

Practitioner Review: Evidence-based practice guidelines on alcohol and drug misuse among adolescents: a systematic review

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Background: Context-specific evidence-based guidelines on how to prevent and treat substance misuse among adolescents are currently lacking in many countries. Due to the time consuming nature of *de novo* guideline development, the ADAPTE collaboration introduced a methodology to adapt existing guidelines to a local context. An important step in this method is a systematic review to identify relevant high-quality evidence-based guidelines. This study describes the results of this step for the development of guidelines on adolescent alcohol and drug misuse in Belgium. **Methods:** Rigorous systematic review methodology was used. This included searches of electronic databases (Medline, Embase, Cinahl, PsychInfo, and ERIC in June 2011), websites of relevant organizations, and reference lists of key publications. Experts in the field were also contacted. Included were Dutch, English, French, or German evidence-based practice guidelines from 2006 or later on the prevention, screening, assessment, or treatment of alcohol or illicit drug misuse in persons aged 12–18 years. Two independent reviewers assessed the quality of the guidelines using the AGREE II (Appraisal of Guidelines for Research and Evaluation) instrument. **Scope:** This overview provides a framework of current knowledge in adolescent alcohol and drug misuse prevention and treatment. **Results:** This systematic review identified 32 relevant evidence-based guidelines on substance misuse among adolescents. Nine guidelines were judged to be of high quality; of which four had recommendations specifically on adolescents: one on school-based prevention, one on substance misuse prevention in vulnerable young people and two on alcohol misuse with specific sections for the adolescent population. There were few commonalities as guidelines focused on different target groups, professional disciplines and type and level of substance misuse. Evidence to support the recommendations was sparse, and many recommendations were based on expert consensus or on studies among adults. Also, the link between evidence and recommendations was often unclear. **Conclusions:** There are a substantial number of guidelines addressing substance misuse in adolescents. However, only four high-quality guidelines included recommendations specific for adolescents. The current level of evidence that underpins the recommendations in these high-quality guidelines is low. **Keywords:** Adolescence, alcohol abuse, drug abuse, prevention, therapy.

Introduction

Alcohol and drug misuse continues to be an important problem among adolescents worldwide. Despite a zero-tolerance policy for alcohol in the United States, an estimated 72.5% of high school students (grade 9–12, aged 14–18) have already consumed alcohol (YRBSS, 2009), 21.1% had consumed alcohol before age 13, and 24.2% reported 'binge drinking' (defined as >5 drinks in a couple of hours) in the 30 days before the survey; 31.8% reported having used marijuana, which was the most frequently used drug (YRBSS, 2009). In Europe, the prevalence of alcohol misuse is even higher; close to 90% of students aged 15 or 16 years have ever consumed alcohol (ESPAD, 2011). About 38% reported 'heavy episodic drinking' (defined as consuming 5 or more drinks per occasion) during the past 30 days. On average, 21% of the boys and 15% of the girls have tried illicit drugs at least once during their lifetime. Although there are marked

differences between European countries, the upward trend for heavy drinking and lifetime use of illicit drug use apparently has come to a halt between 2007 and 2011 (ESPAD, 2011).

The use of alcohol and drugs is associated with significant physical, psychological, and social harm. Alcohol consumption in youngsters has been shown to be associated with physical injury, health risk, and violent behavior (Kodjo, Auinger, & Ryan, 2004; Miller, Naimi, Brewer, & Jones, 2007; Zambon & Hasselberg, 2006) and may lead to abnormalities in brain functioning, including poorer neurocognitive performance (Squeglia, Jacobus, & Tapert, 2009). There is also consistent evidence of associations between late adolescent alcohol consumption and subsequent drinking in adulthood, and alcohol problems or dependence in adulthood (McCambridge, McAlaney, & Rowe, 2011).

The implementation of evidence-based practice is increasingly being promoted, also in substance misuse treatment (Amodeo, Ellis, & Samet, 2006; Miller, Sorensen, Selzer, & Brigham, 2006). Evidence-based

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practice refers to the use of three sources of information as a basis of clinical decisions: results from scientific studies, clinical judgment, and patient values (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). To implement this in daily practice, practitioners need a ready-to-use summary of available scientific research of which systematic reviews are examples. The number of systematic reviews summarizing the available literature on adolescent substance misuse is growing. For example, the Drug and Alcohol Review Group of the Cochrane Collaboration has published 8 systematic reviews specifically on interventions to prevent or treat adolescent substance misuse (CGAD, 2012). Of these, one review covers detoxification and another review covers maintenance treatment of opiate dependent adolescents (Minozzi, Amato & Davoli, 2009a,b). Both reviews identified only two studies and the authors suggest that this may be due to practical and ethical difficulties in conducting studies among adolescents. Three reviews focus on the prevention of drug misuse (Gates, McCambridge, Smith, & Foxcroft, 2006; Thomas, Lorenzetti, & Spragins, 2011; Faggiano et al., 2005). The largest body of evidence is available on school-based drug prevention programs. Knowledge-based programs effectively increased drug knowledge and skill-based programs improved decision-making skills, self-esteem, resistance to peer pressure, and drug use. However, effects on other outcomes such as assertiveness, attitudes towards drugs, and intention to use drugs were not clearly different in any of the trials (Faggiano et al., 2005). The remaining three reviews focused on universal prevention of alcohol misuse in three different settings (Foxcroft & Tsertsvadze, 2011a,b,c). The effects of family-based prevention interventions are small but generally consistent. The effects lasted into medium- to longer term (Foxcroft & Tsertsvadze, 2011a). Some school-based alcohol prevention programs were effective while others were not and the authors concluded that it was not possible to identify which characteristics were associated with effective programs. (Foxcroft & Tsertsvadze, 2011b). Evidence-based guidelines are another example of summaries of evidence, typically based on multiple systematic reviews. Such guidelines consist of recommendations with respect to the most appropriate care (i.e. assessment tools or interventions) for a certain patient population. Rigorously developed guidelines are based on a review of literature with a clear link between evidence and recommendations (Brouwers et al., 2010). Guidelines support practitioners in making clinical decisions. Other benefits of guidelines are that these contribute to the transparency, coordination and continuity of care (Grol, 2001).

