant 1996; Schuler 2000) found no significant differences in Bayley MDI (FE MD 2.89, 95% CI -1.17 to 6.95) or Bayley PDI (FEMD 3.14, 95% CI -0.03 to 6.32). Butz 1998 reported a reduction in behavioural problems of borderline statistical significance (RR 0.46, 95% CI 0.21 to 1.01; RD -0.17, 95% CI -0.33



to-0.01). Butz 1998 also reported no significant difference in the Child Behavioural Checklist total score at 18 months (MD -3.10, 95% CI -7.26 to 1.06). Bartu 2006 reported no significant difference in maternal depression screen test positive: EPDS \_12 at six months (RR 1.22, 95% CI 0.63 to 2.38). Meta-analysis of two studies (Butz 1998; Quinlivan 2000) found no significant difference in risk of infant not in care of biological mother (FE RR 0.83, 95% CI 0.50 to 1.39). There was substantial ( $I^2 = 63\%$ ) but not statistically significant ( $P = 0.1$ ) heterogeneity between studies. Quinlivan 2000 reported child abuse or neglect (non-accidental injury) with only one infant in the control group having this reported outcome, and a reduction in non-accidental injury and non-voluntary foster care of borderline statistical significance (RR 0.16, 95% CI 0.02 to 1.23; RD -0.08, 95% CI -0.16 to -0.01). Schuler 2000 reported a significant reduction in use of child protection services (RR 0.38, 95% CI 0.20 to 0.74). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in infant death (FE RR 0.70, 95% CI 0.12 to 4.16). Black 1994 reported a significant reduction in the Child Abuse Potential Inventory z-score (MD -0.90, 95% CI -1.61 to -0.19) and the child domain of the Parenting Stress Index z-score (MD -0.50, 95% CI -0.78 to -0.22), and no significant difference in the HOME score (MD 3.70, 95% CI -0.06 to 7.46). Quinlivan 2000 reported a significant reduction in no use of postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82).

**Evidence statement 8: The impact of at least weekly home visits**

Four studies (Black 1994; Dakof 2003; Grant 1996; Schuler 2000) provided home visits at least weekly. Schuler 2000 reported no significant difference for continued illicit drug use (RR 1.20, 95% CI 0.79 to 1.85) and continued alcohol use (RR 1.01, 95% CI 0.75 to 1.35). Black 1994 reported a logistic regression analysis for remaining drug free and found no significant difference (OR 0.23, 95% CI 0.05 to 1.07 (authors' analysis)). Meta-analysis of two studies (Dakof, 2003; Schuler 2000) found considerable ( $I^2 = 92\%$ ) and statistically significant ( $P = 0.0005$ ) heterogeneity between studies reporting failure to enroll in a drug treatment program. Random-effects meta-analysis found no significant reduction in failure to enroll in a drug treatment program (RE RR 0.45, 95% CI 0.10 to 1.94). Dakof, 2003 reported a significant reduction in failure of retention in treatment at four weeks (RR 0.54, 95% CI 0.35 to 0.84) but no significant difference at 90 days (RR 0.93, 95% CI 0.69 to 1.25). Black 1994 reported no significant difference in failure of retention in program at six months (RR 1.66, 95% CI 0.71 to 3.89) and no significant difference in failure to keep scheduled appointments for an infant primary care clinic (RR 0.84, 95% CI 0.42 to 1.66). Grant 1996 reported at three years no significant difference in incidence of cognitive delay using the Bayley MDI (RR 1.36, 95% CI 0.41 to 4.45), and an increase in incidence of psychomotor delay using the Bayley PDI of borderline statistical significance (RR 3.26, 95% CI 1.00 to 10.59; RD 0.27, 95% CI 0.03 to 0.51). Meta-analysis of three studies (Black 1994; Grant 1996; Schuler 2000) found no significant differences in Bayley MDI (FE MD 2.89, 95% CI -1.17 to 6.95) or Bayley PDI (FE MD 3.14, 95% CI -0.03 to 6.32). Schuler 2000 reported a significant reduction in child protection services (RR 0.38, 95% CI 0.20 to 0.74). Black 1994 reported a significant reduction in the Child Abuse Potential Inventory z-score (MD -0.90, 95% CI -1.61 to -0.19) and the child domain of the Parenting Stress Index z-score (MD -0.50, 95% CI -0.78 to -0.22), and no

significant difference in the HOME score (MD3.70, 95%CI -0.06 to 7.46).

**Evidence statement 9: The impact of less than weekly home visits**

Three studies (Bartu 2006; Butz 1998; Quinlivan, 2000) provided home visits less often than weekly. Meta-analysis of two studies (Bartu 2006; Butz 1998) found considerable ( $I^2 = 80\%$ ) and statistically significant ( $P = 0.02$ ) heterogeneity. Random-effects analysis found no significant difference for continued illicit drug use (RE RR 0.99, 95% CI 0.66 to 1.47). Meta-analysis of two studies (Bartu 2006; Butz 1998) found no significant difference in continued alcohol use (FE RR 1.33, 95% CI 0.99 to 1.79). Bartu 2006 reported no significant difference in failure of retention in program at six months (RR 0.45, 95% CI 0.17 to 1.25). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in not breastfeeding at six months (FE RR 0.95, 95% CI 0.83 to 1.10). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in risk of incomplete vaccination schedule at six months (FE RR 1.09, 95% CI 0.91 to 1.32). Bartu 2006 reported no significant difference in maternal depression screen test positive: EPDS \_12 at six months (RR 1.22, 95% CI 0.63 to 2.38). Butz 1998 reported a reduction in behavioural problems of borderline statistical significance (RR 0.46, 95%CI 0.21 to 1.01; RD-0.17, 95%CI -0.33 to -0.01) but no significant difference in the Child Behavioural Checklist total score at 18 months (MD -3.10, 95% CI -7.26 to 1.06). Meta-analysis of two studies (Butz 1998; Quinlivan 2000) found no significant difference in risk of children not being in the care of their biological mother (FE RR 0.83, 95%CI 0.50 to 1.39). Quinlivan 2000 reported child abuse or neglect (non-accidental injury) with only one infant in the control group with this reported outcome, and a reduction in non-accidental injury and non-voluntary foster care of borderline statistical significance (RR 0.16, 95% CI 0.02 to 1.23; RD -0.08, 95% CI -0.16 to -0.01). Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in infant death (FE RR 0.70, 95% CI 0.12 to 4.16). Quinlivan 2000 reported a significant reduction in no use of postpartum contraception (RR 0.41, 95% CI 0.20 to 0.82).

**Evidence statement 10: The impact of home visits by nurses**

Four studies (Bartu 2006; Black 1994; Butz 1998; Quinlivan 2000) used nurses to provide home visits. Meta-analysis of two studies (Bartu 2006; Butz 1998) found considerable ( $I^2 = 80\%$ ) and statistically significant ( $P = 0.02$ ) heterogeneity between studies for continued illicit drug use. Random-effects meta-analysis found no significant difference in continued illicit drug use (RE RR 0.99, 95% CI 0.66 to 1.47). Meta-analysis of two studies (Bartu 2006; Butz 1998) found no significant difference in continued alcohol use (FE RR 1.33, 95% CI 0.99 to 1.79). Black 1994 reported a logistic regression analysis for remaining drug free and found no significant difference (OR 0.23, 95% CI 0.05 to 1.07 (authors' analysis)). Meta-analysis of two studies (Bartu 2006; Black 1994) reporting failure of retention in program to six months found considerable ( $I^2 = 73\%$ ) and statistically significant heterogeneity ( $P = 0.05$ ) between studies. Random-effects metaanalysis found no significant difference in failure of retention in program to six months (RE RR 0.89, 95%CI 0.25 to 3.20). Metaanalysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in failure to breastfeed at six months (FE RR 0.95, 95%CI 0.83 to 1.10) and no significant difference in risk of incomplete vaccination schedule at

six months (FE RR 1.09, 95% CI 0.91 to 1.32). Black 1994 reported no significant difference in failure to keep scheduled appointments for an infant primary care clinic (RR 0.84, 95% CI 0.42 to 1.66). Bartu 2006 reported no significant difference in maternal depression screen test positive: EPDS \_ 12 at six months (RR 1.22, 95% CI 0.63 to 2.38). Black 1994 reported no significant difference in the Bayley MDI (MD - 1.80, 95% CI -11.36 to 7.76) or the Bayley PDI (MD 0.70, 95% CI -17.75 to 19.15) at 18months. Butz 1998 reported a reduction in behavioural problems of borderline statistical significance (RR 0.46, 95% CI 0.21 to 1.01; RD -0.17, 95% CI -0.33 to -0.01). Butz 1998 also reported no significant difference in the Child Behavioural Checklist total score at 18months (MD-3.10, 95%CI - 7.26 to 1.06).Meta-analysis of two studies (Butz 1998; Quinlivan 2000) found no significant difference in rate of children not in the care of their biological mother (FE RR 0.83, 95% CI 0.50 to 1.39). Quinlivan 2000 reported child abuse or neglect (non-accidental injury) with only one infant in the control group with this reported outcome, and a reduction in non-accidental injury and non-voluntary foster care of borderline statistical significance (RR 0.16, 95% CI 0.02 to 1.23; RD -0.08, 95% CI -0.16 to -0.01).Meta-analysis of two studies (Bartu 2006; Quinlivan 2000) found no significant difference in infant death (FE RR 0.70, 95% CI 0.12 to 4.16). Black 1994 reported a significant reduction in the Child Abuse Potential Inventory z-score (MD -0.90, 95% CI -1.61 to -0.19) and the child domain of the Parenting Stress Index z-score (MD - 0.50, 95%CI -0.78 to -0.22). Black 1994 reported no significant difference in the HOME score (MD 3.70, 95% CI -0.06 to 7.46). Quinlivan 2000 reported a significant reduction in no use of postpartum contraception (RR 0.41, 95% CI 0.20 to0.82).

**Evidence statement 11: The impact of home visits by trained social workers**

No study reported using trained social workers to provide home visits.

**Evidence statement 12: The impact of home visits by trained counsellors**

Dakof 2003 provided a manualised home-based, goal-orientated program administered by trained 'black' specialists with prior experience in drug treatment services. Dakof, 2003 reported a significant reduction in failure to enroll in a drug treatment program (RR 0.22, 95% CI 0.10 to 0.48) and a significant reduction in failure of retention in treatment at four weeks (RR 0.54, 95% CI 0.35 to 0.84) but no significant difference at 90 days (RR 0.93,95% CI 0.69 to 1.25).

**Evidence statement 13: The impact of home visits by trained lay workers**

Two studies (Grant 1996; Schuler 2000) reported home visits by trained lay workers. Schuler 2000 reported no significant difference for continued illicit drug use (RR 1.20, 95% CI 0.79 to1.85), continued alcohol use (RR 1.01, 95% CI 0.75 to 1.35) or failure to enroll in a drug treatment program (RR 0.84, 95% CI 0.63 to 1.12). Grant 1996 reported at three years no significant difference in incidence of cognitive delay using the Bayley MDI(RR 1.36, 95% CI 0.41 to 4.45), and an increase in incidence of psychomotor delay using the Bayley PDI of borderline statistical significance (RR 3.26, 95% CI 1.00 to 10.59; RD 0.27, 95% CI 0.03 to 0.51). Meta-analysis of two studies (Grant 1996; Schuler2000) found no significant differences in cognitive development (Bayley MDI:

FEMD3.92, 95% CI -0.56 to 8.41) or psychomotor development (Bayley PDI: FE MD 3.22, 95% CI -0.01 to 6.44). Schuler 2000 reported a significant reduction in child protection services (RR 0.38, 95% CI 0.20 to 0.74).

**Evidence statement 14: The impact of home visits by a multidisciplinary team**

No study reported using a multidisciplinary team to provide home visits.

**Evidence statement 15: The impact of home visits providing a developmental intervention**

Three studies (Black 1994; Butz 1998; Schuler 2000) provided a developmental intervention as a component of the home visiting program. All three studies used the Carolina Preschool Curriculum and Hawaii Early Learning Program. Meta-analysis of two studies (Butz 1998; Schuler 2000) found no significant difference in continued illicit drug use (FE RR 0.95, 95% CI 0.75 to 1.20) and continued alcohol use (FE RR 1.08, 95% CI 0.83 to 1.41). Black 1994 reported a logistic regression analysis for remaining drug free and found no significant difference (OR 0.23, 95% CI 0.05 to 1.07 (authors' analysis)). Schuler 2000 reported no significant reduction in failure to enroll in a drug treatment program (RR 0.84, 95% CI 0.63 to 1.12). Black 1994 reported no significant difference in failure to keep scheduled appointments for an infant primary care clinic (RR 0.84, 95% CI 0.42 to 1.66).

Meta-analysis of two studies (Black 1994; Schuler 2000) found no significant difference in cognitive development (Bayley MDI: FEMD 3.13, 95% CI -1.46 to 7.72) but a significant improvement in psychomotor development (Bayley PDI: FE MD 4.14, 95% CI 0.79 to 7.50). Butz 1998 reported a reduction in behavioural problems of borderline statistical significance (RR 0.46, 95% CI 0.21 to 1.01; RD -0.17, 95% CI -0.33 to -0.01). Butz 1998 also reported no significant difference in the Child Behavioural Checklist total score at 18 months (MD -3.10, 95% CI -7.26 to 1.06). Butz 1998 reported no significant difference in rates of children not in the care of their biological mother (RR 1.04, 95% CI 0.61 to 1.77). Schuler 2000 reported a significant reduction in child protection services (RR 0.38, 95% CI 0.20 to 0.74). Black 1994 reported a significant reduction in the Child Abuse Potential Inventory z-score (MD -0.73, 95% CI -1.35 to -0.11) and the child domain of the Parenting Stress Index z-score (MD -0.50, 95% CI -0.78 to -0.22). Black 1994 reported no significant difference in the HOME score (MD 3.70, 95% CI -0.06 to 7.46).

**Integrated programs for mothers with substance use issues (Milligan et al., 2010)**

**Evidence statement 1: Studies of the impact of integrated programs on maternal substance use**

Two studies compared substance use outcomes for women participating in integrated programs to women in no treatment control groups. In a quasi-experimental study, Armstrong et al. examined percent negative urine screens in 782 integrated program clients and 610 no-treatment control participants and found that women participating in integrated programs were significantly more

likely than women not in treatment to have negative urine toxicology screens during pregnancy ( $d = 0.18$ ,  $SE = 0.07$ ,  $2.719 p < .01$ ). In a quasi-experimental study of 72 women in integrated programs and 23 women not in treatment, Whiteside-Mansell, Crone, and Connors examined the percent using drugs and the percent using alcohol at the time of the birth of their child. Results indicated that significantly fewer women in integrated programs used drugs or alcohol than those not in treatment ( $d = 1.41$  ( $SE = 0.42$ ,  $z = 3.351$ ,  $p < .001$  and  $d = 0.49$ ,  $SE = 0.21$ ,  $z = 2.287$ ,  $p = 0.02$ , for drug and alcohol use, respectively).

There were 10 cohort studies with data on maternal substance use at intake and end of treatment or follow up. 29 out of 31 measures indicated decreased maternal substance use. We combined studies with the most common measures of maternal substance use (i.e., Alcohol and Drug Composites of the Addiction Severity Index and days of use). Five studies involved the Alcohol and Drug Composites of the Addiction Severity Index, on which women in integrated programs reported significantly reducing their alcohol and drug use from intake to the end of treatment. The overall effect sizes using a fixed effects model were 0.40 ( $z = 9.34$ ,  $p < .001$ ) for the alcohol composite and 0.65 ( $z = 14.57$ ,  $p < .001$ ) for the drug composite (CIs = - 0.31 to 0.48 and 0.57 to 0.74, respectively). These effect sizes are considered medium (Cohen, 1988). The file drawer statistic indicated that 66 and 143 studies, respectively, with null results would be required to reduce significance to the just -significant level,  $\alpha = 0.05$  (Rosenthal, 1991). This exceeds Rosenthal's critical value of 35 ( $5k + 10$ , where  $k$  is the number of included studies). Therefore, we can be confident that these significant results would not be negated by null findings that were not included in the present analysis. Cochran's chi square test, which examines homogeneity of variance, was not statistically significant for alcohol ( $Q(4) = 1.58$ ,  $p = 0.81$  and drug ( $Q(4) = 3.90$ ,  $p = 0.42$ ) composites.