The development of evidence-based guidelines requires substantial time, expertise and resources. For this reason, the international ADAPTE collaboration (<http://www.adapte.org/>) has developed a

methodology to adjust existing guidelines for use in a particular local context (Fervers et al., 2006). An important first step in this process is to identify existing guidelines that can be used. This article describes our findings of this step, while aiming at answering the following questions. 1. How many evidence-based guidelines are available on the prevention, screening, assessment and treatment of adolescent alcohol and drug misuse? 2. How many guidelines display high methodological quality? 3. What is the content of the high-quality guidelines with regard to target population, professionals and recommendations? As part of this question, also the currency (whether the evidence was up-to-date) and consistency of recommendations will be assessed. This study was carried out with the intent to adapt guidelines for the Belgian context. However, the results of this process can also be used by other countries wishing to adapt these into their own national guidelines.

This overview also provides a framework of current knowledge in adolescent alcohol and drug misuse prevention and treatment, which we hope will be of value to practitioners and clinicians in assimilating and implementing evidence-based guidance, in the absence of well-developed (national) evidence-based guidelines.

Methods

Standard systematic review methodology as outlined by the Cochrane and the Campbell Collaboration was used (Higgins & Green, 2011; Campbell Collaboration, 2011). The review protocol is available from the first author on request.

Search strategy

A sensitive search was performed aiming to identify relevant national and international guidelines. In June 2011, we searched the following electronic databases: Medline, Embase, Cinahl, PsychInfo, and ERIC. The full search strategy for Medline is presented in Appendix S1. The terms were translated to similar terms for the other databases.

In addition, we screened all titles of guidelines in the following databases. Note: databases with an (*) were screened in full. Of the remaining, we screened the relevant subfolders, as stated.

1. Guidelines International Network (searched with the following terms: Alcohol, Drug misuse, Drug use, Cannabis, Cocaine, Heroin, Marijuana, Amphetamin)
2. The National Guideline Clearinghouse (screened guidelines on 'substance-related disorders')
3. The New Zealand Guidelines Group*
4. the Scottish Intercollegiate Guidelines Network (SIGN)*

5. Domus Medica (Belgian Association for Flemish General Practitioners)*
6. Nederlands Huisartsen Genootschap (Dutch Association for General Practitioners)*
7. Dutch Institute of Healthcare Improvement CBO*
8. Société Scientifique de Médecine Générale (SSMG)*
9. National Institute of Clinical Excellence (NICE) (screened guidelines on 'mental health and behavioural conditions')
10. Database 'evidence-based guidelines' from Duodecim (Finland; searched with the following terms: Alcohol, Drug misuse, Drug use, Cannabis, Cocaine, Heroin, Marijuana, Amphetamin). This database is hosted in the Digital Library of Health from the Belgian Centre for Evidence-Based Medicine (CEBAM)
11. World Health Organization (WHO) (screened guidelines on "mental health and substance abuse")

The Association for Alcohol and other Drug Problems [Vereniging voor Alcohol en andere Drugsproblemen, and the portal of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) provide an overview of (European) guidelines for substance misuse and these were all screened for relevance].

In addition, internet sites of the following relevant organizations were searched using the above mentioned search terms:

1. National Drug and Alcohol Research Center
2. Australian Drug Information Network
3. Alcohol Studies Database

We also searched Google with the same search terms. Selected guidelines were screened for references to related guidelines and national experts in the field were contacted to identify any other guidelines overlooked in these searches.

Selection of guidelines and inclusion criteria

The retrieved guidelines were screened as to whether they fulfilled the following inclusion criteria:

1. The document should be a (clinical) practice guideline. Clinical practice guidelines are systematically developed statements to assist practitioners and patient decisions about appropriate health care for specific circumstances (Field & Lohr, 1990).
2. Recommendations should be based on evidence. Guidelines were included if they used references to scientific studies supporting their statements.
3. The guideline should report on the prevention, screening/assessment or treatment of alcohol or illicit drug (mis)use. The recommendations should refer to preventing or reducing the use of alcohol or illicit drugs (i.e. cannabis, ecstasy, cocaine), the screening or assessment of the use

of alcohol and drugs or treatment of the consequences of the (mis)use of these substances. Guidelines on caffeine or smoking cessation were excluded.

4. The guideline should report on adolescents. The recommendations should refer to youngsters aged 12 to 18. Guidelines specifically focusing on adolescents with accompanying health issues such as psychosis, HIV infection or pregnancy were excluded.
5. In addition, for pragmatic reasons, only guidelines in English, Dutch, French and German were included. Also, guidelines had to be published or updated in 2006 or later as research has demonstrated that the median survival of guidelines is 5 years, meaning that half of all guidelines are outdated 5 years after publication (Alderson, 2012). Initial selection took place based on title and abstract. Potentially relevant documents were retrieved and screened in full. All retrieved citations were screened by one reviewer (GEB). A second reviewer (KH) screened a random sample of 10% of the retrieved guidelines in duplicate. The inter-rater reliability was assessed using the percentage of agreement and the Kappa statistic.

Data extraction and data synthesis

The following data were extracted: title of guideline, authors, country, year of publication, target population, professionals and field (prevention, assessment or treatment) and substance (alcohol, opioids etc.). Data were extracted by one reviewer and checked by a second reviewer.

The quality of guidelines was assessed using the validated and reliable AGREE II (Appraisal of Guidelines for Research and Evaluation) instrument, which aims to assess the degree of methodological rigor in a clinical practice guideline (Brouwers et al., 2010; AGREE Collaboration, 2003). It consists of 23 items organized within six domains, with each domain capturing a specific aspect of guideline quality:

1. Scope and Purpose (three items): overall aim of the guideline, target group
2. Stakeholder Involvement (three items): extent to which appropriate stakeholders were involved in developing the guideline and extent to which the guideline represents the views of its intended users
3. Rigor of Development (eight items): process of gathering and summarizing the evidence, methods used to develop recommendations
4. Clarity of Presentation (four items): language, structure, format of guideline
5. Applicability (three items): potential barriers and facilitators to implementation, strategies to improve uptake, resources needed to implement the guideline

6. Editorial Independence (two items): biases due to competing interests

Items were rated on a seven-point scale from 1 (Strongly Disagree) to 7 (Strongly Agree). A quality score was calculated for each of the six domains, which were independently scored by at least two independent reviewers. Domain scores were calculated by summing all the scores of items in that domain and then representing the total as a percentage of the maximum possible score for that specific domain.