Four studies reported on days of use. Results indicated that women in integrated programs reported significantly reducing the number of days using substances from intake to the end of treatment,  $z = 3.74$ ,  $p < .0001$ . The overall effect size using a random effects model was 0.52 (CI = 0.25 to 0.80), which is medium. The file drawer statistic indicated that 80 studies with null results would be required to reduce significance to just the significant level,  $\alpha = 0.05$ . This exceeds Rosenthal's critical value of 30 ( $5k + 10$ , where  $k$  is the number of included studies). Therefore, we can be confident that this significant result would not be negated by null findings that were not included in the present analysis. Given that Cochran's chi square test indicated significant heterogeneity between studies ( $Q(3) = 10.43$ ,  $p < 0.01$ ), we completed univariate metaregression using the following independent variables: document date, type of document, country, sample size, attrition, study design, maternal age, marital status, education, employment, income, substance abuse history, previous substance abuse treatment, mental and physical health, involvement with the legal system, child age, custody, involvement with child protection services, positive toxicology at birth, and treatment program characteristics (e.g., program for pregnant and/or parenting women, planned length of treatment, intensity of treatment, residential or outpatient, type of services). These variables did not significantly moderate the substance use effect. It is important to note that, due to missing data and our inability to include all

studies in all analyses, these analyses may have been underpowered.

**Evidence statement 2: Studies comparing integrated programs to non-integrated programs**

There were 10 studies comparing substance use for women participating in integrated and non-integrated programs. As can be seen in Table 3, 9 out of 16 measures indicated better outcomes for integrated programs and most of these effect sizes were small and non-significant. We combined studies with the most common measures of maternal substance use (urine toxicology and self-report abstinence, i.e., percent not using). Four studies examining urine toxicology indicated no significant differences between integrated and non-integrated programs. Carroll et al. [39] found that 71% of integrated and 76% of non-integrated program clients had negative urine screens ( $n = 7$  in each group). Similarly, Barkauskas, Low, & Pimlott [44] found that 95% of integrated and 97% of non-integrated program clients had negative urine screens ( $n = 37$  and  $35$ , respectively). Chang, Carroll, Behr, & Kosten [45] examined 6 integrated and 6 non-integrated program clients and found that more integrated program clients had negative urine screens (41% and 24%, respectively). Luthar et al. compared a relational psychotherapy mothers group plus standard methadone treatment (treatment group) with a recovery training plus standard methadone treatment (control group) on opiate and cocaine screens ( $n = 60$  and  $67$ , respectively). No significant group differences were found on opiate or cocaine screens. Taken together, the combined effect size data for these 4 studies suggest that the percentage of clients with negative urine screens in integrated and non-integrated programs was not significantly different ( $d = -0.09$ ,  $CI = -0.412$  to  $0.224$ ,  $z = -0.58$ ,  $p = 0.56$ ). Cochran's chi square test indicated that there was no statistically significant heterogeneity among studies,  $Q(3) = 0.66$ ,  $p = 0.88$ .

There were two studies comparing self-reported abstinence for women in integrated and non-integrated programs. Sowers, Ellis, Washington, & Currant examined differences in abstinence for integrated residential treatment and non-integrated day treatment. A moderate effect was found ( $d = 0.33$ ) but was not statistically significant. Suchman, Mayes, Conti, Slade, & Rounsaville [49] found a small, non-significant effect ( $d = 0.15$ ) when comparing abstinence for women in women-only outpatient treatment programs with or without parenting services. Taken together, the combined effect size data suggest that the percentage of clients reporting abstinence in integrated and non-integrated programs was not significantly different ( $d = 0.22$ ,  $CI = -0.231$  to  $0.672$ ,  $z = 0.96$ ,  $p = 0.34$ ). There was not statistically significant heterogeneity among studies,  $Q(1) = 0.158$ ,  $p = 0.691$ .

**Integrated programs for mothers with substance use issues: Maternal Mental Health (Niccols et al., 2010)**

**Evidence statement 1: The Effect of Integrated Programs on Maternal Mental Health**

No studies compared maternal mental health outcomes for women participating in integrated programs to women in no treatment control groups.

**Evidence statement 2: Comparing Integrated Programs to Non-integrated Programs**

There were five studies comparing maternal mental health for women participating in integrated and non-integrated programs. As can be seen in Table 1, most effects (13/15) indicated better outcomes for integrated programs, and were small to medium in size. Few (2/15) effects indicated better outcomes for non-integrated programs.

**Evidence statement 3: Comparing Integrated Programs to Non-integrated Programs**

We combined the three studies that provided enough statistical information to permit meta-analysis (i.e. Luthar et al., 2007; Sacks et al., 2004; Schinka et al., 1999) and found that there was more improvement in mental health scored for women in integrated than non-integrated programs,  $p < .001$ . The overall effect size using a fixed effects model was 0.23 (95% CI = 0.15 to 0.31). This effect size is considered small (Cohen, 1988). There was no statistically significant heterogeneity among studies,  $Q = 5.66$ ,  $p = .059$ .

**Integrated programs for mothers with substance use issues: Parenting Outcomes (Niccols et al., 2012)****Evidence statement 1: Are integrated programmes more effective than addiction treatment-as-usual in improving parenting outcomes?**

There were three randomized trials comparing parenting outcomes for clients participating in integrated programs and addiction treatment-as-usual. For the two studies [Luthar & Suchman 2000; Luthar, Suchman & Altomare 2007] with data on measure of parenting skills,  $d$ s ranged from 0.00 to 0.94 and most indicated greater pre-post improvements in scored for integrated programs than addiction treatment-as-usual, but this advantage was typically small. In the one study of child protection services involvement, there were no group differences in pre-post changes.

**Evidence statement 2 Are some integrated programme characteristics associated with better parenting outcomes than others?**

Examination of parenting effect sizes (where available) among the 31 studies with parenting outcome data suggested that residential programs appeared to have larger effects than outpatient programs and programs with a maternal mental health service appeared to have larger effects than programs that did not offer a maternal mental health service. Only two cohort studies and one randomized trial specifically examined factors associated with parenting outcomes. Kern et al. examined correlations between changes in various domains of parenting stress over the course of treatment and reduction in depressive symptoms. Findings indicated that reduction in depressive symptoms was significantly correlated with improvements in parenting competence, isolation, attachment, and role restriction. Knight and Wallace found that when children resided in the treatment facility, mothers were five times more likely to have custody of their children at the end of treatment.

In a study comparing two integrated programs, Suchman and colleagues randomly assigned mothers (of children under 3 years old) in outpatient

substance abuse treatment to the Mothers and Toddlers Program (MTP; an attachment-based parenting intervention) or the Parent Education Program (PE; case management and child guidance pamphlets). Quality of mental representations of parenting was assessed using the Working Model of the Child Interview, care giving behaviour was assessed using the Nursing Child Assessment Satellite Training, and maternal reflective functioning was assessed using the Parent Development Interview. *ds* ranged from -0.22 to 0.70 and most indicated greater improvements in scores for attachment-based parenting intervention than parent education, but this advantage was typically small. At the end of the 3-month treatment, mothers in the MPT had significantly more improved scores for care giving behaviour and reflective functioning and a trend for more improved sensitivity score than mothers in the PE group. At 6-week follow-up, there were no significant group differences in improvements in scores.

### **Integrated programs for mothers with substance use issues: Child Outcomes (Niccols et al., 2012)**

#### **Evidence statement 1: What is the impact of integrated programs on child outcomes from intake to post-test?**

There were 6 cohort studies in which child development outcomes were reported. As can be seen in Table 1, all 9 mean 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 in both studies in which they were examined. One cohort study reported that a large percentage (91–97%) of 6- and 12-month-old infants whose mothers participated in integrated programs scored over one standard deviation above the normative mean. In the 2 cohort studies reporting pre-post changes, most effects indicated positive child development outcomes for integrated programs, with effect sizes ranging from small to large ( $ds = 0.007–1.132$ ). There were 2 cohort studies in which emotional and behavioural functioning outcomes were reported. As can be seen in Table 1, most effects indicated positive emotional and behavioural functioning outcomes for integrated programs from pre-test to post-test and, where available, most effect sizes were large ( $ds = 0.652–1.132$ ). There were no studies examining the impact of integrated programs on child growth from intake to post-test.

#### **Evidence statement 2: Are integrated programs more effective than no treatment in improving outcomes for children?**

There were 2 quasi-experimental studies in which child development outcomes and growth parameter outcomes (length, weight, and head circumference) were reported. As can be seen in Table 2, most developmental scores for 3-, 6-, and 12-month-old infants of women who participated in integrated programs were higher than those for infants of women not in treatment (and similar to those for infants of non-users). In the 1 study in which 18 month olds participated there were large differences between the groups, with children of women who participated in integrated programs scoring higher than children of women not in treatment. Also, most growth parameters for infants whose mothers participated in integrated programs were higher than those for infants of women not in treatment and, where available, all effect sizes were large ( $ds$



= 1.16–2.48). Below, we provide a narrative review of these 2 studies.

Field et al. (1998) compared developmental outcomes and growth markers for infants of polydrug-using adolescent mothers to those of infants of polydrug-using adolescent mothers not in treatment and non-using adolescent mothers (sample size not specified by group). At 3 and 6 months, scores on the Infant Neurological International Battery were similar to those for infants of non-users. At 12 months, children of women receiving treatment scored higher on the Early Social Communication Scales than children of women not in treatment, with scores approximating those of children of non-users. Children of women receiving treatment also scored higher on the Bayley Scales of Infant Development Mental Development Index than children of women not in treatment, but lower than the children of non-users. Scores on the Bayley Scales of Infant Development Psychomotor Development Index did not differ between children of women receiving or not receiving treatment and both of these groups scored lower than children of non-users. Mothers who participated in the integrated program had infants who were similar to non-users in growth parameters assessed when they were 3, 6, and 12 months old. Compared to no treatment, all growth parameter comparisons favoured integrated treatment at 6 and 12 months, but not at 3 months. Unfortunately, statistical tests were not reported in this study.

Whiteside-Mansell et al. (1999) compared Bayley Scales of Infant Development Mental and Psychomotor Development Index scores and growth markers for children of women attending an integrated program to children of women who refused treatment. At 6 and 12 months, there were no significant differences between the groups in developmental scores, however, at 12 months there was a large effect size (0.96) for the Psychomotor Index favouring children whose mothers were in treatment. At 18 months, the treatment group outperformed the no treatment group in developmental scores, but small sample size precluded statistical comparison. At each age, all children of participating women scored in the normal range on the developmental tests whereas at 12 months 1 child of a non-participating woman scored below the normal range on both tests. At 6, 12, and 18 months of age, both groups of children were in the normal range for weight, length, and head circumference, with higher parameters for children in the integrated program than those in the no treatment comparison group.

There were no studies of child emotional and behavioural functioning outcomes comparing integrated programs to no treatment.

**Evidence statement 3: Are integrated programs more effective than non-integrated programs in improving outcomes for children?**

There was one quasi-experimental study and 2 randomized trials in which emotional and behavioural functioning outcomes were reported. As can be seen in Table 3, most effects favoured integrated over non-integrated treatment and, where available, most effect sizes indicated that this advantage was small ( $d_s = 0.22-0.45$ ). Below, we provide a narrative review of each of these 3 studies.

Luthar and Suchman (2000) randomly assigned mothers at 3 methadone clinics to standard treatment or standard treatment plus a mothers' group. Psychosocial adjustment was assessed in children over 7 years old using the self-report and parent-report Behavioural Assessment System for Children. At the end of the 6-month treatment and at 6-month follow up, most (7/8) effects favoured the integrated treatment, with small to medium effect sizes ( $d_s = 0.22-0.53$ ) that were not statistically significant (likely due to small sample size).

With another sample, Luthar et al. (2007) randomly assigned mothers at 3 methadone clinics to standard treatment plus recovery training or standard treatment plus a mothers' group. Children over the age of 7 were assessed for psychosocial adjustment using self-report and parent-report measures. There were no significant group differences on the parent-reported Behavioural Assessment System for Children. At the end of the 6-month treatment, scores for children whose mothers participated in the integrated program were significantly lower than the comparison group on the self-reported Behavioural Assessment System for Children and the Children's Depression Inventory. However, at 6-month follow-up, the circumstances reversed, with scores for children whose mothers participated in integrated treatment showing more maladjustment by self-report than the comparison group. The authors highlight the need for continuity of care past formal completion of a treatment program.

Noether et al. (2007) examined children of women receiving services, comparing comprehensive integrated treatment services for mothers with substance abuse issues to child-specific treatment as usual. At both 6- and 12-month follow-up, scores on the Behavioural and Emotional Rating Scales showed more improvement for the children who participated in the integrated program than those of children in the control group. In addition, the authors found that significant predictors of positive child outcomes included younger child age, participation in a residential (vs. outpatient) program, having witnessed household violence, and non-Black race.

There were no studies of child development or growth outcomes comparing integrated to non-integrated programs.

### **Prevention for children from substance-affected families (Broning et al., 2012)**

#### **Evidence statement 1: Own reduction of substance consumption or abstinence**

Own reduction of substance consumption or abstinence was evaluated only in some studies, although almost all studies stated this as their ultimate preventive goal. In one study with good design quality, no reduction of substance consumption was found for the experimental groups, whereas the control groups' consumption increased. In another program with modest design quality evaluation the experimental group even showed a higher frequency of alcohol consumption. In the only long-term study of a family-based program substance consumption was elevated in both study groups (intervention and

control group) compared to other population samples, and the risk for developing SUD in adolescence or young adulthood was significantly reduced for males, but elevated for females.

**Evidence statement 2: Improvement in coping strategies, social behaviours and self-worth**

An improvement in coping strategies was a central part of almost all studied programs, with the exception of one. Frequently, an improvement was observed. In one study with good design quality (Gance-Cleveland & Mays 2008), only girls showed better coping strategies.

**Evidence statement 3: Improvement in coping strategies, social behaviours and self-worth**

Social behaviour was also frequently assessed and showed significant improvements in all studies, especially for family-based programs, but also otherwise.

**Evidence statement 4: Improvement in coping strategies, social behaviours and self-worth**

Self-worth enhancement was assessed in four programs with inconsistent findings. One study with good design quality found improvement of self-worth, but only for a group that received additional training as mentors (not as mentees). A study with poorer design quality reported increase of self-worth, but the duration of the program was over two years, i.e. untypically long. Two further high quality studies did not reveal significant effects on self-worth.

**Evidence statement 5: Program-related knowledge**

*Program-related knowledge* such as facts about alcohol, drugs, addiction, and their effects on families was assessed in five of the studies and increased substantially in all cases.

**Evidence statement 6: Unexpected findings / negative effects**

Unexpected findings / negative effects also occurred: positive alcohol expectations rose in one study (Short et al 1995) with very good design quality, even though the intended effect was the opposite. In the same study no outcome differences between groups with or without individual trainer component were found. This finding contrasts with another study, also with good design quality, in which positive effects of mentorship were reported (Horn & Kolbo 2000a). Also, high levels of loneliness and isolation were found at pre-test measurement in one study (Dore et al 1999) with good design quality, which did not change after the 8-week program. In another study of low quality (Horn & Kolbo 2000b) that featured 11 sessions plus a mentorship component participants did report decreased levels of isolation. In a further study (Gance-Cleveland & Mays 2008; good design quality) there were other unexpected findings such as increased medical complaints and diminished social integration for boys. In one program (Horn & Kolbo 2000a; good design quality), positive effects were also reported for the wait control groups, while this was either not the case or not reported in other programs.

## Parenting programmes for prevention of substance misuse among under 18 year olds (J. Petrie et al 2007)

### Evidence statement 1: primary school

One study [Hawkins et al 1999 ], the 'Preparing For The Drug Free Years' (PDFY) programme, looked at the effect of behaviour management training for teachers and parents and social skills training for children on tobacco, alcohol and drug use. The study included a longitudinal follow-up, reporting on student's drug, alcohol and cigarette consumption at graduation. They found no significant difference in substance use between the intervention and control groups ( $P = 0.93$ ) although the intervention group had better academic achievement ( $P = 0.01$ ), less school misbehaviour ( $P = 0.02$ ) and reported fewer violent delinquent acts ( $P = 0.04$ ).

### Evidence statement 2: Transition from primary to secondary school

Eight studies targeted children at the change from primary (elementary) to secondary (middle and high school) education [22, 24, 26, 30, 33–35, 37]. Three [22, 30, 35] focused on tobacco, alcohol and drug use. One [22], 'The Midwestern Prevention Programme', was a 12-month programme involving homework designed to engage parents in reinforcing abstinence messages with their children. The study found a significant reduction in tobacco and marijuana use in the intervention group and a non-significant reduction in alcohol use (difference in absolute change from baseline, tobacco: 5.5%, marijuana 9%, alcohol: 3.1%). One [35] entitled 'Project Star' was a classroom intervention that also included homework activities involving parents. The study found significant reductions for alcohol, cigarette and marijuana use among the intervention group compared with the control (change in proportion of use in last month between intervention and control; alcohol: difference 5.2%, tobacco: difference 9.7%, marijuana: difference 3.7%). The other the Iowa Strengthening Families Programme (ISFP) [30], which involved seven parent and child sessions, also found significant reductions in alcohol, drug and tobacco use, with a 21% difference between intervention and control in those who had ever used alcohol.

Another study [24] the 'Coping Power Programme' focused on children with aggressive behavioural problems who were considered to be at risk of later substance misuse and social exclusion. They found that group-based parenting skills training alone (indicated) or alongside the classroom programme (universal with indicated) had a significant effect on drug and alcohol scores compared with the control (indicated  $-0.01$ , indicated with universal  $-0.01$ , control  $+0.10$ ). The classroom-only programme (universal) had no significant effect on reducing delinquency and substance misuse 1 year after the intervention (0.00).

### Evidence statement 3: adolescents programmes

Eight studies looked at interventions with teenage children and their parents.

Three studies focussed on drugs, tobacco and alcohol use. Project [South Carolina Coping Skills Project (SCCOPE)] evaluated coping skills training. They compared three groups, a classroom-based programme, a classroom-based programme with additional parenting programme and a control. At the 2-year follow-up, the classroom-only programme showed effective results, but

those with both parenting and classroom intervention showed an increase in use of drugs and alcohol. One study compared the established classroom programme of school-based sessions [Drug Abuse Resistance Education (DARE)] with an additional parenting programme involving homework tasks (DARE Plus). Outcome data for girls and boys were reported separately. The study found no significant differences in the girls' substance use scores. For the boys, scores were lower in the DARE and DARE Plus groups when compared with control (but this was only statistically significant in the DARE Plus group). The other compared a parenting programme [Life Skills Training (LST) with Strengthening Families Programme (SFP)], involving evening sessions for children and their parents, with a classroom-only intervention (LST) and a standard school curriculum control group. There was a relative reduction in numbers of new users of tobacco, alcohol and marijuana in both intervention groups compared with the control. However, reductions were higher in the parenting programme (LST with SFP) than the classroom-only intervention (LST) (relative reduction rate in number of new users—alcohol, LST with SFP 30%, LST 4%; tobacco, LST with SFP 28%, LST 14%; marijuana, LST with SFP 48%, LST 46%).

The New Hampshire study looked at use of drugs and chewing tobacco in adolescents. They compared three groups: a classroom-based intervention, a classroom intervention with additional 10-session parent communication course and a control. There was a reduction in initiation and regular use of marijuana in both intervention groups, which was greater in the parenting group, but this was not statistically significant in either [classroom intervention: initiation RR 0.95 (95% CI 0.67, 1.35), regular use RR 0.84 (95% CI 0.51, 1.36); parenting programme: initiation RR 0.74 (95% CI 0.48, 1.14), regular use RR 0.56 (95% CI 0.29, 1.08)].

## **Community based interventions to reduce substance misuse among vulnerable and disadvantaged young people (Jones et al., 2006)**

### **1. Young people with multiple risk factors (general at risk)**

#### **Comparison of interventions delivered in different settings**

##### **Evidence statement 1**

There is evidence from one SR ++ 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 programmes alone. Compared with low risk youth, this population may respond more favourably to comprehensive programmes targeting alcohol, cannabis, tobacco, and generic substance use (Streke, 2004). Applicability Rating B.

##### **Evidence statement 2**

There is evidence from five CNRT - 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 Switzerland and 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. However, there is some evidence that they may produce reductions in use in existing users of these drugs (Hermann et al., 2002; Hulser et al., 2005; Sambrano et al., 2005; Springer et al., 2002a; Springer et al., 2002b).  
Applicability Rating B.

### **Evidence statement 3**

There is evidence from two CNRT – of a multi-site evaluation of community-based interventions targeting high-risk youth (comprising behavioural skills programmes, informational focused programmes, recreational focused programmes, and affective programmes) conducted in Switzerland (2 CNRT -) to suggest that these types of programmes have no overall effects on mental health outcomes in the short to long term (Hulser et al., 2005a; Hulser et al., 2005b). Applicability Rating B.

## **Community-based interventions**

### **Evidence statement 4**

There is insufficient evidence from one SR ++ to determine whether family, educational or multi-component community interventions per se are effective in reducing drug use behaviour in vulnerable or disadvantaged young people (Gates et al., 2006). However, the review focused exclusively on RCTs and the authors did not specifically focus upon vulnerable young people.

## **Youth programmes**

### **Evidence statement 5**

There is inconsistent evidence from four CNRT – about the effectiveness of community-based youth programmes for young people at-risk of substance use in reducing substance use outcomes:

**5.1** There is evidence from three CNRT – to suggest 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 (Baker et al., 1995; Beamer et al., 1991; St Pierre et al., 1992). However one CNRT – suggested that a community-based youth programme increased last month use of a variety of substances, particularly amongst girls (Lam et al., 2005).  
Applicability Rating C.

### **Evidence statement 6**

There is evidence from two CNRT – to suggest that educational and skills focused interventions delivered in out of school youth work settings may produce short to long-term increases in drug related knowledge and attitudes (Lam et al., 2005; St Pierre et al.). Applicability Rating C.

### **Evidence statement 7**

**7.1** There is evidence from one CNRT – to suggest that after school programmes for high-risk youth can produce long-term reductions in serious and minor delinquent behaviours (Baker et al., 1995). Applicability Rating C.

**7.2** There is evidence from one CBA + to suggest that skills training delivered through residential summer camps has little effect on behavioural

indicators of resilience (Grayson, 2001). Applicability Rating C.

### **Case management interventions**

#### **Evidence statement 8**

There is evidence from three RCTs (1 + and 2 -) to suggest that a community-based programme including early intervention and case management services (Creating Lasting Connections) has no medium- to long-term effects on substance use (Halmi & Golik-Gruber, 2002; Johnson et al., 1996; Johnson et al., 1998). Applicability Rating C

#### **Evidence statement 9**

There is evidence from three RCTs (1 + and 2 -) to suggest that a community-based programme including early intervention and case management services (Creating Lasting Connections) can produce a short to medium term increase in substance use knowledge but have little effect on family management relating to substance use (Halmi & Golik-Gruber, 2002; Johnson et al., 1996; Johnson et al., 1998). Applicability Rating C.

#### **Evidence statement 10**

**10.1** There is evidence from two RCTs (1 + and 1 -) to suggest that a community-based programme including early intervention and case management services for young people and their parents (Creating Lasting Connections) has no effect on family functioning (Halmi & Golik-Gruber, 2002; Johnson et al., 1998). Applicability Rating C.

**10.2** There is evidence from one RCT + to suggest that a community-based, family case management intervention can increase positive parenting skills in families with young children considered at risk (Baydar et al., 2003). Applicability Rating B.

### **Employment skills programmes**

#### **Evidence statement 11**

There is evidence from one RCT + to suggest that a comprehensive employment programme (comprising outreach and admissions; basic education; vocational training; residential living; health care and education; counselling; and job placement assistance) is not effective in reducing substance use in the long term (Schochet et al 2001). Applicability Rating B.

### **Community-based counselling and therapy**

#### **Evidence statement 13**

There is evidence from one RCT + to suggest that motivational interviewing with video feedback has no effect upon delinquent, home or school behaviours and may actually decrease the young person's perception of control over the consequences of their individual actions (Knopes et al., 2004). Applicability Rating B.

## **Community mobilisation programmes**

### **Evidence statement 14**

There is evidence from one RCT – to suggest that a community mobilisation and youth development programme has no effect on neighbourhood co-operation or pride, indicators of community mobilisation, or generic youth risk behaviours (Cheadle et al., 2001). Applicability Rating C.

## **Family-based interventions**

### **Evidence statement 15**

There is evidence from two RCT + to suggest that a tiered family based approach incorporating family support may be effective in producing long term reductions in substance use:

**15.1** There is evidence from one RCT + to suggest that a tiered, multilevel prevention strategy focusing primarily on parenting practices (the most recent version of the Adolescent Transitions Program) that is delivered according to the needs and motivation of the family can produce long-term decreases in overall substance use in young people (Dishion et al. 2002). Applicability Rating B.

**15.2** There is evidence from one RCT + to suggest that a school-based parent- focused intervention (the Family Check Up programme; the selective prevention component of the most recent Adolescent Transition Programme) comprising individual and group-based family behavioural therapy, motivational interviewing, individual consultations and feedback on their child's behaviour, and parent-student activities designed to enhance family management can produce significant long-term reductions in overall tobacco, alcohol and cannabis use in young people (Dishion et al. 2003). Applicability rating B.

**15.3** There is evidence from one RCT+ and one CNRT+ to suggest that interventions that aggregate high-risk peers (such as the teen-focused peer support element of the older version of the Adolescent Transitions Program alone or the parent and teen focused elements combined) may have negative effects on smoking behaviours (Dishion and Andrews, 1995; Poulin et al., 2001). Applicability rating B.

### **Evidence statement 16**

There is evidence from seven RCT + to suggest that family based interventions can be effective in producing long term improvements in parenting skills:

**16.1** There is evidence from one RCT + to suggest that the early intervention Healthy Start Programme (HSP) 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 significant improvements in parental use of non-violent discipline in the long term, compared with control (Duggan, 1999). Applicability Rating B.

**16.2** There is evidence from four RCT + to suggest that the Preparing for the Drug Free Years programme 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 (Kosterman et al., 1997; 2001; Spoth et al., 1998; Park et al., 2000).



Applicability Rating B.

**16.3** There is evidence from one RCT + to suggest 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 significant effects on parenting stress (Miller-Heyl et al., 1998). Applicability Rating B.

**16.4** There is evidence from one RCT + to suggest that a brief school-based family-focused intervention (the Family Check Up programme; the selective element of the revised Adolescent Transition Programme), comprising individual and group based family behavioural therapy, motivational interviewing, individual consultations and feedback on their child's behaviour, and parent-student activities designed to enhance family management can produce long term increases in parental monitoring of their child's activities (Dishion et al., 2003). Applicability Rating B.

### **Evidence statement 17**

There is inconsistent evidence from two RCTs + about the long term effectiveness of family based interventions on child development:

**17.1** There is 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 (Duggan, 1999). Applicability Rating B.

**17.2** There is 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 (Miller-Heyl, 1998). Applicability Rating B.

**17.3** There is evidence from one CNRT + to suggest that interventions that aggregate high-risk peers (such as the teen-focused elements of the older version of the Adolescent Transitions Program) may produce a long-term increase in ratings of delinquency. These increases appear to be greatest in participants expressing low levels of delinquency at baseline (Poulin et al., 2001). Applicability Rating B.

### **Evidence statement 18**

There is evidence from one RCT + to suggest that a multicomponent community- based intervention can be effective in reducing substance use in the short term (LoSciuto et al., 1999). However there is inconsistent evidence from three RCTs (1 + and 2 -) about the effectiveness of multicomponent interventions in the long-term, with interventions either indicating a reduction in alcohol use, but not in the onset of tobacco or cannabis use (Eddy, 2003) or no significant difference in substance use behaviour compared with control (Wagner et al., 2000; Harmon, 1995). Applicability Rating B.

**18.1** There is evidence from one RCT + to suggest that a youth development programme comprising classroom-based educational sessions, peer mentoring, after school clubs, weekend retreats and family counselling and outreach can be effective in reducing substance use in the short term (LoSciuto et al., 1999). Applicability Rating B

**18.2** There is evidence from one RCT – to suggest that a multicomponent drug and delinquency prevention programme comprising case management, family services, after school and summer activities, mentoring, education services, community policing and criminal and juvenile justice intervention may

be effective at reducing 'gateway' substance use, but not 'stronger' substance use, in the medium term compared with control (Harrell et al., 1999). Applicability Rating C.

**18.3** There is evidence from one RCT – to suggest that a multicomponent community-based intervention comprising school-based training in life skills and refusal skills, peer leader programs, community-based drug/alcohol-free events, educational activities for parents and public awareness campaigns is not effective at reducing the prevalence of binge drinking or cannabis use in the long term, compared with control. (Wagner et al., 2000) Applicability Rating B.

**18.4** There is evidence from one RCT + to suggest that a multicomponent drug education programme (the Open Doors programme) delivered to pregnant and parenting teens and young adults residing in rural areas and comprising counselling, social skills training, drug education, peer group leadership training, and mentoring is not significantly effective at reducing drug, alcohol or tobacco use in the long term, compared with control (Harmon et al., 1995). Applicability Rating B.

**18.5** There is evidence from one RCT – to suggest that a multicomponent intervention comprising behavioural parent management training, child social and problem-solving skills training, a behaviour management programme, and a classroom dedicated phone line (the Linking the Interest of Families and Teachers programme) for children in neighbourhoods characterised by high levels of juvenile delinquency can be effective at reducing alcohol use, but not the onset of tobacco or cannabis use, in the long term (Eddy et al., 2003). Applicability Rating B.

### **Evidence statement 19**

There is inconsistent evidence about the effectiveness of multicomponent interventions in affecting different secondary outcomes relating to substance misuse in vulnerable or disadvantaged young people:

**19.1** There is evidence from one RCT + to suggest that a multicomponent intervention comprising school- and family-based components may result in young people expressing a greater willingness to use substances in the immediate term compared with a no-intervention control. The intervention had no long term effect on willingness to use substances, family functioning, or absences and suspensions from school, and appeared to increase negative behaviours (Hostetler and Fisher, 1997). Applicability Rating B.

**19.2** There is evidence from 1 RCT – and 1 CNRT – to suggest that adding family advocacy or additional youth activities to an existing community-based prevention programme can produce long term increases in substance knowledge but not refusal skills or attitudes to substance use (St Pierre et al., 1997; St Pierre et al., 2001). Applicability Rating C.

**19.3** There is inconsistent evidence about the effectiveness of multicomponent interventions on school and education related outcomes. There is evidence from one RCT + to suggest an immediate positive intervention effect on school attendance (LoSciuto et al., 1999), whilst evidence from one RCT + suggests no long-term effects of intervention on educational attainment or aspirations (Harmon, 1995). Applicability Rating B.

**19.4** There is evidence from two RCT – to suggest that a multicomponent intervention offered in addition to usual school prevention services may

produce an immediate decrease in problem behaviours and a long term decrease in association with deviant peers and involvement in criminal activity (Eddy et al., 2000; 2003). Applicability Rating B.

**19.5** There is evidence from one RCT – to suggest that that a multicomponent drug and delinquency prevention programme comprising case management, family services, after school and summer activities, mentoring, education services, community policing and criminal and juvenile justice intervention may be effective in reducing peer group risk factors (but not individual, family or educational risk factors) and preventing problem behaviours such as drug selling and violent crime (Harrell et al., 1999). Applicability Rating C.

**19.6** There is evidence from one RCT – to suggest that multicomponent interventions delivered across several communities do not have an effect on wider health outcomes such as diet, accidental injury, and teenage pregnancy (Wagner, 2000) Applicability Rating D.

## **School-based interventions**

### **a) Educational and skills-based school interventions**

#### **Evidence statement 20**

There is evidence to suggest that school-based LST or generic life skills interventions, on their own or in combination with other approaches, are not effective in reducing substance misuse in the long term:

**20.1** There is evidence from three RCT + to suggest that when delivered as a stand alone intervention, LST or generic life skills interventions may produce medium, but not short or long term, reductions in substance use (Griffin et al., 2003; Smith et al., 2004; Vicary et al., 2004). There is evidence from one RCT + to suggest that this effect on substance use may be strongest in girls (Smith et al., 2004). Applicability Rating B.

**20.2** There is evidence from one RCT +, four RCT –, one CNRT +, and one CNRT – to suggest that school-based LST or generic life skills interventions 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 (Brown et al., 2005; Demers, 2000; Forman et al., 1990; LoSciuto et al., 1996; Palinkas et al., 1996; Rentschler, 1997; Richards-Colocino, 1996). However, there is evidence from two CNRT – to suggest that delivering generic life skills interventions in combination with family-based components can produce both immediate and medium term reductions in alcohol use and frequency, but only immediate effects on cannabis use frequency (DeWit et al., 1998; 2000). Applicability Rating B.