We used a staged scoring process to assess the quality of the included guidelines. First, one reviewer assessed the rigor of the development subscale (domain 3) of all guidelines. A second reviewer also assessed this domain if guidelines reported a systematic search or a clear link between evidence and recommendations. The guidelines that scored high on this domain, with a cutoff set at 50% of the maximum score, were assessed by two reviewers with regard to the other domains. Details of the guidelines with respect to characteristics, content and quality were tabulated.

Results

The search in electronic databases identified 3,318 records and 198 records were found using additional sources (see Figure 1). In total, 198 guidelines were screened in full to determine whether they fulfilled the inclusion criteria. A subset of 20 guidelines was screened by a second reviewer. The percentage

agreement between reviewers was 90% and the Kappa statistics for inter-rater agreement 0.73, indicating substantial agreement.

Thirty-six guidelines fulfilled our inclusion criteria. However, four guidelines were disregarded because they targeted very specific groups of health care professionals (emergency departments and ambulance services) or patients (young people in secure environment and detainees in police custody), while more general guidelines were available. Therefore, our final sample consisted of 32 relevant guidelines (see Table S1 and S2). A list of excluded guidelines is available as supplementary material (Table S3). Fifteen guidelines formulated recommendations specifically for adolescents, while the remaining documents formulated recommendations on substance misuse for a broader population, including adolescents. References to all relevant guidelines and details on the target population and health professionals are available as supplementary material (Appendix S2).

Quality of the guidelines

Nine of 32 relevant guidelines were considered high-quality guidelines, i.e. these scored more than 50% on the AGREE II instrument subscale methodology (UK001, 2007; UK003, 2010; UK004, 2010; UK005, 2010; UK007, 2007; UK008, 2007; UK009, 2007; NL001, 2009; INT004, 2008). The Tables 1 and 2 present basic characteristics and quality

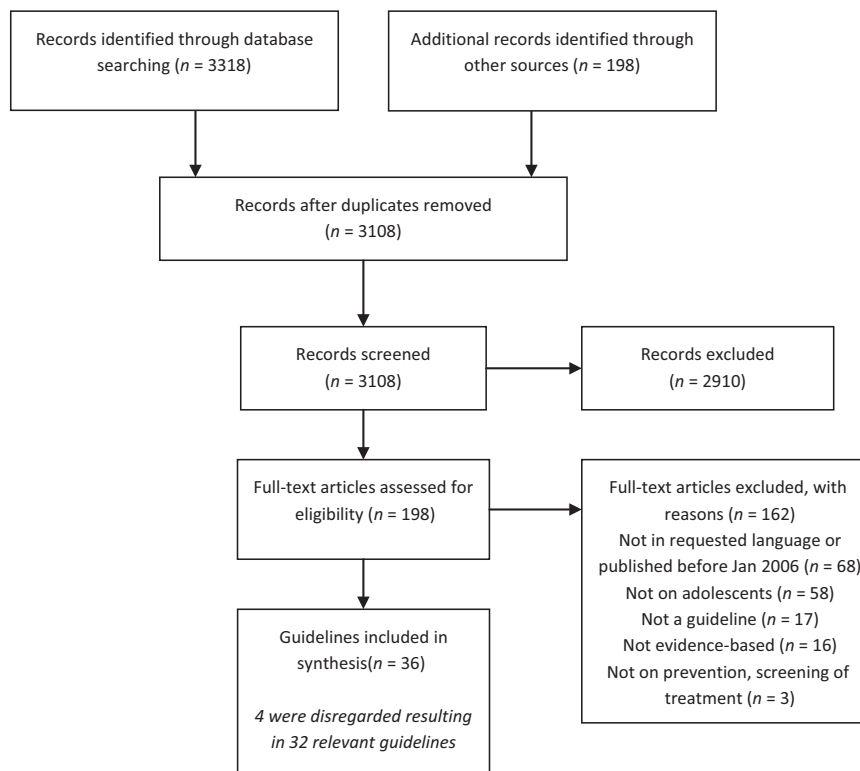


Figure 1 Flow diagram of numbers of identified and included guidelines in our systematic review of evidence-based guidelines on adolescent substance misuse

scores of these guidelines, respectively. Figure 2 presents the scores on all subscales of the AGREE instrument for these guidelines. These figures illustrate that the three guidelines on prevention are rated high on all domains but 'editorial independence'. The guidelines on assessment and treatment are rated consistently high across all domains with exception of 'applicability' for the guidelines on drug misuse.

High quality guidelines on prevention

Three high-quality guidelines, all from The National Institute of Clinical Excellence (NICE), formulated recommendations with respect to the prevention of substance misuse among adolescents (UK001, 2007; UK004, 2010; UK009, 2007) (see Table 3).

UK001 (2007) focuses on school-based interventions to prevent and reduce alcohol use among children and young people. It recommends tailored alcohol education to be part of the education curriculum for all students. If appropriate, parents should get information about developing parental skills. Furthermore, it recommends that local partnerships need to be developed to support the education in schools, to integrate this with community activities and to involve families. Students thought to be at risk of drinking too much, should be offered brief advice and referral.