**20.3** There is evidence from one RCT + to suggest that female-targeted peer support can be effective at producing medium term reductions in substance use (aged <12 years) but not older (aged >13 years) (Weiss and Nicholson, 1998). Applicability Rating C.

**20.4** There is evidence from one RCT + and one CNRT – 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 (Farrell et al., 2003; Donnelly et al., 2001). Applicability Rating B.

### **Evidence statement 21**

There is inconsistent evidence about the effectiveness of life skills approaches at changing attitudes and knowledge relating to substance abuse:

**21.1** There is evidence from one RCT - and one CBA – to suggest an immediate improvement in reactions to situations involving drug use with an intervention comprising community service, parent workshops and mentoring (LoSciuto et al., 1996; Gilham et al., 1997). There is evidence from one RCT + that suggests both positive and negative medium term effects of the Friendly PEERsuasion intervention (Weiss and Nicholson, 1998), and a further RCT + that suggests long term effects of LST when delivered either as a discreet stand alone intervention or throughout the school year infused within the regular curriculum compared with no intervention (Vicary et al., 2004).

Applicability Rating C.

**21.2** There was evidence from one RCT – to suggest that LST can produce long term decreases in young people’s association with substance using peers (Gottfredson et al., 1996). Applicability Rating B

**21.3** There was evidence from one RCT – to suggest no long term effects of generic life skills with family and diversionary components on intentions to use substances, although evidence from two CNRT – suggested that with the addition of either mentoring or outreach with generic skills training may produce short and medium term decreases in favourable attitudes towards substance use (DeWit et al., 1998; DeWit 2000; Rentschler, 1997).

Applicability Rating B

**21.4** There is evidence from one CNRT – to suggest that specialised teacher training, in the context of a skills development approach, has no long term effects on substance use norms (O’Donnell et al., 1995). Applicability Rating B.

### **Evidence statement 22**

There is evidence to suggest that some school based educational and skills interventions can improve young peoples’ educational skills and positive behaviours, and parents’ family based care giving.

**22.1** There is evidence from two CNRT + 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 (Dubas et al., 1998; Hawkins et al., 1999).

Applicability Rating C.

**22.2** There is evidence from one RCT + to suggest that a tiered classroom based intervention with parental training (Project STAR) can produce improvements in family based care giving and school bonding when compared with no intervention or the classroom intervention alone in the medium and long term (Kaminski et al., 2002) Applicability Rating C.

**22.3** There is evidence from one CNRT – to suggest that specialised teacher training, in the context of a cognitive skills development approach, may be associated with long term improvements in educational skills and other classroom behaviours (O’Donnell et al., 1995). Applicability Rating B.

**22.4** There is evidence from one RCT +, one CNRT + and one CBA + to suggest that cognitive problem solving skills sessions or a violence prevention curriculum (with substance use components) can produce immediate and medium term improvements in social behaviours (DeMar, 1997; Farrell et al., 2003; Gainer et al., 1993). Applicability Rating C.

**22.5** There is evidence from 2 RCT - and 2 CNRT – to suggest that life skills curricula with parental, mentoring and/or social support components can produce both short and long term increases in mood, anxiety, community engagement, positive school based outcomes, and family bonding (De Wit et al., 1998; De Wit et al., 2000; Forman et al., 1990; LoSciuto et al., 1996). However, there is evidence from one CNRT – to suggest that a weakly implemented LST programme may be associated with long-term iatrogenic effects, and decreases in positive, school-based outcomes (Gottfredson et al., 1996). Applicability Rating B.

### **b) School-based counselling and therapy**

#### **Evidence statement 23**

**23.1** There is evidence from one RCT ++ to suggest that a brief single drug (alcohol) preventive intervention delivered by a school nurse can be more effective, than a brief, multi-drug (including alcohol) intervention in producing short-term reductions in alcohol use for adolescents (Werch et al., 2005). Applicability Rating A.

**23.2** There is evidence from one CNRT – to suggest that in younger children (aged <14 years) a group counselling approach can reduce alcohol use. However, in older children (aged >14 years) a group counselling approach may be associated with an increase in use of both cannabis and alcohol (Valentine et al., 1998). Applicability Rating C.

#### **Evidence statement 24**

There is evidence from one RCT ++ to suggest that a brief, alcohol specific intervention can more effective at changing attitudes to alcohol, than interventions targeting multiple substances (including alcohol) (Werch et al., 2005). Applicability Rating A.

#### **Evidence statement 25**

There is inconsistent evidence about the effectiveness of school based counselling and therapy on behavioural and social functioning in young people. Some evidence suggests that these interventions can lead to potentially harmful outcomes in young people.

**25.1** There is evidence from one RCT – to suggest that a combination of individual and group counselling sessions can produce short and medium term improvements in a range of social behaviours (Reynolds and Cooper, 1995). However, there is evidence from one CNRT – to suggest that over the course of a 3-year programme such an approach may be associated with an increase in antisocial behaviour and poor educational outcomes in older children (Valentine et al., 1998). Applicability Rating C.

**25.2** There is evidence from one CNRT – to suggest that although school based diversionary schemes may produce long term increases in mathematical achievement, participation may also be associated with a decrease in self-esteem and school attendance when compared with an academic assistance programme (Flores-Fahs et al., 1997). Applicability Rating C.

**25.3** There is evidence from one CBA – to suggest that a multidimensional school wide improvement programme has no long-term effects upon engagement with a wide range of (external) health services (Britto, 2001).

Applicability Rating C.

**25.4** There is evidence from one CNRT – to suggest that school based social work schemes may produce long term decreases in reported thefts and truanting (Bagley and Pritchard, 1998). Applicability Rating A.

## **2. Black and minority ethnic populations**

### **School-based interventions**

#### **Evidence statement 26**

There is evidence to suggest that school-based programmes for minority youth can have positive effects on alcohol and cigarette use, however there is inconsistent evidence about their effectiveness in reducing cannabis and other drug use:

26.1 There is evidence from one SR ++ to suggest that school-based interactive programmes (i.e. those involving discussion) can be more effective than non- interactive programmes (e.g. a lecture) in reducing substance use in populations of minority students (Tobler et al., 2000). Applicability Rating C

26.2 There is evidence from four RCT + to suggest that school-based life skills training (LST)/resistance skills interventions may reduce tobacco and alcohol use compared to no intervention in populations of mixed ethnicity in the short, medium and long term (Botvin et al., 1995; Botvin et al., 1997; Botvin et al., 2001; Hecht et al., 2003). Applicability Rating C

26.3 There is inconsistent evidence from four RCT + about the effectiveness of school-based life skills training/resistance skills interventions in reducing cannabis use in populations of mixed ethnicity in the short and long term (Botvin et al., 1995; Botvin 1997; Botvin et al., 2001; Hecht et al., 2003). Applicability Rating C

#### **Evidence statement 27**

There is inconsistent evidence about the effectiveness of school-based programmes for minority youth can have inconsistent effects on risk and protective factors related to substance use:

27.1 There is evidence from two RCT + to suggest that school-based interventions can produce long term increases in smoking and drinking-related knowledge and reduce intentions to use alcohol and tobacco in populations of mixed ethnicity, but did not impact on knowledge or intentions related to cannabis and other drugs (Botvin et al., 1995; Botvin et al., 2001). Applicability Rating C.

27.2 There is inconsistent evidence from three RCT + about the effectiveness of life skills training/resistance skills interventions in improving substance refusal skills in populations of mixed ethnicity in the long term (Botvin et al., 1995; Botvin et al., 2001; Hecht et al., 2003). Applicability Rating C.

27.3 There is evidence from one RCT + that a school-based, peer leadership intervention has no effects on outcomes related to risk and protective factors for drug use in those trained to be peer leaders in the short term (Colnes et al., 2000). Applicability Rating C.

27.4 There is evidence from one RCT – to suggest that video prevention interventions may have no effect on risk and protective factors related to

substance use in groups of Latino/Hispanic students (Polansky et al., 1999). Applicability Rating D.

## **Community-based interventions**

### **Evidence statement 28**

28.1 There is evidence from one RCT + to suggest that a CD-ROM intervention targeting mixed populations of minority youth can reduce monthly substance use in the long term compared to no intervention. Delivering the intervention in combination with parent workshops does not appear to increase effectiveness with regard to cigarettes and cannabis use; however an additional decrease in monthly alcohol use may be observed (Schinke et al., 2004a). Applicability Rating C.

28.2 There is evidence from one RCT – to suggest that culturally-tailored skills training can produce long term reductions in substance use in a Native American community. Delivering skills training alone appears more effective than delivering the intervention in combination with community mobilisation. Furthermore, evidence from one CNRT – suggests that community activities have no effect on substance use, with the exception of smokeless tobacco use (Schinke et al., 2000; Cheadle et al., 1995). Applicability Rating D.

28.3 There is insufficient and inconsistent evidence from one CNRT – and four BA studies (2 CBA -; 2 BA -) to determine whether youth group activities are effective in reducing substance use in primarily African American populations and populations of mixed ethnicity (Marcus et al., 2004; Gottfredson et al., 2004; Sutherland et al., 1997; Harrington and Donohew, 1997; Zane et al., 1998). Applicability Rating C.

28.4 There is evidence from one CNRT – to suggest that tailored individual counselling and mentoring can produce a significant medium term reduction in the number of occasions “high” on alcohol, but have no effect on cannabis use, compared to standard counselling (Hanlon et al., 2002). Applicability Rating C.

### **Evidence statement 29**

There is insufficient and inconsistent evidence to determine whether community- based interventions have effects on risk and protective factors related to substance use in minority populations:

29.1 There is evidence from one RCT – to suggest that substance use prevention messages delivered by role play or by a computer programme produce some positive effects on attitudes to substance use, but not intentions, immediately following intervention, in populations of mixed ethnicity compared to no intervention. There is evidence to suggest that role-play interventions may have more impact on refusal skills than a computer-delivered intervention (Schinke et al., 2004b). Applicability Rating C.

29.2 There is evidence from one RCT – to suggest that a risk and resilience interventions targeting Hispanic females are not effective in increasing substance-related knowledge, attitudes and intentions or self-efficacy and resilience (Lindenberg et al., 2002). Applicability Rating D.

29.3 There is evidence from one RCT + to suggest that a CD-ROM intervention with the addition of parenting workshops is more than the CD-ROM intervention alone or no intervention in improving long-term family involvement. There is evidence that the CD-ROM intervention with and without parent

workshops is more effective than no intervention in improving peer influence (Schinke et al., 2004a). Applicability Rating C.

29.4 There is evidence from one CNRT – to suggest that after school programmes delivered to populations of mixed ethnicities have few positive effects on risk factors related to substance in the medium term (Gottfredson et al., 2004). Applicability Rating C.

29.5 There is evidence from one CNRT – to suggest that tailored individual counselling and group mentoring can produce a significant medium term reduction in delinquent and criminal behaviour compared to standard counselling (Hanlon et al., 2002). Applicability Rating C

## **Family-based interventions**

### **Evidence statement 30**

There is inconsistent evidence from one RCT +, one CBA – and one BA – about the effectiveness of family-based interventions in changing substance use behaviours in populations of mixed ethnicities:

30.1 There is evidence from one RCT + to suggest that family-based interventions targeting Hispanic populations are no more effective than programmes targeting other health behaviours in reducing abstinence from or initiation of substance use in the long term (Prado, 2005). Applicability Rating D.

30.2 There is evidence from two BA studies (1 CBA - and 1 BA -) to suggest that family-based interventions can have positive impacts on substance use in the immediate term (Prado, 2005; Aktan et al., 1996; Bruce and Emshoff, 1992). Applicability Rating C.

### **Evidence statement 31**

There is evidence from three RCT + to suggest that family based interventions can positively impact on some secondary outcomes, including child participation in family meetings, bonding to school, and regulated communication parenting, but not others (number of family meetings and parental monitoring) in predominantly African American families in the immediate short term (Aktan et al., 1996; Brody et al., 2004; 2005; Bruce and Emshoff, 1992; Emshoff et al., 1996; Houge et al., 2002; Spoth et al., 2003; Applicability Rating C.

## **Multicomponent programmes**

### **Evidence statement 32**

There is insufficient evidence to determine whether multicomponent programmes targeting young minority populations are effective in reducing substance use.

32.1 There is evidence from two BA studies (1 CBA + and 1 BA -) to suggest that multicomponent programmes may not reduce substance use immediately following intervention (Godley and Velasquez, 1998; Stevenson et al., 1998). Applicability Rating C.

### **Evidence statement 33**

There is inconsistent evidence from one CNRT + and four BA studies (1 CBA +



and 3 BA –) to determine whether multicomponent interventions are effective in reducing risk factors related to substance use:

33.1 There is evidence from one CNRT + to suggest that multicomponent interventions targeting populations of young African Americans may be no more effective than no intervention in improving substance-related knowledge and attitudes, family functioning and self-esteem (Cherry et al., 1998). Applicability Rating C.

### **Other interventions**

#### **Evidence statement 34**

34.1 There is evidence from one SR ++ and one SR + to suggest that interventions incorporating cultural values are no more effective in reducing substance misuse than interventions that do not (Bledsoe 2002; Yuen 2004). Applicability Rating B.

34.2 There is also evidence from one SR + that drug prevention programmes targeting populations of mixed ethnicities which incorporate refusal skills training are more effective in reducing substance misuse than programmes that do not (Bledsoe 2002). Applicability Rating B.

#### **Evidence statement 35**

There is evidence from 1 RCT + to suggest that specialised, early educational interventions that include participation in a pre-school curriculum may be effective in reducing in cannabis use in the long-term but not other substance use behaviours, in a predominantly African American population, (Campbell et al., 2002). Applicability Rating C.

#### **Evidence statement 36**

There is evidence from one RCT – to suggest that mentoring for longer than 12 months may have long term, beneficial impacts on substance use among African American and minority ethnic populations (Rhodes et al., 2005). Applicability Rating C.

#### **Evidence statement 37**

There is evidence from one SR + to suggest that interventions including refusal skills training can have a greater effect on behavioural outcomes related to substance use than interventions not incorporating this approach (Bledsoe, 2002). Applicability Rating B.

#### **Evidence statement 38**

There is evidence from one RCT + to suggest that specialised, early educational interventions, which include a pre-school curriculum, can positively impact on years of education and engagement in skilled labour in a predominantly African American population in the long term. There is evidence that the intervention may not impact on criminal behaviours (Campbell et al., 2002). Applicability Rating C.

#### **Evidence statement 39**

There is evidence from one RCT + to suggest that a universal intervention can be less effective in improving social skills in a young BME population with a

diagnosis of conduct disorder compared to those without the diagnosis (Fishbein et al., 2006). Applicability Rating C.

**Evidence statement 40**

40.1 There is evidence from two RCT – to suggest that mentoring has no immediate effects on attitudes to substance use, self-esteem, grades or school absences and no long term effects on self-worth, peer relations or parental relationships (Rhodes et al., 2005; Royse, 1998). Applicability Rating C.

40.2 There is evidence from one RCT – to suggest that mentoring for longer than 12 months can produce long term improvements in parental relationships (Rhodes et al., 2005). Applicability Rating C.

40.3 There was evidence from one RCT – to suggest that mentoring may reduce conservative attitudes to substance use in the long term (Royse et al., 1998). Applicability Rating C.

**3. Young people in families with substance using members**

**Multicomponent interventions**

**Evidence statement 41**

There is evidence from two RCT + to suggest that multicomponent interventions targeting parental drug use and parenting practices in combination with drug treatment have no effect on children’s drug use in the short, medium or long term compared to treatment only (Catalano et al., 1999; Catalano et al., 2002). Applicability Rating B.

**Evidence statement 42**

There is evidence from two RCT + to suggest that multicomponent interventions targeting parental drug use and parenting practices in combination with drug treatment have no effects on children’s behavioural outcomes or school and family factors in short, medium or long term compared to treatment only (Catalano et al., 1999; Catalano et al., 2002). Applicability Rating B.

**Evidence statement 43**

43.1 There is evidence from two RCT + and one CRNT + to suggest that parenting programmes combined with drug treatment can improve parental outcomes in terms of problem-solving, parenting practices and depression although there are few intervention effects on family factors such as bonding and conflict (Catalano et al., 1999; Catalano et al., 2002; Whiteside-Mansell, 1999). Applicability Rating B.

43.2 There is evidence from one RCT +, one CNRT – and one BA – which also suggest that parenting programmes may help drug-using parents to stabilise or reduce their own use in the short to medium term (Catalano et al., 1999; Magura et al., 1999; Whiteside-Mansell, 1999). Applicability Rating B.