UK009 (2007) are guidelines on community based interventions to reduce substance (legal and illegal drugs) misuse amongst vulnerable and disadvantaged children and young people. The guidelines are intended for all health professionals but also for

Table 1 Main characteristics of the selected guidelines

Guideline title (ID)	Institute, country, year of publication	Target group	Professionals
Interventions in schools to prevent and reduce alcohol use among children and young people. (UK001)	NICE, UK Nov 2007	Children in primary and secondary school	School personnel, local authorities, the NHS and the wider public, voluntary and community sectors, including children, families and friends.
Alcohol-use disorders: diagnosis and clinical management of physical complications. (UK003)	NCC-CC, UK 2010	Adults and children from age 10	All healthcare professionals, people with alcohol-use disorders and their carers, patient support groups, commissioning organizations and service providers
Alcohol-use disorders: preventing the development of hazardous and harmful drinking. (UK004)	NICE, UK 2010	People aged 10 and over	Government, industry and commerce, the NHS, and local authorities, education, the wider public, private, voluntary and community sectors.
Alcohol-use disorders: diagnosis, assessment and management of harmful drinking and alcohol dependence. (UK005)	NICE, UK 2011	Young people (10 years and older) and adults with a diagnosis of alcohol dependence or harmful alcohol use.	Primary, community and secondary healthcare and social care professionals
Community-based interventions to reduce substance misuse among vulnerable and disadvantaged children and young people. (UK009)	NICE, UK March 2007	Vulnerable and disadvantaged children and young people (under 25 years)	Practitioners and others in the NHS, local authorities and the education, voluntary, community, social care, youth and criminal justice sectors.
Multidisciplinary guidelines on impairments in alcohol use (NL001)	GGZ, Netherlands 2009	Persons who misuse or are dependent of alcohol	All care givers involved in (early) diagnostics and treatment of alcohol misuse and dependence
Drug misuse: psychosocial management of drug misusers in the community and prison. (UK007)	NCCMH, UK 2007	Adults and young people (aged 16-18 years) who misuse opiates, cannabis and/or stimulants	Primary, community, secondary, tertiary and other healthcare professionals
Drug misuse: opioid detoxification. (UK008)	NCCMH, UK 2007	Opiate dependent adults and young people suitable for detoxification	NHS and related organizations, including prison services, inpatient and specialist residential and community-based treatment settings
Guidelines for the psychosocially assisted pharmacological treatment of opioid dependence (INT004)	WHO, World 2009	Persons dependent on opioids	Policy makers, managers and healthcare workers

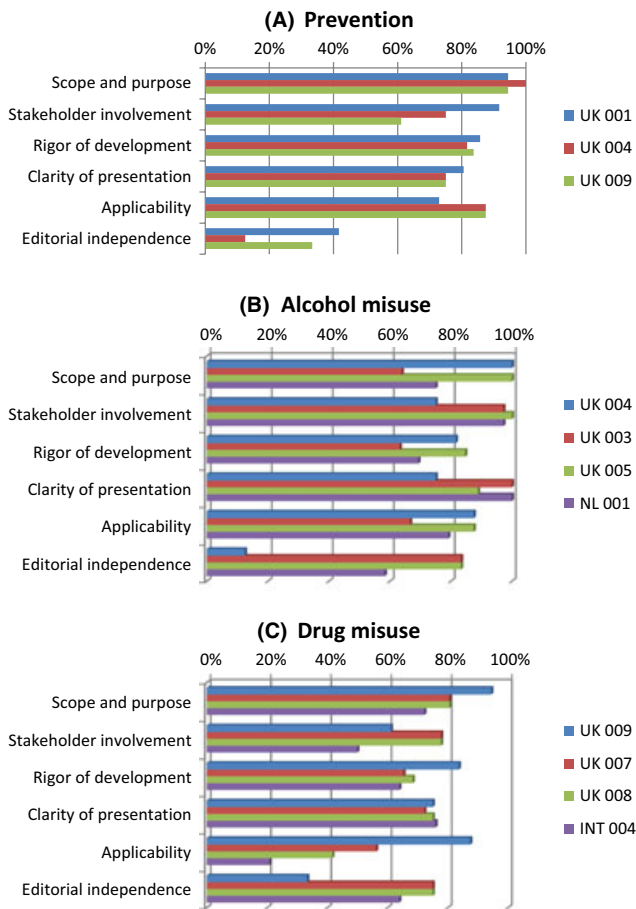


Figure 2 AGREE II assessment for high-quality guidelines on adolescent substance misuse. All scores are presented as a percentage of the maximum possible score for that specific domain: the panels guidelines on (a) prevention, (b) treatment of alcohol misuse refer to (c) drug misuse

professionals from other relevant sectors such as education and social welfare. The guideline includes recommendations on the prevention, screening and assessment and treatment and all recommendations involve multiple disciplines. With respect to prevention, the guidelines recommend development and implementation of a strategy to reduce substance misuse amongst vulnerable and disadvantaged youngsters, as part of a local area agreement. This strategy should be based on a local risk profile of the target population and supported by a local service model that defines the role of the agencies and practitioners. Furthermore, certain treatment programs are recommended for youngsters, aged 10–12, with persistent behavioral problems and youngsters, aged 11–16, who are at high risk of substance misuse with the aim to reduce substance misuse in the long-term (indicated prevention).

UK004 (2010) are guidelines that aim to prevent the development of hazardous and harmful drinking. It targets individuals aged 10 and above and is meant for government, industry and commerce, and a wide range of (health) professionals who are in contact with this population. The guideline formulates separate recommendations for policy and for

Table 2 Details of methodological quality (subscale of AGREE) of the selected guidelines. Results are presented on a 7-point Likert scale, 1: strongly disagree to 7: strongly agree.

Guideline	Systematic methods were used to search for evidence.	The criteria for selecting the evidence are clearly described.	The strengths and limitations of the body of evidence are clearly described.	Methods for formulating the recommendations are clearly described	The health benefits, side effects, and risks have been considered in formulating the recommendations	There is an explicit link between the recommendations and the supporting evidence	The guideline has been externally reviewed by experts prior to its publication.	A procedure for updating the guideline is provided
UK001 (2007)	5	7	7	7	5.5	6.5	5	6
UK003 (2010)	5	5	3	5	7	5	7	3
UK004 (2010)	6	7	6.5	7	5	5.5	5	5
UK005 (2010)	7	7	7	7	7	5	7	7
UK007 (2007)	6.5	6.5	5	5	5	4	5	2
UK008 (2007)	6.5	6	5.5	5.5	6	4.5	4.5	2
UK009 (2007)	7	7	6.5	6	5	5	6.5	5
NL001 (2009)	6	1	5	7	7	5	5	7
INT004 (2008)	5.5	5	4.5	4.5	3	5.5	1.5	2.5

Table 3 Relevant recommendation of the selected high-quality guidelines on adolescent alcohol and drug misuse

Field	Subfield (ID)	Prevention	Screening/assessment	Early intervention/referral	Treatment
Substances	Community-based interventions to reduce misuse among vulnerable youngsters (UK009, 2007)	Develop and implement a local plan to reduce substance misuse.	Use existing screening and assessment tools to identify vulnerable and disadvantaged youngsters who are misusing or at risk of misusing substances.	Work with parents, education welfare services, adolescent mental health services, school drug advisors or other specialists to provide support and refer to other services, if needed, based on mutually agreed plan. Offer family-based support for those at high risk of substance misuse, and offer more intensive support to families who need it. Offer group-based behavioral therapy for 10–12 year olds with behavioral problems and at high risk of misusing, offer parents group-based training in parental skills.	Offer motivational interviews for problematic substance misusers.
Alcohol	School-based prevention interventions (UK001, 2007)	Ensure alcohol education is an integral part of the curriculum. Ensure education is tailored. Introduce a whole school approach to alcohol. Offer parents information about where they can get help to develop parenting skills, where appropriate. Maintain and develop partnerships to support alcohol education in schools, to ensure school interventions are integrated with community activities, monitor and evaluate partnerships. Find ways to consult with and involve families about initiatives to reduce alcohol use.	-	For children thought to be drinking harmful amounts of alcohol: Offer brief advice and make direct referrals to external services where appropriate. Follow best practice on child protection consent and confidentiality.	-

(continued)

Table 3 (continued)

Field	Subfield (ID)	Prevention	Screening/assessment	Early intervention/referral	Treatment
Alcohol	Preventing hazardous/harmful drinking (UK004, 2010)	<p>Population-level approaches: increase price, reduce availability of alcohol, restrict marketing and licensing.</p> <p>Local level: generate resources for screening and brief intervention.</p>	<p>^aSupport 10–15-year olds thought to be at risk of their use of alcohol (e.g. routinely assess their ability to consent to alcohol-related interventions and treatment, obtain history of use, include background factors, use professional judge to decide on course of action, consider referral to special services, ensure discussions are sensitive to the young person's characteristics). Screen 16–17-year olds thought to be at risk (using AUDIT, focus on key groups at increased risk of alcohol-related harm).</p>	<p>^aOffer extended brief interventions for 16–17-year olds who have been identified as drinking hazardously or harmfully (Ask the young person's permission, deliver intervention by trained staff, provide information on local specialist addiction services for young people who want further help, give those who are actively seeking treatment for an alcohol problem a physical and mental assessment and offer, or refer them for, appropriate treatment and care.) Refer in case of signs of alcohol-dependence, severe alcohol-related impairment or related co-morbid disease, and when brief interventions have no benefits.</p>	–

(continued)

Table 3 (continued)

Field	Subfield (ID)	Prevention	Screening/assessment	Early intervention/referral	Treatment
Alcohol	Diagnosis, assessment and management of harmful drinking/dependence (UK005, 2010)	–	<p>Assessment^a</p> <p>If alcohol misuse is identified as potential problem in 10–17-year olds, conduct a brief assessment.</p>	<p>Referral^a</p> <p>Refer 10–15-year olds to a specialist service for a comprehensive assessment of their needs, if their alcohol misuse is associated with physical, psychological, educational and social problems and/or comorbid drug misuse.</p> <p>When considering referral of 16–17-year olds, use the same criteria as for adults.</p> <p>Comprehensive assessment should include multiple areas of need. If possible involve parent.</p>	<p><i>Principles of care</i></p> <p>When working with people misusing alcohol</p> <p>Build a trusting relation.</p> <p>Provide information appropriate to their level of understanding.</p> <p>Encourage families/carers to be involved in the treatment and to support them</p> <p><i>Assisted withdrawal, promoting abstinence and preventing relapse^a</i></p> <p>Offer inpatient assisted withdrawal for 10–17-year olds.</p> <p>Base assisted withdrawal on recommendations for adults.</p> <p>Adjust medication based on age, height etc.</p> <p>For 10–17-year olds primary goal of treatment goal should be abstinence.</p> <p>Offer individual cognitive therapy for those with limited co-morbidities/good social support and multicomponent treatment for all others.</p> <p>Acamprosate or naltrexone may be considered in combination with cognitive behavioural therapy for 16/17-year olds who have not engaged with or benefited from a multicomponent treatment.</p> <p><i>Delivering psychological and psychosocial interventions^a</i></p> <p>Multidimensional family therapy should usually consist of 12–15 sessions of 12 weeks, sessions should be provided for the family and individually both the parents and the child.</p> <p>Emphasis should be on care coordination and crisis management.</p> <p>Similar recommendations are given on the delivery of brief strategic, functional family and multisystemic therapy.</p>

(continued)

Table 3 (continued)