**Home visitation**

**Evidence statement 44**

There is evidence from one RCT + to suggest that in the long-term there is no

difference in substance use between children with drug-using mothers who receive home visitation at birth and those who do not (Olds et al., 1998). Applicability Rating B.

#### **Evidence statement 45**

45.1 There is evidence from one RCT + to suggest that adolescents who receive home visitation as infants do not have improved outcomes of dysfunctional behaviours. In addition, there is evidence to suggest that although stops by police may be higher, there are fewer arrests and convictions in the long term among children who receive home visitation at birth compared to those who do not (Olds et al., 1998). Applicability Rating B.

45.2 There is insufficient evidence from two RCTs (1 + and 1 -) to determine whether home visitation may produce positive effects on children's developmental progress (Black et al., 1994; Nair et al., 2003). Applicability Rating B.

#### **Evidence statement 46**

There is insufficient evidence to determine the effects of home visitation on parental drug use:

46.1 There is evidence from one RCT + to suggest that home visitation does not produce long term increases in the number of mothers who are drug free compared to no visits and from two RCTs (1 +, 1 -) to suggest that there are no effects of home visitation on parenting stress or child abuse potential compared to no visits (Black et al., 1994; Nair et al., 2003). Applicability Rating B.

### **Behavioural/skills-based interventions**

#### **Evidence statement 47**

There is insufficient evidence to determine whether behavioural and skills training interventions for young people with substance using parents or siblings are effective in reducing substance use.

#### **Evidence statement 48**

There is inconsistent evidence to determine whether behavioural and skills training interventions, delivered to young people with substance-using parents or siblings, are effective at reducing or improving risk and protective factors related to substance use:

48.1 There is evidence from two RCT – to suggest that support group programmes can be effective at improving intervention-targeted outcomes such as emotion-focused coping and self-esteem in the short to medium term. (Horn, 1998; Short et al., 1995). Applicability Rating B.

### **Other interventions**

#### **Evidence statement 49**

There is insufficient evidence to determine whether interventions targeting young pregnant or parenting adolescents are effectiveness in reducing drug use behaviour:

49.1 There is evidence from one CNRT + to suggest that self-administered drug education programmes for pregnant adolescents do not impact on

substance use behaviours in the medium term (Sarvela and Ford, 1993).

Applicability Rating B.

49.2 There is evidence from one CNRT + to suggest that multicomponent interventions targeting adolescent mothers, which include drug rehabilitation, may reduce drug use in the medium term compared to no intervention (Field et al., 1998). Applicability Rating C.

#### **Evidence statement 50**

There is evidence from one RCT – to suggest that high levels of engagement of mothers in outreach programmes may be linked to improved prosocial behaviour in their children (Nye et al., 1995). Applicability Rating C.

#### **Evidence statement 51**

There is insufficient evidence to determine whether interventions targeting young pregnant or parenting adolescents are effectiveness in reducing a range of secondary outcomes related to substance use:

51.1 There is evidence from one CNRT + to suggest that self-directed learning improved substance-related knowledge but no effect on attitudes to substance use, immediately following intervention (Sarvela and Ford, 1993). Applicability Rating B.

51.2 There is evidence from one CNRT + to suggest that multicomponent interventions including drug rehabilitation and vocational training can decrease self-reported psychopathology (including stress and depression) and improve educational and employment outcomes. Applicability Rating C.

### **4. Young substance users**

#### **Brief intervention or motivational interviewing**

#### **Evidence statement 52**

52.1 There is evidence from one SR +, two RCTs (1 + and 1 -) and one CNRT – to suggest that motivational interviewing and brief intervention can have short term effects on the use of cigarettes, alcohol and cannabis (Tait and Hulse, 2003; McCambridge and Strang 2004; Oliansky et al., 1997; Aubrey, 1998). Applicability Rating A.

52.2 There is evidence from one RCT + however, to suggest that motivational interviewing does not have a significant medium term impact on the use of cigarettes, alcohol or cannabis, although there is a non-significant trend favouring intervention compared with control (McCambridge and Strang, 2005). Applicability Rating A.

#### **Evidence statement 53**

53.1 There is evidence from one RCT + to suggest that a single session of motivational interviewing can have a positive impact on attitudes, intentions and behavioural outcomes related to substance use in the short term (McCambridge and Strang, 2004). However, there is evidence from one RCT + to suggest that these positive effects do not last in the medium term (McCambridge and Strang, 2005). Applicability Rating A.

53.2 There is evidence from one RCT + to suggest that brief intervention enhanced with additional support can have a positive impact on attendance at

community treatment agencies and psychological well-being compared to usual hospital treatment (Tait et al., 2004). Applicability Rating B.

### **Family therapy**

#### **Evidence statement 54**

54.1 There is evidence from one SR + and three RCTs (2++ and 1+) to suggest that family therapy is more effective at reducing substance use in young people than other types of group therapy interventions immediately following treatment (Austin et al., 2005; Liddle et al., 2001; Liddle et al., 2004; Joanning et al., 1992). Applicability Rating B.

54.2 There is evidence from one SR + and one RCT ++ to suggest that multidimensional family therapy is more effective at reducing substance use than other approaches to treatment in the short to medium term (Austin et al., 2005; Liddle et al., 2001). Applicability Rating B.

54.3 There is evidence from two RCT – to suggest that brief family therapy interventions are more effective than group therapy in producing immediate reductions in cannabis use (Santisteban et al., 2003) and overall substance use (Lewis et al., 1990). Applicability Rating B.

#### **Evidence statement 55**

55.1 There is evidence from one SR + and two RCTs (1 ++ and 1 -) to suggest that family therapy interventions may have more positive impacts on social behaviours than group therapy or individual therapy, immediately following treatment (Elliott et al., 2005; Liddle et al., 2001; Liddle et al., 2004; Santisteban et al., 2003). Applicability Rating C.

55.2 There is evidence from three RCTs (2 ++ and 1 +) to suggest that family therapy interventions are no more effective in improving school or family-related factors compared to educational or group therapy approaches in the immediate or medium term (Liddle et al., 2001; Liddle et al., 2004; Joanning et al., 1997). Applicability Rating B.

### **Counselling or therapy sessions for adolescents**

#### **Evidence statement 56**

56.1 There is evidence from one RCT + to suggest that five sessions of motivational enhancement treatment combined with cognitive behavioural therapy (MET/CBT) is not more or less effective compared with twelve sessions of MET/CBT (either alone or combined with additional other types of approaches such as family support, individual counselling, or multidimensional family therapy) in reducing cannabis, alcohol or other drug use in the medium term (Dennis et al., 2004). Applicability Rating C.

56.2 There is insufficient evidence from one CBA + and one BA - to determine whether other types of counselling and behaviour therapy interventions targeting young substance users are effective in reducing substance use.

#### **Evidence statement 57**

There is insufficient evidence from one CNRT – and one CBA + to determine whether counselling and behavioural therapy interventions targeting young

substance users are effective in reducing risk behaviours related to substance use.

### **Other Interventions**

#### **Evidence statement 58**

There is evidence from one RCT – to suggest that universal, community-based programmes delivered to existing substance users may produce short and long term decreases in alcohol use, short term decreases in cigarette use but no change in cannabis use (Chou et al., 1998). Applicability Rating C.

#### **Evidence statement 59**

There is preliminary evidence from one RCT + to suggest that skills training for parents of young substance users is effective in producing immediate reductions in cannabis use among young substance users compared to no intervention (McGillcuddy et al., 2001). Applicability Rating B.

#### **Evidence statement 60**

There is insufficient evidence from one BA - to determine whether contingency-based management programmes with parent and child components are effective at reducing substance use in young users.

#### **Evidence statement 61**

There is evidence from one RCT + to suggest that skills training programmes for parents of young substance users can produce an immediate improvement in parent coping but not other measures of parent and family functioning (McGillicuddy et al., 2001). Applicability Rating B.

#### **Evidence statement 62**

There is insufficient evidence from one BA - to determine whether contingency-based management programmes with parent and child components had positive effects on risk factors related to substance use in young users.

## **5. Young people with behavioural and aggressive problems**

### **Multicomponent programmes**

#### **Evidence statement 63**

There is evidence from two RCT + to suggest that a multicomponent parent and child programme, the Coping Power programme, can have an immediate and medium term impact on reducing use of alcohol, tobacco and cannabis compared to no intervention in children with aggressive and behavioural problems (Lochman and Wells, 2003; Lochman and Wells, 2004). Applicability Rating C.

#### **Evidence statement 64**

64.1 There is evidence from six RCTs (1 ++, 4 + and 1 -) to suggest that multicomponent programmes (including child and parent components) targeting children with behavioural and aggressive problem behaviours can have a positive impact in reducing some problem behaviours compared to

no intervention (August et al., 2002; Barrera et al., 2002; CPPRG, 2002; Lochman and Wells, 2002; Lochman and Wells 2003; Lochman and Wells 2004). Applicability Rating C.

64.2 There is evidence from one RCT ++ to suggest that a multicomponent programme (Early Risers programme) can produce long-term improvements in social skills, academic achievement and parental discipline, but not self-regulation problems, compared to no intervention (August et al., 2002). Applicability Rating C.

### **Single component programmes**

#### **Evidence statement 65**

There is evidence from one RCT – to suggest that a modified version of LST may be no more effective than no intervention at reducing cigarette and alcohol use (cannabis use was not assessed) in young people (aged 11 to 12 years) with behavioural and aggressive disorders, immediately following intervention (Vitaro and Dobkin, 2001). Applicability Rating C.

#### **Evidence statement 66**

There is evidence from one RCT – to suggest that a modified version of LST is more effective than no intervention in increasing knowledge and negative attitudes to cigarettes, but not alcohol or cannabis in young people (aged 11 to 12 years) with behavioural and aggressive disorders, immediately following intervention (Vitaro and Dobkin, 2001). Applicability Rating C.

## **6. Young offenders**

### **Counselling or behavioural therapy**

#### **Evidence statement 67**

There is evidence from one RCT + to suggest that multi-systemic therapy may be more effective than “usual services” at reducing “soft” drug use by young offenders in the immediate term (Henggeler et al., 1991). Applicability Rating C.

#### **Evidence statement 68**

There is evidence from one RCT + to suggest that multi-systemic therapy may be more effective than individual focused counselling in tackling recidivism in young offenders in the immediate term (Henggeler et al., 1991). Applicability Rating C.

Educational or skills based programmes

#### **Evidence statement 69**

69.1 There is evidence from one RCT – to suggest that neither a modified version of LST nor a combined anti-violence and values clarification programme are effective in reducing substance use among young offenders in the short term (Friedman and Utada, 1992). Applicability Rating C.

69.2 There is evidence from one RCT – to suggest that a combined

programme of LST, anti-violence and values clarification can produce short-term reductions in substance use by young offenders compared to no intervention (Friedman et al., 2002). Applicability Rating C.

**Evidence statement 70**

70.1 There is evidence from two RCTs (1 + and 1 -) to suggest that educational and skills based interventions are effective in improving knowledge, attitudes, skills and behaviours related to substance use in young offenders in the immediate to short term (Friedman and Utada, 1992; Hawkins et al., 1991). Applicability Rating C.

70.2 There is evidence from one RCT – to suggest that a combined programme of LST and anti-violence and values clarification may not have an impact on illegal and violent offences or school problems in a population of young offenders, compared to no intervention (Friedman et al., 2002). Applicability Rating C

**Other**

**Evidence statement 71**

There is insufficient evidence from one BA - to determine whether multicomponent interventions for young offenders are effective in reducing substance use.

**Evidence statement 72**

There is insufficient evidence from one BA - to determine whether multicomponent interventions are effective in reducing risk factors related to substance use in young offenders.

**Evidence statement 73**

There is insufficient evidence from one CBA - to determine whether drug courts for young people have positive effects on risk factors related to substance in young offenders.

73.1 There is evidence from one CBA – to suggest that juvenile drug court programmes are no more effective than drug education and treatment in reducing the long-term frequency of being arrested (Sloan et al., 2004). Applicability Rating C.

**7. School dropouts, truants and underachievers**

**Educational/skills-based interventions**

**Evidence statement 74**

74.1 There is evidence from two RCT + to suggest that a classroom-based social influence intervention (Project TND) has inconsistent long-term effects but positive medium-term effects on “hard drug use” amongst youth in alternative education provision. Medium- and long-term intervention effects on use of other substances (alcohol, tobacco and cannabis) are inconsistent. (Sussman et al., 1998; Sun et al., 2006; Sussman et al., 2002b; Sussman et al., 2003). Applicability Rating D.



74.2 There is evidence from two RCT + to suggest that the addition of a community-based component to Project TND does not increase programme effectiveness (Sussman et al., 1998; Sun et al., 2006) and that health-educator delivered interventions are more effective than a self-instruction programme in reducing substance use (Sussman et al., 2002b; Sussman et al., 2003). Applicability Rating D.

74.3 There is inconsistent evidence from one RCT + and two CNRT - about the effectiveness of skills based interventions in preventing or reducing substance use in students identified as at risk of school dropout (Cho et al., 2005; Eggert et al., 1994; Thompson et al., 1997). Applicability Rating C.

### **Evidence statement 75**

75.1 There is evidence from two RCT - to suggest that a social influence intervention (Project TND) is effective in producing very short-term improvements in substance-related attitudes and knowledge within youth in alternative education provision (Sussman et al., 1995; Sussman et al., 2002a). There is evidence to suggest that the programme is more effective when delivered actively rather than passively (Sussman et al., 1995). Applicability Rating D.

75.2 There is evidence from two CNRT – to suggest that skills based interventions are effective at improving grades in the immediate and short term in students identified as at risk of school dropout, although effects on school absences are less clear (Eggert et al., 1990; Eggert et al., 1994). Applicability Rating C.

75.3 There is evidence from one RCT + to suggest that a programmed intervention approach (Reconnecting Youth) has no effects on grades, school connectedness or anger. In addition, there is evidence to suggest that intervention may decrease conventional peer bonding and increase peer high-risk behaviours in the short term (Cho et al., 2005). Applicability Rating C.

## **Multicomponent interventions**

### **Evidence statement 76**

There is insufficient evidence from one BA - to determine whether multicomponent interventions are effective in preventing or reducing substance use in students identified as at risk of school dropout, truants or students in alternative education provision.

### **Evidence statement 77**

There is insufficient evidence from two BA - to determine whether multicomponent interventions have positive effects on risk factors related to substance use in young people identified as at risk of school dropout, truants or students in alternative education provision.

## **8. Other populations**

### **High sensation seekers**

### **Evidence statement 78**

There is insufficient evidence from one CNRT - to determine whether

television campaigns targeting high sensation seeking adolescents are effective at reducing self-reported cannabis use (Palmgreen et al., 2001). Applicability Rating C.

#### **Evidence statement 79**

There is insufficient evidence from one CNRT - to determine whether television campaigns targeting high sensation seekers have effects on substance use knowledge, attitudes, and intentions to use (Stephenson et al., 1999). Applicability Rating C.

### **Homeless young people**

#### **Evidence statement 80**

There is insufficient evidence from one CNRT - to determine whether substance use prevention interventions targeting young homeless people are effective in reducing their substance use.

80.1 There is evidence from one CNRT – to suggest that peer led interventions targeting young runaways and homeless people do not significantly impact on drug use (heroin and cocaine) in the short term (Booth et al., 1999). Applicability Rating C.

#### **Evidence statement 81**

There is insufficient evidence from two CNRT - to determine whether substance use prevention interventions targeting young homeless people have any effect on risk and protective factors related to substance use.

81.1 There is evidence from one CNRT to suggest that peer led interventions are more effective than no intervention in increasing knowledge related to HIV but not related to high risk sex in the short term (Booth et al., 1999). Applicability Rating C.

81.2 There is evidence from two CNRT – to suggest that peer led interventions may encourage young runaways and young homeless people to reduce some risk-taking behaviours related to HIV and drug use in the short term (Booth et al., 1999; Fors and Jarvis, 1995). Applicability Rating C.

### **Children of divorce**

#### **Evidence statement 82**

There is evidence from one RCT + and one CNRT – to suggest that classroom- based interventions for children of divorced parents can have positive effects on some measures of psychological wellbeing (e.g. anxiety, self-esteem, composite mental health) at immediate post-test (Wolchik et al., 1993; Short, 1998). Applicability Rating C.