Field	Subfield (ID)	Prevention	Screening/assessment	Early intervention/referral	Treatment
Alcohol	Diagnosis and management of alcohol-related physical complications (UK003, 2010)	-	-	-	<p><i>Acute alcohol withdrawal</i> Offer admission for 10–15-year olds. Consider admission for vulnerable 16–17-year olds. <i>Management of delirium, seizures.</i> For delirium, offer oral lorazepam as first-line treatment. Alternatively, give parenteral lorazepam, haloperidol or olanzapine. For seizures, consider offering a quick-acting benzodiazepine (such as lorazepam). Review drug regimen if delirium or seizures develop during acute alcohol withdrawal treatment. This guideline further provides recommendations on the management of alcohol-related physical complications.</p>
Alcohol	Multidisciplinary guideline on screening, diagnosis and management of problematic alcohol use (NL001, 2009)	-	<p><i>Identification</i> Assess alcohol use in case of signs that may suggest misuse: e.g. mental or social problems often combined with sleeping disorders, frequent visits to GP or emergency room of hospital. <i>Casefinding</i> Use AUDIT or Fiveshot test. For young people check risk of binge drinking. Lab tests are not recommended to detect alcohol misuse, but may be used for monitoring.</p>	<p>Detoxification: in-patient or out-patient? Offer clinical detoxification and treatment in case of misuse of multiple substances, a poor physical health, or when previous detoxifications led to delirium/insults. <i>Brief interventions</i> Offer brief interventions, including motivating interviewing, to all patients with identified alcohol problems. Provide self-help materials Inform about self-help groups</p>	<p><i>Pharmacological treatment</i> Long-lasting benzodiazepines are preferred to reduce symptoms at detoxification. Acamprosaat and naltrexone are safe and effective to become abstinent/to reduce alcohol use. <i>Psychosocial interventions</i> Cognitive behavioral therapy should be used to treat misuse and dependence, including elements of social skills training and self-control. Behavioral group-based interventions are preferred above individual treatment. Community Reinforcement Approach may be used for persons with severe problems who do have social support. This guideline has special recommendations on the role of the GP, on the impact of comorbidity and causes and risk factors for physical complications of alcohol misuse.</p>

(continued)

Table 3 (continued)

Field	Subfield (ID)	Prevention	Screening/assessment	Early intervention/referral	Treatment
Drugs (opioids, stimulants, cannabis)	Psychosocial interventions for drug misuse (UK007, 2007) ^b	-	<p><i>Identification</i></p> <p>Ask routinely about recent legal and illicit drug use in settings where drug misuse is prevalent.</p> <p>Symptoms that may suggest drug misuse: e.g. acute chest pain in a young person, acute psychosis, or mood and sleep disorders.</p> <p>During assessment, consider: medical, psychological, social needs, history of drug use, and experience of previous treatment, goals in relation to drug use and treatment preferences.</p> <p>General recommendations on the <i>delivery and monitoring of the agreed care plan</i>: e.g. establish and sustain a respectful and supportive relationship with the service user, ensure that maintaining the service user's engagement with services remains a major focus, maintain effective collaboration with other care providers.</p> <p>Biological testing may complement but is not sufficient for diagnosis/assessment.</p>	<p><i>Brief interventions</i></p> <p>Offer opportunistic brief interventions for those not or limited contact with health care.</p> <p>Do not offer group-based psychoeducational interventions.</p> <p>Give information on self-help and facilitate contact with self-help groups.</p>	<p><i>Principles of care</i></p> <p>Staff should explain all treatment options, discuss whether to involve their families in their treatment and ensure that there are clear and agreed plans to facilitate effective transfer.</p> <p>Encourage families to be involved in the treatment and support them.</p> <p><i>Psychosocial interventions</i></p> <p>Offer contingency management treatment to change behavior, e.g. to improve physical health care.</p> <p>Do not routinely offer cognitive behavioural therapy and psychodynamic therapy to people presenting for treatment of cannabis or stimulant misuse or those receiving opioid maintenance treatment.</p> <p>The guideline further provides recommendations on how to implement these interventions in residential/inpatient and criminal justice settings.</p>

(continued)

Table 3 (continued)

Field	Subfield (ID)	Prevention	Screening/assessment	Early intervention /referral	Treatment
Illicit drugs	Detoxification for opioid dependence (UK008, 2007) ^b	-	<p><i>Clinical assessment of people presenting for opioid detoxification</i></p> <p>Establish the presence and severity of opioid dependence, and misuse of and/or dependence on other substances.</p> <p>Assessment may be complimented by near-patient testing, use confirmatory laboratory tests (for example when a young person first presents for opioid detoxification).</p> <p>The guideline gives special considerations for people who also misuse other substances.</p>	-	<p><i>Principles of care</i></p> <p>Provide adequate information, advice and support: e.g. detoxification should be available for those who want to become abstinent; give detailed information on risks to obtain consent; people should be encouraged to seek detoxification in a structured treatment program; provide information on self-help groups.</p> <p>Discuss impact of drug misuse and concerns with family, offer and assessment, provide information and support.</p> <p><i>Pharmacological treatment</i></p> <p>Choice of medication: methadone or buprenorphine. Do not (routinely) use clonidine and dihydrocodeine. Base starting dose, duration and regimen on severity of dependence, stability of user, chosen medication and setting.</p> <p>Monitor medication concordance and consider adjunctive medication. Do not (routinely) offer accelerated detoxification.</p> <p><i>Psychosocial interventions</i></p> <p>Consider contingency management therapy to support the detoxification.</p> <p><i>Setting</i></p> <p>Community-based programs should routinely be offered for opioid detoxification.</p>

(continued)

Table 3 (continued)

Field	Subfield (ID)	Prevention	Screening/assessment	Early intervention/referral	Treatment
Opioids	<p>Psychosocially assisted pharmacological treatment of opioid dependence (INT004, 2008)^b</p> <p>The guideline additionally includes recommendations for health systems at (sub) national levels and program level guidelines – for program managers and clinical leaders.</p>	–	–	–	<p><i>Choice of treatment</i></p> <p>Most patients should be advised to use opioid agonist maintenance treatment and methadone is preferred above buprenorphine. The initial daily dose methadone should be <20 mg and certainly <30 mg. Average methadone maintenance doses: 60–120 mg daily.</p> <p>Doses should be directly supervised in the early phase of treatment. Take-away doses may be provided when the benefits outweigh the risk of diversion.</p> <p>Offer psychosocial support in association with pharmacological treatment.</p> <p><i>Opioid withdrawal</i></p> <p>Tapered doses of opioid agonists should generally be used, alpha-2 adrenergic agonists are alternative. Do not (routinely) use a combination of opioid antagonists and minimal or heavy sedation.</p> <p>Offer psychosocial services routinely in combination with pharmacological treatment.</p>

^aRecommendations on adults were omitted here.

^bThis guideline does not have recommendations that are specific for adolescents.

practice. Recommendations with respect to policy include, for example, making alcohol less affordable, or making it less easy to buy alcohol. Practice recommendations include screening and supporting young people aged 10–15, and those aged 16 and 17 who are thought to be at risk for alcohol misuse. (see paragraph below).

The recommendations of these three guidelines are based on systematic reviews of relevant literature, including cost-effectiveness evidence and the guidelines describe the evidence that underlies a recommendation. However, the guidelines typically include multiple actions under one recommendation while evidence statements are given for each recommendation. Therefore, it was not always possible to identify the body of evidence relevant to each action, which weakens the link between evidence and recommendations. Also, evidence statements covered only a part of a recommendation, for example the effectiveness of an intervention while the recommendation also included details on the content of the intervention.

High quality guidelines on screening, assessment and treatment

Four guidelines formulated recommendations on screening, assessment and treatment of alcohol misuse, of which two had recommendations targeted on adolescents or children (UK004, 2010; UK005, 2010). UK004 (2010) includes recommendations on early identification of alcohol-use disorders. Children aged 10–15 should be assessed and receive an appropriate intervention, based on professional judgment. Young people aged 16 and 17 thought to be drinking too much should be screened, and receive brief advice, extended brief interventions, where appropriate. Young people aged 16 and 17 who do not benefit from these interventions or those who may be alcohol-dependent should be referred to specialist treatment. The same issues about the evidence underpinning this guideline as stated above apply. However, for some parts of this guideline the link between evidence and recommendations was felt to be weaker because the relevance of some evidence statements was unclear. For example, recommendation eight on extended brief interventions is linked to evidence statements on the effectiveness of the AUDIT (Alcohol Use Disorders Identification Test) in adults as assessment tool, or other screening questionnaires for adults (evidence statements 5.1 and 5.6). It should be noted that the recommendation to use the AUDIT to screen for harmful alcohol use among adolescents is the only recommendation with high-quality evidence.

The recommendations of UK005 (2010) concern the assessment and management in those drinking harmfully or with alcohol dependence. This guideline recommends conducting a brief assessment in 10–17 year olds when alcohol misuse is expected. Fur-

thermore, 10–15 year olds with concurrent physical or psychosocial problems need to be referred to a specialist service for assessment of their needs. For 10–17 year olds, abstinence should be the first treatment goal and these youngsters should be offered inpatient assisted withdrawal. Although for this guideline also systematic searches for evidence were conducted, strong evidence is lacking. For example, only 3 small randomized controlled trials (RCT) were found on pharmacological interventions for preventing relapse amongst children and young people. As a result, recommendations for young people and adolescents rely on extrapolations from the data set for adults. In contrast to the guidelines discussed above, this guideline does not clearly describe which evidence statements are linked to which recommendations. Also, the full guideline follows a different format than the practice guidance which makes it difficult to assess the link between evidence and recommendation. An important strength of this report is the sections ‘from evidence to recommendations’ that explain how recommendations were derived.

UK003 (2010) and NL001 (2009) focus on broader populations, including adolescents. UK003 (2010) includes recommendations on treatment of acute alcohol withdrawal, management of delirium or alcohol withdrawal seizures. NL001 (2009) is a multidisciplinary guideline on alcohol misuse in general, with recommendations on screening, assessment and treatment (pharmacological, psychosocial and combined), including somatic complications.

Although the systematic searches for these guidelines were not restricted based on age, only a few studies that include adolescents were found and many recommendations were based on studies in adult populations only. An example is the recommendation on ‘long-lasting benzodiazepine as first choice for alcohol detoxification’ (NL001, 2009). The guideline does not specify that this recommendation applies only to adults. Therefore, we assumed that it can be used for adolescents, if necessary. However, all studies are based on an adult population. A major strength of NL001 (2009) is that evidence levels are given to evidence statements, which provides the reader insight in the amount and quality of evidence.

Four guidelines concern substance misuse (UK009, 2007; UK007, 2007; UK008, 2007; INT004, 2008). UK009 (2007) focuses specifically on vulnerable and disadvantaged adolescents (already discussed above). They recommend using existing screening and assessment tools to identify adolescents who are (at risk of) misusing substances. They also recommend working with patients and relevant (health) professionals to provide support and to refer to other services, if needed. For problematic drug users, they recommend motivational interviewing. In general, evidence to support these recommendations is sparse. For example,

there is no direct evidence to support the effectiveness of screening in this population. One RCT (and one controlled nonrandomized trial) was found to support the recommendation on family-based programs of structured support. For multicomponent parent and child programs two RCTs were found that reported outcomes on substance misuse in children with aggressive behavior. The largest body of evidence was found for motivational interviewing (as part of brief interventions): one systematic review (11 studies), two RCTs and one non-RCT.

The remaining three guidelines focus on assessment and treatment of opioid misuse. UK007 (2007) covers psychosocial support provided by all health care professionals involved in the treatment of adults and young people (aged 16 and 17 years) who misuse drugs. It encompasses screening, assessment and treatment. Recommendations include the use of opportunistic brief interventions for those who are not, or in limited contact, with services, the use of self-help and contacting self-help groups and contingency management, also with the aim to improve physical health care. UK008 (2007) focusses on opioid detoxification and targets adults and young people (16–18 years) who are dependent on opiates and have been identified as suitable for a detoxification program. Important recommendations include providing information, advice and support, offering methadone or buprenorphine as first choice of medication, the advice of not using ultra-rapid detoxification and offering community-based programs routinely for those considering opioid detoxification.

These guidelines, however, lack a clear link between evidence and recommendation. They provide a summary of the literature, followed by the clinical recommendations but the link between evidence and recommendations, including impact of other considerations on that recommendation could be improved. Although the searches did not exclude adolescents, again very few studies focusing on adolescents were found. For example, with respect to pharmacological agents for detoxification, only one study on buprenorphine and none on methadone was found that assessed these drugs in adolescents.

INT004 (2008) targets persons dependent on opioids. The guidelines are relevant to policy makers and administrators making decisions on the organization of treatment, managers and clinical leaders responsible for the organization of health-care services and health-care workers treating patients. Recommendations are formulated at three levels: for health systems at national and subnational level, recommendations for treatment programs and for the support of individual patients. This guideline contains a section that describes special considerations for adolescents, which concludes that no systematic reviews were found that could answer the question whether pharmacological treatment for

adolescents with opioid dependence should differ from that for adults.