### **Institutionalised youth**

#### **Evidence statement 83**

There is insufficient evidence from one CBA - to determine whether multicomponent interventions targeting institutionalised youth are effective in preventing or reducing substance use Morehouse&Tobler (2000).

## **Abused females**

### **Evidence statement 84**

There is evidence from one RCT – about the effectiveness of multicomponent programmes in reducing substance use among abused females.

84.1 There is evidence from one RCT – to suggest that multicomponent school based intervention (comprising support groups, case management services, skill-building workshops and knowledge acquisition sessions) for young women identified as victims of sexual, physical or emotional abuse may be effective at reducing cannabis use in the long term but have no effects on the initiation of alcohol or cigarette use (Brown and Block 2001). Applicability Rating C.

### **Evidence statement 85**

There is evidence from one RCT – about the effectiveness of multicomponent programmes on secondary outcomes related to substance use in abused females.

85.1 There is evidence from one RCT – to suggest that multicomponent school based interventions (comprising support groups, case management services, skill-building workshops and knowledge acquisition sessions) for young women identified as victims of sexual, physical or emotional abuse may be effective at reducing suicide risk behaviour. (Brown and Block 2001). Applicability Rating C.

## **Latchkey students**

### **Evidence statement 86**

There is insufficient evidence from one CNRT - to determine whether interventions targeting latchkey students have positive effects on risk factors related to substance use.

## **Motivational interviewing interventions for adolescent substance use behaviour change (Jensen et al., 2011)**

### **Evidence statements 1: Overall effect size**

The aggregate effect sizes for MI interventions targeting substance use behaviour yielded a non-significant Q-statistic, indicating that the search had revealed a statistically homogenous sample of effect sizes ( $Q = 15.858$ ,  $p = .725$ ). Despite the non-significant Q-statistic, the more conservative random effects model was calculated to protect against capitalizing on error, which could be masked by the relatively small number of effect sizes. The model constructed by re-estimating the mean effect size and confidence intervals, incorporating the random effects variance as an adjusted inverse variance weight (Lipsey & Wilson, 2001). The resulting random effects weighted mean effect size for all interventions revealed a small, but significant, effect size (mean  $d = 0.173$ , 95% CI [.094, .252],  $n = 21$ ). Individual effect sizes contributed weighted mean effect sizes as graphically depicted in Figure 2. Despite the finding of a homogeneous Q-statistic, it is conceptually compelling to examine studies that addressed only tobacco cessation separately from

those that included other drug and alcohol users. 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],  $n = 16$ ). Studies that addressed only tobacco smoking yielded a larger, but not statistically difference, effect size (mean  $d = 0.305$ , 95% CI [.113, .497],  $n = 5$ ).

### **Evidence statement 2: Follow-up analyses**

Because the range of follow-up periods was quite large (1-24 months) we dichotomized studies to provide some preliminary descriptive data regarding the duration of treatment effects. 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 [0.040, .607],  $n = 4$ ) than those occurring over a period greater than 6 months (mean  $d = 0.133$ , 95% CI [.023, .44],  $n = 7$ ). The aggregate effect size at both time intervals was significant, suggesting that MI interventions for adolescent substance use maintain their effectiveness over time.

## **Motivational interviewing for adolescent substance use: a review of the literature (Barnett et al., 2012)**

### **Evidence statement 1 – Programme effects**

Twenty-six trials (67%) showed significant reductions in some type of substance use. Studies showed significant reductions in at least one alcohol ( $n=7$ ; Bailey, Baker, Webster, & Lewin, 2004; Monti et al., 1999; Spirito et al., 2004, 2011; Stein et al., 2006a; Stein et al., 2011; Walton et al., 2010), tobacco ( $n=6$ ; Colby et al., 2005; Hollis, Polen, Whitlock, & Lichtenstein, 2005; Kelly & Lapworth, 2006; Pbert et al., 2006; Peterson et al., 2009; Woodruff, Conway, Edwards, Elliott, & Crittenden, 2007), marijuana ( $n=7$ ; Dennis, Godley, Diamond, & Tims, 2004; Godley et al., 2010; Martin & Copeland, 2008; Stein et al., 2006a; Stein et al., 2011; Waldron, Slesnick, Brody, Turner, & Peterson, 2001; Walker et al., 2011), and “substance use” outcome ( $n=8$ ; Battjes et al., 2004; D'Amico, Miles, Stern, & Meredith, 2008; Gray, McCambridge, & Strang, 2005; Grenard et al., 2007; Mason, Pate, Drapkin, & Sozinho, 2011; McCambridge & Strang, 2004; Peterson, Baer, Wells, Ginzler, & Garrett, 2006; Winters & Leitten, 2007). Studies reporting positive effects included all of the studies reporting the lowest level of quality, and approximately 70% of the three other categories.

### **Evidence statement 2 Comparison of intervention formats**

Interventions were delivered in either group ( $n=3$ ), individual ( $n=35$ ), or a combination of group and individual formats ( $n=1$ ). All three of the group interventions showed a positive effect, while 22(63%) of the individual studies did. The group/individual combination trial showed significant effects. Studies used a variety of modalities, including face-to-face only ( $n=29$ ), telephone only ( $n=1$ ), face- to-face + telephone ( $n=4$ ), and other modality combinations or comparisons ( $n=5$ ). Results from these studies showed 21 (72%) of the face-to-face only interventions demonstrated significant reductions in at least one substance use outcome, as did the one telephone-only intervention, one quarter of the face-to-face + telephone interventions, and

60% of the others. Due to uneven sample sizes, we were unable to conduct Chi Square Goodness of Fit analyses using modality data.

**Evidence statement 3: Results of comparing different treatment modalities**

Of particular interest are studies comparing different modalities.

There was one test of a telephone vs. face-to-face booster (Kaminer et al., 2008), two tests of an adolescent alone vs. adolescent with parent intervention (Spirito et al., 2011; Winters & Leitten, 2007), and one test of in-person vs. computerized feedback (Walton et al., 2010). Kaminer et al. (2008)

test of a face-to-face vs. telephone booster of an aftercare program for participants of a cognitive behavioural therapy intervention found no difference between the 50-minute in-person session compared to the 15–20-minute telephone intervention, and no significant effects for either group compared to the control. However, the authors note randomization failed and the control condition had significantly fewer persons with substance use disorders. In addition, when both the face-to-face and telephone groups were combined, youth who received some aftercare were less likely to relapse than youth who received no active aftercare.

In a three-group school-based intervention Winters and Leitten (2007) tested the effect of MI with adolescents only vs. MI with adolescents + parents intervention and found the treatment conditions significantly outperformed the control, and the adolescent + parent condition significantly outperformed the adolescent only condition on most outcome variables. However, they further reported that 6-month abstinence rates did not differ across groups. Spirito et al. (2011) also found added significant effects of including parents in an MI intervention with alcohol-positive adolescents recruited in an emergency department. This intervention required families to return to the hospital 1 week later.

In a three-group randomized controlled trial of 756 urban adolescents seen in an emergency department, Walton et al. (2010) tested the use of providing feedback in face-to-face vs. computer-delivered format. They found that both intervention groups significantly outperformed the assessment-only control, and the face-to-face feedback condition significantly outperformed the computerized feedback condition. At 3 months, a significant decrease was found in self-reported alcohol consequences, aggression, and violence, and the effect on alcohol consequences was maintained at 6 months in the face-to-face condition.

Finally, in a three-group randomized controlled trial of a twelve-session classroom-based prevention program, a classroom-only condition, a classroom + three-session MI booster (one session in-person and two sessions via telephone), and an assessment-only control, Sussman, Sun, Rohrbach, and Spruijt-Metz (2011) found that the MI booster did not significantly improve outcomes for any measured substance use outcome when compared to the classroom-only condition.

**Evidence statement 4: Results of adolescent specific MI adaptation**

Adaptations have been developed to capitalize on the influence of family members and existing school-based efforts to address substance use. For an example of including parents in MI, an inpatient psychiatric smoking cessation intervention provided parents up to four telephone counselling sessions. Compared to the brief advice condition, the study showed the MI intervention to be more effective at reducing substance use (Brown et al., 2009), but not more effective on smoking cessation (Brown et al., 2003). For an example of MI provided in a school setting, in a three-group randomized controlled trial of a twelve-session classroom-based prevention program, a classroom-only condition, a classroom + three-session MI booster (one session in-person and two sessions via telephone), and an assessment-only control, Sussman et al. (2011) found that the MI booster did not significantly improve outcomes for any measured substance use outcome when compared to the classroom-only condition.

**Evidence statement 5: Results of comparison of intervention design;**

**Results of MI with feedback MI; and results of MI with additional features**

In this review, studies represented MIO (n=8), MIF (n=17), MI+(n=9), and MIF+ (n=5) interventions. Six MIO (75%), 11 MIF (65%), seven MI+(78%), and two MIF+(40%) interventions showed a positive effect on outcomes. Chi Square Goodness of Fit analyses were used to test for differences in effectiveness based on the addition of a feedback component or the combination of other treatments with MI. The results from this comparison suggest very little difference between the intervention designs. However, caution should be used when interpreting these results due to the small number of studies represented in each category.

**Evidence statement 6: Results of comparison of intervention design;**

**Results of MI with feedback MI; and results of MI with additional features**

There was no difference between interventions containing feedback (MIF and MIF +) versus their non-feedback counterparts (MIO and MI +),  $\chi^2(1)=.64, p=.42$ . All 22 MI interventions with feedback (MIF and MIF+) included a face-to-face component, three added additional telephone contact, and one included additional contact with a parent. The number of sessions varied from one to more than three: one session (n=9), two sessions (n=6), and three or more sessions (n=7).

**Evidence statement 7: Results of comparison of intervention design;**

**Results of MI with feedback MI; and results of MI with additional features**

There was no significant difference between interventions with additional programs (MI+ and MIF +) versus their stand-alone MI counterparts (MIO and MIF),  $\chi^2(1) =.06, p=.81$ . Of 14 programs where MI was added to another component (MI+ and MIF+), two interventions used MI as a post-treatment booster to maintain effects one as an aftercare component to a CBT program (Kaminer et al., 2008), the other as motivational booster to a classroom-based prevention program (Sussman et al., 2011). Two followed advice presented by a doctor (Hollis et al., 2005) or video (Colby et al., 1998), one provided MIF to the adolescent and held a separate meeting with parents (Gotiet et al., 2010), one used MIF with a social network intervention component (Mason et al., 2011); one provided MI and made a skills-based class available for those who

wanted to attend (Martin & Copeland, 2008) ;and seven used MI as a prelude to cognitive behavioural programs that included refusal skills, relapse prevention, and information about consequences of use (n=5 MI+CBT; Battjes et al., 2004; Dennis et al., 2004; Peterson et al., 2009; Waldron et al., 2001; Woodruff et al., 2007; n=2 MIF+CBT Brown et al., 2003; Godley et al., 2010)

**Evidence statement 8: Potential theory-based mechanisms of change**

No studies reported mediation analyses. However, 71% of studies Reported findings about potential mechanisms of change in MI interventions. Significant findings of MI's effectiveness were reported for attitudinal constructs such as readiness/ intention to change (n=5)(Bailey et al., 2004; Colby et al., 2005; D'Amico et al., 2008; Grenard et al., 2007; Mason et al., 2011), client engagement in the treatment process (n=2) (Peterson et al., 2006; Stein et al., 2006b), implicit cognitions (Thush et al., 2009), and client perception of risk (Goti et al., 2010). Changes in behavioural constructs were found for improved drug refusal skills (Kelly & Lapworth, 2006), reduced dependence criteria (Martin & Copeland, 2008), participating in other risky behaviours (Monti et al., 1999), and client self-monitoring (McCambridge & Strang, 2005). However, non-significant findings were found for some of the same attitudinal measures: readiness/intention to change(n=5)(Brown et al., 2003; Peterson et al., 2006, 2009; Thush et al., 2009; Woodruff et al., 2007) and participation in additional treatment (Monti et al., 1999; Walker et al., 2011).

**Mentoring adolescents to prevent drug and alcohol use (Thomas, Lorenzetti and Spragins, 2011)**

**Evidence statement 1: Drug Use**

Three RCTs provided evidence about mentoring and the prevention of drug use. They could not be pooled because of different outcome measures: Grossman 1998 asked one question about "illegal" drugs," Rosenblum 2005 asked one question about "Any substance use " (alcohol, tobacco or "other substances"), and Aseltine 2000 used the US National Youth Survey and reported only marijuana use. One RCT (Grossman 1998) found less use of "illegal drugs" in the mentored group (we computed RR = 0.54; 95%CI = 0.35 to 0.83; Z = 2.84, P value = 0.005). Two RCTs found no effect of mentoring: Aseltine 2000) for marijuana (we computed mean differences = - 0.20; 95%CI = -0.43 to 0.03; Z = 1.68, P value = 0.09) and there were no significant differences between the group which received mentoring and a curriculum and the group which received only a curriculum. Rosenblum 2005 found no significant differences.

**Evidence statement 2: Substance Use (drugs and alcohol)**

Taylor 1999 did not separate alcohol from drug use, and found at the 3 year follow-up the frequency of "substance use" in the previous two months no differences for the group which received mentoring and the curriculum and community service intervention compared to no intervention, but paradoxically both had less use than the group which received the curriculum and community service intervention (P value < 0.056) which casts some doubt on the study. Students who received exceptional mentoring, compared to those

who received marginal or average mentoring, had better reactions to situations involving drug use ( $P$  value  $\leq 0.018$ ) and knowledge about substance abuse ( $P$  value  $\leq 0.018$ ) but there were no differences for substance use .

### **Interventions to prevent substance use and risky sexual behaviour in young people (Jackson et al., 2011)**

#### **Evidence statement 1: School-based curriculum-focused interventions**

*HealthWise:* There was no significant difference in past-month cannabis use or sexual intercourse, and past-month smoking was reduced significantly among girls only.

#### **Evidence statement 2: School-based curriculum-focused interventions**

*Stepping Stones:* After 2 years, herpes simplex virus-2 infection incidence for both genders was lower in the intervention than control group (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, pregnancy or alcohol or illicit drug use.

#### **Evidence statement 3: School-based curriculum-focused interventions**

*Project Alert:* 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.

#### **Evidence statement 4: School-based curriculum-focused programmes with additional components**

*'Forth R: Skills for Youth Relationships' programme:* After 30 months there was no effect on problem substance use among males and females (OR 1.11, 95% CI 0.84–1.44) and a 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.

#### **Evidence statement 5: Whole-school or multi-setting programmes**

*Aban Aya Youth Project:* After 4 years, growth in rates of substance use and sexual intercourse was reduced in the intervention compared with control group among boys only (relative reduction 34%,  $P = 0.05$  and 65%,  $P = 0.02$ ), 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%,  $P = 0.05$ ), but no effect on sexual intercourse.

#### **Evidence statement 6: Whole-school or multi-setting programmes**

*The Gatehouse Project:* 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 or early initiation of sex (L. Bond; personal communication). In a further survey of 14-year-olds, carried out 4 years post-intervention, there was no significant difference in substance use, but a significant reduction in early initiation of



sexual intercourse (OR 0.55, 95% CI 0.37–0.83) and marked risky behaviour, a composite variable of substance use, antisocial behaviour and sexual intercourse (OR 0.71, 95% CI 0.52–0.97). This suggests that it may take time for whole-school changes to become established and to impact upon risk behaviour.

**Evidence statement 7: Whole-school or multi-setting programmes**

*The Healthy Life Project:* After 2 years, there were no significant effects on past-month alcohol, tobacco or cannabis use or sexual intercourse. However, in the intervention group which contained the intensive classroom-based curriculum element, smoking and cannabis were reduced.

**Evidence statement 8: Whole-school or multi-setting programmes**

*The Seattle Social Development Project (SSDP):* At age 18, heavy drinking, life-time sexual activity, and sex with multiple partners were reduced significantly in the intervention group (OR 0.54, 95% CI 0.32–0.92; OR 0.52, 95% CI 0.38–0.72; and OR 0.61, 95% CI 0.43–0.88, respectively), as was pregnancy or causing pregnancy (OR 0.57, 95% CI 0.34–0.95). There was, however, no difference in life-time smoking or cannabis use. 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 ( $P < 0.05$ ), but there was no significant difference in substance use. 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 ( $P = 0.02$ ). There were no significant effects on substance use at age 24.

**Evidence statement 9: Community-based interventions**

*Youth Action Research for Prevention:* After 3 years there was a significant reduction in cannabis use, but not in alcohol use or multiple sexual partners.

**Evidence statement 10 : Non-school based intervention or family programmes**

*Familias Unidas:* After 3 years, past 90-day cigarette smoking was reduced significantly when compared to both control groups ( $P < 0.01$ ) and past 90-day illicit drug use was reduced when compared to one of the control groups ( $P < 0.05$ ). However, there were no significant effects on past 90-day alcohol use or unprotected sex.

**Evidence statement 11: Non-school based intervention or family programmes**

*Focus on Kids (FOK):* After 2 years there were no significant differences in the prevalence of sexual intercourse, unprotected sex (among sexually active youths), alcohol, tobacco or illicit drug use.

*Focus on Kids + Informed Parents and Children Together (ImPACT):* After 2 years, past 6-months cigarette smoking was reduced significantly in the intervention group (OR 0.48, 95% CI 0.27–0.86), but there was no effect on illicit drug or alcohol use. The intervention had no effect on having sexual intercourse, but reduced pregnancy (OR 0.24, 95% CI 0.10–0.56) and increased condom use (OR 1.24, 95% CI 0.90–1.71). The inclusion of FOK booster sessions had no impact on smoking, alcohol or condom use, but reduced illicit drug use significantly.

### **Interventions for the prevention of drug use by young people delivered in non-school settings (Gates et al., 2006)**

#### **Evidence statement 1: Results of studies of education and skills training interventions**

Lindenberg 2002 did not present any numerical data or statistics, but stated that there was no detectable difference between the groups. Palinkas 1996 did not find any differences in use of cannabis or other illicit drugs between the groups who received PALS (Positive Adolescent Life Skills) and no intervention.

#### **Evidence statement 2: Results of studies of family interventions**

The published results generally showed no clear differences between the groups. Three interventions (evaluated in two RCTs) appeared to be superior to no intervention in preventing self-reported cannabis use; Focus on Families ( $p < 0.10$ ) (Catalano 1997), Iowa Strengthening Families Program (ISFP) ( $p < 0.01$ ), and Preparing for the Drug-Free Years (PDFY) ( $p < 0.01$ ) (Spoth 1999). Calculated results for this study, using the numbers of drug users at follow-up, showed an advantageous effect of the ISFP on self-reported lifetime cannabis use at 6 year follow-up (adjusted RR 0.55, 95% CI 0.32 to 0.95) and self-reported cannabis use in the past year at six year follow-up (adjusted RR 0.44 95% CI 0.20 to 0.96), but no clear effect of PDFY on any of the outcomes and any follow-up period. However, less than 70% of the participants were followed up at 4 and 6 years, so there may be a possibility of bias in these results.

#### **Evidence statement 3: Results of studies of brief intervention or motivational interviewing**

The primary care-based study (Oliansky 1997) used scores on the Substance Use Screening Instrument (SUSI) to measure drug use. The control group scores were higher than those of the intervention group at both 1 month and 3 month follow-up (1 month means, intervention 1.15, control 4.31,  $p = 0.05$ ; 3 month means intervention 1.58, control 7.46,  $p = 0.04$ ; no standard deviations given).

The other trial (McCambridge 2004) included baseline covariate in its analysis to control for imbalances between the groups. There was a large decrease in the frequency of self-reported cannabis use in the intervention group (15.7 times per week to 5.4) but not in the control group (13.3 to 16.9); this remained statistically significant after adjustment for confounders. There were also reductions in the quantity of cannabis used and the number of days it was

### **School-based interventions to prevent illicit drug use (Faggiano et al., 2005)**

smoked in the intervention compared to the control group. There was no difference in the use of stimulant drugs, but the intervention group were less likely to report use of non-stimulant illicit drugs other than cannabis (adjusted OR 0.32, 95% CI 0.12 to 0.82 p=0.04).

### **Evidence statement 4: Results of studies of multi-component community interventions**

Wu 2002 found a large reduction in new drug users in intervention villages compared to control villages (published result). However, the methodology of this study may be suspect, and the calculated result from the data extracted from the publication does not appear to support this conclusion.

Two studies that evaluated addition of a community component to a school-based programme (Perry 2003; Flay 2004) published results for boys and girls separately. No differences in substance use were identified. However, the calculated result from Flay 2004, combining data for boys and girls, suggested that the school plus community intervention may possibly reduce self-reported substance use. This result was marginally statistically significant when analysed without adjustment for clustering, but not so when adjusted using a value of the ICC of 0.02 (RR 0.89, 95% CI 0.75 to 1.05). This adjustment may be conservative. The third similar study, Biglan 2000, found a marginally statistically significant reduction in self-reported cannabis use in the group randomised to the community programme in addition to the school-based programme (p=0.043), but the difference in the number of users at four years was small (6.7% versus 8.5%).

The community study of native American youth, Schinke 2000, found no clear effects of the community intervention on self-reported cannabis use.

### **Evidence statement 1: all comparisons**

Effects of the interventions on assertiveness, attitudes towards drugs and intention to use drugs were not statistical significant in any of the comparisons.

### **Evidence statement 2: Knowledge versus usual curricula**

Three studies had a knowledge focused arm (Corbin 1993; Jones 1995; Sigelman 2003). Their results showed that drug knowledge was improved at post-test (SMD 0.91; 95% CI 0.42 to 1.39 - test for heterogeneity p = 0.17) when compared to the usual curricula control group, whereas decision making skills were not increased (SMD -0.06; 95% CI -0.60 to 0.47 - test for heterogeneity p = 0.34). A knowledge arm was also evaluated in the Sexter 1984 study (quality class:C), but no significant effect was showed in the comparison between pre and post- test use of drugs.

### **Evidence statement 3a: Skills versus usual curricula (results from RCTs)**

Skills based intervention significantly improved drug knowledge when compared to usual curricula at post-test (WMD 2.60; 95%CI 1.17 to 4.03) (Hurry 1997). The result is confirmed by the study conducted by Botvin 1984, showing an improvement of marijuana knowledge for all arms compared to controls at post test and of the peer arm with booster at one year follow up, by the study conducted by Moskowitz 1984, showing an improvement of knowledge in the intervention arm at one year follow-up (males group), and by Botvin 1990 at three years follow-up. However, the studies by Malvin 1985(quality class: C) and Moskowitz 1984 did not show any significant differences for drug knowledge at the post test and one year follow-up (Malvin 1985, quality class:C). No differences in marijuana knowledge were shown by Werch 1991 (quality class: C) at post test. Skills interventions were better in improving decision making skills (SMD 0.78; 95% CI 0.46 to 1.09 -test for heterogeneity  $p = 0.09$ ) (Hurry 1997; Snow 1992), but for Botvin 1997 at post test and for Botvin 1990 at three years follow-up, and peer pressure resistance (RR 2.05; 95% CI 1.24 to 3.42) (Hurry 1997), and they were slightly better in improving self-esteem (SMD 0.22; 95% CI 0.03 to 0.40 - test for heterogeneity  $p = 0.32$ ) (Hurry 1997; Kim 1989 quality class: C), when compared to usual curricula at post-test. The effect on peer pressure resistance is confirmed by the Clayton 1991 study, at one year follow-up; in this study however self-esteem was lower in the intervention group at 10 years follow-up. In the study by Cook 1984 self-esteem was significantly improved in the intervention arm at one year follow-up, and at three years follow-up in the study by Botvin 1990. Generic drug use (RR 0.81; 95% CI 0.64 to 1.02 - test for heterogeneity  $p = 0.30$ ) (Ringwalt 1991; Snow 1992) and the hard drug use both in the continuous outcome (SMD -0.30; 95%CI -0.85 to 0.25 - test for heterogeneity  $p < 0.0001$ ) (Snow 1992; Sussman 1998) and in the dichotomous outcome (RR 0.45; 95% CI 0.24 to 0.85 - test for heterogeneity  $p = 0.55$ ) (Sussman 2002 two years follow-up, quality class C, Furr-Holden 2004, five years follow-up) were positively affected by the skills intervention when compared to usual curricula; this result is confirmed by Botvin 1997 and Hecht 1993(quality class: C) at the post test and by Dent 2001 at one year follow-up. The generic drug use did not show differences at one year in the study by Cook 1984, and at 10 years in the study by Clayton 1991.

Skills based intervention had no effects on marijuana use in the continuous outcome (SMD -0.05; 95% CI -0.10 to 0.01- test for heterogeneity  $p = 0.38$ ) (Botvin 2001; Snow 1992; Sussman 1998), confirmed by Dent 2001, Clayton 1991 at 1 and 10 years respectively, Cook 1984 at one year. Nevertheless Botvin 1984, Botvin 1997, Sexter 1984 (quality class: C) and Hecht 1993(quality class: C) showed a positive effect of the skills focused arm at the post test. Botvin 1984 showed a significant effect of the intervention on marijuana use at one year follow-up, as well as theme ta-analysis of four studies (RR 0.82; 95% CI 0.73 to .92 – test for heterogeneity  $p = 0.37$ ) (Ellickson 2003 at one year follow-up, Sussman 2002 (quality class: C) at two years, Furr-Holden 2004 at five years follow-up and Botvin 1990 at six years follow-up). For sensitivity purposes, excluding the quality C study from this meta-analysis, the result was unchanged: RR 0.81; 95% CI 0.72 to 0.91 - test for heterogeneity  $p = 0.25$ . Botvin 1990 showed a significant effect at three years follow-up. Ellickson 1990 did not show significant differences in

marijuana use at two, three and five years.

Sexter 1984 (quality class: C) detected a positive effect on the use of glues; however Botvin 2001 found no effect on inhalant use on the continuous outcome at one year follow-up (WMD -0.05; 95% CI -0.11 to 0.01) and Furr- Holden 2004 found no effect on the dichotomous outcome (RR 1.00; 95% CI 0.60 to 1.66) at five years follow-up.

**Evidence statement 3b: Skills versus usual curricula (results from controlled prospective studies - CPSs)**

In the study by Rosenbaum 1994 drug attitudes, self-esteem and peer pressure resistance were evaluated at post-test and at one, two and six years after the program. A significant result was only obtained only for self-esteem at post-test. In the study by Ross 1998, no significant result was obtained. No significant differences in marijuana use were found in the study by Rosenbaum 1994.

**Evidence statement 4: Skills versus knowledge**

Programs based on skills enhancement, when compared with knowledge-based programs, showed a slight effect on knowledge about drugs at post-test (SMD 0.02; 95% CI -0.18 to 0.22 -test for heterogeneity  $p = 0.50$ ) (Botvin 1994; Jones 1990). Decision making skills at post-test were also not influenced by skills based interventions, compared with knowledge-based interventions (WMD -0.75; 95% CI -5.61 to 4.11) (Botvin 1994). No differences were evident between interventions in improving self-efficacy (SMD 0.13; 95% CI -0.37 to 0.63 - test for heterogeneity  $p = 0.16$ ) (Botvin 1994; Jones 1990), and self-esteem (WMD -0.31; 95% CI -3.92 to 3.30) (Botvin 1994) at post-test. At two years follow-up Botvin 1994 found a significant effect on marijuana knowledge in favour of the information-only control group. One study (Hansen 1991) evaluated the difference in marijuana use between two skills-focused programs and a knowledge-focused program: one of the two skills-focused programs (normative education) reduced marijuana use at one year follow-up but not at two years follow-up, whereas the other skills-focused program (resistance training) was not effective on marijuana use neither at one year nor at two years follow-up.

**Evidence statement 5: Skills versus affective**

Jones 1990 showed that skills-based interventions were better than affective in the improvement of self-efficacy (WMD 1.90; 95% CI 0.25 to 3.55), but not drug knowledge at post-test (WMD - 0.60; 95% CI -1.48 to 0.28).

**Evidence statement 6a: Affective versus usual curricula (from RCTs)**

Drug knowledge was significantly improved at the post-test in the affective arm compared with the usual curricula arm in two studies (Corbin 1993; Jones 1995) (SMD 1.88, 95% CI 1.27 to 2.50, -test for heterogeneity  $p = 0.36$ ). In these studies, decision making skills were also significantly improved by the intervention (SMD 1.35; 95% CI 0.79 to 1.91 - test for heterogeneity  $p = 0.82$ ). No significant differences were reported in knowledge and in self-reported behaviour in the study by Bernstein 1987, whereas in the study by Hansen 1988 (quality class: C) the affective group used significantly more marijuana at

one year ( $p = 0.004$ ) and at two years ( $p = 0.0003$ ) of follow-up than the controls. In the study by Sexter 1984 (quality class: C) the use of psychedelic and stimulant drugs at post-test was lower in the affective arm.

**Evidence statement 6b: Affective versus usual curricula (from CPSs)**

In the study by Valentine 1998 (quality class: C) both marijuana use and self-esteem were in favour of the usual curricula group versus at one-three years follow-up, for the high school sample, whereas in the middle school sample self-esteem was better in the intervention group, and marijuana use was indifferent.

**Evidence statement 7: Affective versus knowledge**

By comparison with knowledge based ones, affective focused interventions slightly improve drug knowledge (SMD 0.60; 95% CI 0.18 to 1.03 - test for heterogeneity  $p = 0.94$ ) (Corbin 1993; Jones 1990; Jones 1995). A better effect was evident for decision making skills (SMD 1.22; 95% CI 0.33 to 2.12 - test for heterogeneity  $p = 0.11$ ) (Corbin 1993; Jones 1995), whereas self-efficacy was unaffected (WMD -1.00; 95% CI -2.94 to 0.94) at post-test in the study by Jones 1990.

**Evidence statement 8: Interactive versus passive techniques**

We compared studies in which interactive as opposed to passive were used, irrespective of their types. Only three studies (Botvin 1994; Jones 1990; Sussman 2002) provided data suitable for meta-analysis: results were not statistically significant for drug knowledge (SMD 0.02; 95% CI -0.18 to 0.22 - test for heterogeneity  $p = 0.50$ ) (Botvin 1994; Jones 1990), decision making skills (WMD -0.75, 95% CI -5.61 to 4.11) (Botvin 1994), self-esteem (WMD -0.31; 95% CI -3.92 to 3.30) (Botvin 1994), self-efficacy (SMD 0.13; 95% CI -0.37 to 0.63 - test for heterogeneity  $p = 0.16$ ) (Botvin 1994; Jones 1990), and marijuana use (RR 0.78; 95% CI 0.49 to 1.23). However, interactive techniques were more effective in reducing hard drug use in the study by Sussman 2002 (RR 0.43; 95% CI 0.19 to 0.99).

**Evidence statement 9: The role of peers**

Programs were significantly more effective with regard to marijuana knowledge and marijuana attitudes at post test, and for locus of control, when administered by peers as opposed to teachers (Botvin 1984; Botvin 1990). Marijuana attitudes at one year follow-up were lower in the teacher-led group (Botvin 1984; Botvin 1990) and marijuana use indexes were significantly lower in peer led group compared to teacher led group both at post-test and at one year follow-up (Botvin 1984; Botvin 1990). When compared with external educators, the effect of peers was evident for drug knowledge (WMD -3.42; 95% CI -6.81 to -0.03) (Botvin 1994), but not significant for the other outcomes: decision making skills (WMD 1.94; 95% CI -2.12 to 6.00) (Botvin 1994), self-esteem (WMD 1.69; 95% CI -1.33 to 4.71) (Botvin 1994), self-efficacy (WMD 3.57; 95% CI -0.87 to 8.01) (Botvin 1994).

**School-based prevention programmes facilitated by computer or the internet (Champion et al., 2013).**

**Evidence statement 1: Drug use outcomes**

Of the seven programs, only one targeted 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).

**Evidence statement 2: Knowledge and attitudes towards drugs**

All three trials that assessed drug related knowledge demonstrated a significant increase in knowledge in the intervention groups compared with controls. Effect size for positive results ranged from modest to large (0.69 – 1.33). Of the three trials that assessed attitudes towards cannabis and alcohol, one found a reduction in positive expectancies and attitudes, with the strongest effects occurring at 12-month follow up (ES 0.4 females, ES 0.3 males). One trial was associated with a reduction in alcohol-related harms, however only for females and only at 12-month up, and another was associated with an increase in resistance skills, but only among baseline smokers. Finally, one study found a small, yet significant increase in decisional balance relating to tobacco use, as well as a reduction in temptations to smoke.

**School-based intervention: D.A.R.E programme (Pan and Bai, 2009)**

**Evidence statement 1: School-based programme**

*Descriptive analysis*

The unweighted mean effect sizes were 0.05 (ranging from -0.08 to 0.36) and 0.10 (ranging from -0.09 to 0.38) for drug use and psychosocial behaviour, respectively. According to Cohen's interpretation, both the mean effect sizes were less than small although the mean effect size for psychosocial behaviour was larger than that for drug use.

**Evidence statement 2: School-based programme**

*Inferential analysis*

*Test for homogeneity.* Under the null hypothesis of  $H_0: \theta_1 = \dots = \theta_{20} = \theta$ , the Hedges and Olkin's Q-statistic values of  $Q_{Total}$  were 13.34 with  $df = 17$  ( $p = 0.71$ ) and 96.61 with  $df = 12$  ( $p < 0.0001$ ) for drug use and psychosocial behaviour respectively. The homogeneity test results showed that the effect sizes across the 20 studies were statistically heterogeneous for psychosocial behaviour but not for drug use. This inferential finding was consistent with the descriptive finding demonstrated in the confidence interval plots above. By testing a random-effects model for psychosocial behaviour under  $H_0: \theta = 0$ , a  $z = 2.92$  ( $p < 0.01$ ) indicated that the weighted average effect size of the 20 studies from the random-effects model was statistically different from zero but was still 0.10, a less than small effect.

*Weighted regression analysis.* Because the effect sizes were heterogeneous for psychosocial behaviour, a weighted regression analysis was conducted to identify the study characteristics that explained the heterogeneity. Table 2 displays the estimated coefficients of the significant characteristics of the studies from the weighted regression analysis with the adjusted standard

errors (Eq. 2). From Table 2 we can see that five of the study characteristics significantly explained most of the variation of the effect sizes ( $R^2 = 89.8\%$ ). Specifically, the longer follow-up time ( $B = -0.21, t = -2.49, p < 0.02$ ) and the more rigorous statistical method ( $B = -0.13, t = -5.75, p < 0.001$ ) the study used, the less effect of the D.A.R.E. program would be found for psychosocial behaviour; whereas the later D.A.R.E. year ( $B = 0.04, t = 2.58, p < 0.02$ ), the more White students ( $B = 0.01, t = 4.02, p < 0.002$ ), and the more Black students ( $B = 0.01, t = 2.47, p < 0.03$ ) the study had, the more effect of the D.A.R.E. program would have on psychosocial behaviour.

### **School-based prevention for cannabis use (Porath-Waller et al., 2010)**

#### **Evidence statement 1: School-based programmes**

Combining the results of the 15 studies, which include 15,571 sampling units of students, schools, and classes, showed that school-based programs had a positive impact on reducing cannabis use among youth. The mean weighted effect size was moderate according to Cohen's (1988) conventions at 0.58 (95% CI: 0.55, 0.62) and was statistically significant. There was considerable variability in the magnitude of effect sizes across the set of studies, ranging from  $-0.50$  to  $2.90$ . The statistical test for homogeneity confirmed this ( $q = 3,650.12, p > .05$ ) and revealed that the effect sizes included in this analysis were heterogeneous. As a result, it was necessary to assess whether some characteristics of the studies could account for the variability observed across them. Several aspects of the studied prevention programs, student populations, and study design were identified as significant moderators of program effectiveness.

Characteristics of the prevention programs that were examined included the type of prevention model on which the program was based, the number of program sessions delivered, the facilitator of the prevention program, and the delivery method of the program. A summary of the tests conducted to assess whether the effect sizes were different for these levels of the characteristics is provided in Table 2. With respect to the type of prevention model, two different model types were examined including the social influence model and a mixed model that incorporated various models of prevention into the program. As previously discussed, social-influence model programs try to help youth identify both internal and external pressures to use cannabis, to counter pro-cannabis arguments and normative beliefs that everyone uses, and to learn skills for avoiding cannabis use when faced with pressure situations. Mixed programs were conceptualized as those that incorporated elements from various prevention models, such as affective (targets self-esteem, values), informational (provides information on drugs), and social-learning models. There were 5 studies in which the prevention programs were based on social-influence model and 10 studies that consisted of mixed prevention models. Results showed that the mixed programs produced a significantly greater effect ( $d = 1.27$ ) as compared to social learning programs ( $d = 0.19; p < .00001$ ).

The number of program sessions served as a proxy measure of the duration of the program in this analysis, and the set of 15 studies were divided into two categories: those with fewer than 15 sessions ( $n = 7$ ) and those with 15 or



more sessions ( $n = 8$ ). Prevention programs that were longer in duration yielded a significantly larger mean weighted effect size ( $d = 1.40$ ) as compared to those programs that were shorter in duration ( $d = 0.10$ ;  $p < .00001$ ). When the facilitator of the program was assessed as a potential moderator, the results indicated that the five programs delivered by individuals other than teachers (i.e., health professionals, police officers, program specialists) ( $d = 0.74$ ) were significantly more effective in reducing student cannabis use than were those 10 delivered by teachers ( $d = 0.57$ ;  $p = .01$ ). The method of delivery of the prevention program was also tested as a potential factor that could account for some of the variation between the set of studies. An interactive approach to delivering the program content was adopted in 10 of the studies, whereas four investigations used a didactic method of presentation. One study was excluded from analysis as the program consisted of a one-on-one session that incorporated elements of both delivery methods. Findings revealed that the interactive programs ( $d = .57$ ) yielded a significantly larger effect compared to those programs that were didactic in nature ( $d = 0.02$ ;  $p < .00001$ ).

The mean age of the students at the time they received the program was also assessed as a potential moderator of program effectiveness. The age of the students was divided into two groups: those youth who were under the age of 14 years (i.e., middle school-aged students;  $n = 6$ ) and those who were 14 years of age or older (i.e., high school-aged students;  $n = 8$ ) when exposed to the program. The study by Botvin et al. (2001) was excluded from the analysis because it was acting as an outlier. Programs targeting older adolescents produced a significantly larger mean weighted effect size ( $d = 0.39$ ) than did those aimed at younger students ( $d = 0.17$ ;  $p < .00001$ ). Results also indicated that when the fidelity of the prevention program was checked to ensure that all program elements were being delivered to students, these eight programs were significantly more effective in reducing youth rates of cannabis use ( $d = 0.93$ ) as compared to those seven programs that did not assess program fidelity ( $d = 0.06$ ;  $p < .00001$ ).

### **School-based prevention targeting adolescents aged 10–15 (Lemstra et al., 2010)**

#### **Evidence statement 1**

The statistical pooling of the six studies with intervention duration 1 year or longer with both program types combined (knowledge and comprehensive), with both outcome measures (alcohol and marijuana) combined, resulted in a pooled MUR of 0.95 with a 95% CI of 0.91–1.00. The systematic review found that 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 (MUR=0.88; 95%CI =0.87–0.89; or a range of 11–13 days) and a mean absolute reduction of 7 days of marijuana usage per month (MUR=0.93; 95% CI=0.92–0.94; or a range of 6–8 days) among adolescents aged 10–15 years old in comparison to no exposure. Programs that utilized professional led knowledge only program content resulted in a mean absolute reduction of 2 days of alcohol usage per month (MUR=0.98; 95% CI=0.92–1.04; or a range of 4 to 6 days) among adolescents aged 10–15 years in comparison to no exposure. For the stratification category of

marijuana prevention programs that utilized knowledge only program content, only one study was found and therefore failed to meet our inclusion criteria (at least two studies are required for statistical pooling purposes). As a result we were unable to describe the effectiveness of knowledge-based prevention programs for marijuana.

### **Media campaigns**

#### **The effectiveness of anti-illicit-drug public-service announcements (Werb et al., 2011)**

##### **Evidence statement 1**

Three RCTs exposed individuals to marijuana specific anti-illicit-drug PSAs, and four RCTs exposed individuals to a variety of anti-illicit-drug PSAs. Two RCTs reported positive effects of anti-illicit-drug PSAs corresponding to a -0.01 reduction in intention to use illicit drugs on a 1-7 scale of intention, and to a 0.06 increase in intention to call a drug-abuse hotline on a 1-5 scale of intention. Five RCTs reported non-significant and/or negative effects of such interventions.

##### **Evidence statement 2**

Fishbein et al conducted an RCT in which they evaluated the relative effectiveness of 30 anti-illicit-drug PSAs in modifying the intention of targeted individuals to use illicit drugs. Participants (n=3608) were randomly assigned to view six of a possible 30 anti-illicit-drug PSAs or a control program. They were then immediately evaluated after exposure, and their assessment of the PSAs was recorded. Overall mean relative scores of PSA effectiveness were then generated. The mean scores suggest that 16 PSAs were more effective than the control program in reducing intention to use illicit drugs among study participants, eight did not differ significantly from the control, and six were significantly less effective than the control in reducing intention to use illicit drugs (i.e., these PSAs significantly increased the intention to use illicit drugs) among participants. In this study, an effect size of 0 represented a null effect, and the five most effective PSAs were those with content focussing on heroin and methamphetamine, with relative effect sizes ranging from 0.597 to 0.938. By contrast, the five least effective PSAs addressed marijuana use or focused on building the self-esteem of viewers, with the authors reporting relative effect sizes ranging from  $-0.089$  to  $-0.286$ . These effect sizes suggest that these five PSAs had significant negative effects on reducing intention to use illicit drugs compared with a control program; that is, they actually increased the intention of exposed participants to use illicit drugs.

##### **Evidence statement 3**

Additionally, Yzer et al observed no significant effects of exposure to anti-illicit-drug PSAs among a sample of youth (n=418) compared with a control program in decreasing intention to use marijuana. However, individuals exposed to anti-illicit-drug PSAs that explicitly mentioned the gateway theory of drug use (i.e., that marijuana use leads to the use of 'harder' drugs such as cocaine and heroin) reported significantly weaker anti-marijuana norms than the control group.

**Evidence statement 4**

The authors found that individuals who participated in online chatting after exposure to anti-marijuana PSAs reported significantly weakened anti-marijuana beliefs compared with those study participants that did not engage in online chatting.

**Evidence statement 5**

All observational studies observed the effects of anti-illicit- drug PSAs within the context of either a community- or national-based media campaign and two studies examined the effects of the US National Youth Anti-Drug Media Campaign. Specifically, two observational studies conducted by Palmgreen et al in the state of Kentucky found that anti-illicit-drug PSAs were associated with significant 8.8% and 10.7% reductions in illicit-drug use. Furthermore, one national study conducted in Australia observed a 3% reduction in use among study participants but did not report on levels of significance. Finally, as will now be described, one 5-year US-based national observational study observed a non-significant 0.4% increase in use as well as potential negative effects on attitudes towards illicit drugs.

Specifically, the US Office of National Drug Control Policy's National Youth Anti-Drug Media Campaign, on-going since 1999, constitutes the largest PSA-based anti-illicit-drug intervention in the world. A 5-year observational study, using a national sample of youth as well as county-level observational studies, were conducted in order to determine its potential effectiveness in modifying drug use patterns among youth. It is noteworthy that those observational studies conducted by Palmgreen et al in two counties in Kentucky concluded that components of the National Youth Anti-Drug Media Campaign appeared to be effective in reducing rates of illicit-drug use among youth, as mentioned above. However, when campaign effects were investigated at the national level by Orwin et al, there was no evidence that the dissemination of anti-illicit-drug PSAs had a significant effect on reducing levels of illicit-drug use. Further, the authors found that higher exposure to the campaign was significantly associated with the negative effect of weaker anti-illicit-drug norms among study participants corresponding to a decrease in negative attitudes and beliefs related to marijuana on a scale with a baseline mean and SD of 100 each.

**Secondary prevention – a critical review of adolescent substance abuse group treatments (Engle and Macgowan, 2009)****Evidence statement 1: Group-based treatment**

Waldron et al.'s (2001) Psycho educational Therapy group and Liddle et al.'s (2001) AGT were the only two interventions to meet the criteria for possible efficaciousness by outperforming a comparison condition on a substance use outcome, which they did not do until their 7- and 12- month follow-up assessments, respectively. Both of these treatments also significantly reduced illicit substance use levels from baseline. Kaminer et al.'s (1998a, 1998b) CBT, IT, and PET (2002), Wagner et al's (1999) SAP, and Winters et al's (2000) 12-step also significantly reduced substance use from baseline to post-test and/ or follow-ups, and Dennis et al.'s (2004) MET/ CBT 12, Curry et al.'s (2003) CBT,

and Battjes et al.'s (2003) GBT reduced illicit substance use from baseline, thereby providing some indication of positive outcomes. Neither Latimer et al.'s (2003) DHPE nor Joanning et al.'s (1992) AGT group were reported to have statistically significant positive effects, and Azrin et al.'s (1994) supportive therapy group resulted in a slight increase in substance use.

**Evidence statement 2: Group-based treatment**

Three of the group treatments (Latimer et al., 2003; Azrin et al., 1994; Joanning et al., 1992) were outperformed (significantly so) by competing non-group-based treatments. However, the latter treatments were clearly more research- or theory supported than the non-robust group treatments, raising concerns about therapy allegiance.

**Evidence statement 3: Group-based treatment**

There were also some notable similarities between the change theories described by the two possibly efficacious group treatments. Both included drug and alcohol education or didactic presentations, explored individual psychosocial development issues and/ or expectancies and consequences of AOD use, emphasized self-efficacy, and included skills training, such as assertiveness, refusal skills, self-control, self-acceptance, problem solving, and/ or other communication skills. Both groups also personalized or tailored the skill-building to participants' experiences or perspectives. Liddle et al. (2001, p.9) reported initiating these exercises in a "decidedly non-coercive manner," and Waldron et al. (2001, p805) focused on group participation, cohesion, and sharing of experiences with "less emphasis on individual skill building". Finally, both treatments utilised therapeutic factors specific to the group modality, as evidenced by Waldron et al.'s (2001) focus on participation and cohesion, and Liddle et al.'s (2001, p9) introduction of "therapeutic tasks and goals according to the stages of group development".

**Secondary prevention – community based mutual aid for teens (Sussman, 2010)**

**Evidence statement 1: Teen treatment outcomes**

The formal 12-step-oriented program evaluation studies were the only studies I found that also mentioned any type of evaluation of youth alcohol/ drug use, pertaining to informal 12-step involvement and outcomes. In my review, reported levels of abstinence averaged 30-40% across studies and time points. Prevalence of abstinence was at 3 months: 29% and 35% (2 studies); 6 – 9 months: 30%, 51% and 24 % (3 studies); 1 year: 8 studies ranging from 30% to 66%, averaging 39%; and 2 or more years: 40%, 30%, 30%, 20% and 50% (5 studies). One study did not report abstinence rates per se but rather reported changes in the number of days of use (King, Chung & Maisto, 2009).

**Evidence statement 2: Teen treatment outcomes**

For comparison, I examined reviews of other teen quit data that did not focus explicitly on the 12-step involvement (although it is possible that two thirds of these programs involved an AA/ NA dimension to them; see Kelly & Myers, 2007). Clark (2004) inferred based on the studies he reviewed that only 20% of youth treated for an alcohol use disorder will remain abstinent by young

adulthood (although approximately 50% will show non problematic use in young adulthood). Chung and Maisto (2006) inferred based on the studies they reviewed that between 30% and 45% achieve consistent abstinence from alcohol at 1- year follow-up (although they note that results among inpatient teens may be as low at 15%; also see Grenier, 1985), and they also note that approximately 25% show non problematic use at the 1-year follow-up. They suggested a slightly higher abstinence value for other drugs (about 60%), with up to 30% non- problematic use at a 1-year follow-up (also see Maisto, Martin, Pollock, Cornelius, & Chung, 2002). The results of these reviews pretty well matched the re-review [sic] outcomes I reported. It would be difficult to try to disentangle effect of AA/ NA from other treatment components. However, it would appear that programs that explicitly mention AA/ NA as part of treatment obtain results comparable to other reviews suggesting that, at minimum, AA/ NA entrenched formalized treatments for teens do as well as other treatments on average.

**Evidence statement 3: Effect of attendance at informal community-based AA/ NA meetings**

All 11 studies find that AA/ NA attendance predicts abstinence, generally by two- to three- fold, or that those persons that were abstinent attended approximately twice as many meetings per week. These data appear to provide rather strong support that teen attendance at AA/ NA facilitates abstinence. Kelly et al (2000, 2002) and Kelly, Brown, Abrantes, Kahler, and Myers (2008) used temporally ordered, lagged analyses to examine longitudinal prediction of AA/ NA participation and outcomes, finding evidence that the 12-step attendance precedes behavioural outcomes (controlling for baseline motivation for abstinence and substance use severity), lending support to the influence of AA/ NA participation on outcomes.

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### Pregnancy, maternal health, parenting and child outcomes

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