Discussion

This systematic review was performed to prepare for an ADAPTE-process in order to develop local Belgian guidelines on adolescent substance misuse based on existing evidence-based guidelines. The ADAPTE method examines existing guidelines in two stages. First, the quality of the evidence is evaluated by assessing the currency, content and consistency of evidence for each recommendation. In the second stage, local experts evaluate the acceptability and applicability of the recommendations in a certain country (The ADAPTE Collaboration, 2009). Based on this evaluation, recommendations are adopted, adapted or omitted; hereby transferring the guidelines to a specific context. This article reports on the first stage and therefore, the results can also be used in other countries that intend to develop their own national evidence-based guidelines for adolescent substance misuse. We identified 32 relevant guidelines and nine were judged to be developed rigorously. Three guidelines included recommendations on prevention, four on the treatment of alcohol misuse and four on the treatment of substance misuse. Between the guidelines, there were few commonalities because the documents focused on different target groups and professional disciplines. The quality of evidence underpinning the recommendations is meager due to a lack of studies among the population of adolescents.

We excluded guidelines on the combination of mental health problems and alcohol or substance misuse problems. This combination is very common, especially among adolescents. Reviews suggest that 60% of youngsters with an alcohol or drug use disorder had a comorbid diagnosis, such as conduct disorder, oppositional defiant disorder or depression (Armstrong & Costello, 2002). Furthermore, youngsters with comorbidity were more likely to be drug or alcohol dependent and had more problems with family, school, and criminal involvement (Grella, Hser, Joshi, & Rounds-Bryant, 2001). This exclusion did not impact our results as we found no guidelines that targeted dual diagnoses specifically for adolescents. This field needs further attention.

We identified only one high-quality guideline that included recommendations specifically for adolescent drug misuse (UK009, 2007). Currently in many countries most adolescent drug users are treated in pediatric care and sometimes in adult care. This may be due to the relatively limited amount of specific treatment programs that are available for this population. This situation, in turn, may hamper the development of evidence-based guidelines that are supported widely. However, the high prevalence of adolescent drug misuse stresses the urgency to develop and research such programs.

Evidence-based practice in the field of adolescent substance misuse is emerging and much progress has been made in the development and implementation of treatments designed specifically for adolescents with substance use disorders (Daes, 2008). Despite this, available guidelines were hampered by a lack of studies in the adolescent population. This may be due to uncertainty about legal and ethical status of involving adolescents in scientific studies (Santelli et al., 2003). Furthermore, studies on alcohol or drug misuse may be associated with other difficulties such as embarrassment of parents, increased likelihood of drop-out and lack of reliability of self-reported outcome measures.

As studies in adolescents were sparse, recommendations in some guidelines were deduced from studies among adults. Scientific research in adult substance misuse is not directly transferable to adolescents as there are important differences between the two groups. For example, adolescents are at greater risk of problems due to frequent binge drinking, parents play an important role in the recovery process, as most adolescents live together with one or both parents and are under legal custody, while developmental issues (e.g. higher levels of risk taking, responses to peer pressure) should be taken into account during treatment. According to the GRADE approach, a system to rate the quality of the evidence regarding guidelines, this would lower the quality of evidence because of indirectness -differences between the targeted population and those who have participated in the studies (Guyatt et al., 2011). The lack of evidence regarding adolescent substance misuse is an important finding of this systematic review.

Where data are sparse, one can ask what strategy should be followed in developing guidelines. We feel that there are two possibilities. One can decide to postpone the development of guidelines and wait until good quality evidence is available. Alternatively, one can decide to develop guidelines based on lower levels of evidence (or even consensus) and update them as soon as better evidence becomes available. For the field of adolescent substance misuse, we favor the last option. Firstly, it may take many years to gather sufficient and sound evidence for a complete guideline due to high complexity in health problems, relating factors and interventions. Secondly, in the absence of strong evidence practitioners still need to make clinical decisions. It is important, however, to raise awareness amongst practitioners that recommendations based on low levels of evidence, including consensus, may change when new research becomes available. Furthermore, the effect of guidelines should be evaluated with respect to the extent they lead to the expected positive outcomes, for example with respect to health, process of care or costs.

We used the subscale 'rigor of development' of the AGREE II instrument to select high-quality guide-

lines. Although the AGREE II instrument does not provide thresholds for acceptable or unacceptable guidelines, this instrument does rank guidelines based on their rigor and can guide the selection of an ADAPTE process (The ADAPTE Collaboration, 2009). The cut-off score of 50% was set in such a way that multiple guidelines remained for both prevention and treatment to be used in the subsequent process.

Although nine guidelines with respect to assessment and treatment were judged to be based on a rigorous development process, the link between evidence and recommendations was often unclear. More transparency on this matter will increase the feasibility of guidelines to be adapted to another context. Therefore, we support the current proposition of international standards for guidelines which suggest including items on how to formulate recommendations and the synthesis of evidence underlying the recommendation (Qaseem et al., 2012).

Evidence-based practice in the field of prevention of substance misuse appeared even more challenging. Although several Cochrane reviews are available that evaluated effects of prevention interventions, conclusions are rather general, providing few indications on the effective elements of prevention programs (Gates et al., 2006; Thomas et al., 2011; Faggiano et al., 2005; Foxcroft & Tsertsvadze, 2011a,b,c). This hampers the process of making recommendations on effective prevention practice. Rishel (2007) illustrated problems of evidence-based prevention for youth mental health problems as compared to treatment-oriented approaches and acknowledged the lack of rigorous prevention research. Evaluating interventions in prevention tends to be very complex. First, prevention typically involves multiple partners such as social workers, school professionals, and policy makers. Second, there are multiple factors that affect the result of an intervention and third, several interventions affecting different behavioral determinants may be needed to change behavior. As a consequence, studies to retrieve direct evidence for the effectiveness of preventive actions are more difficult to conceptualize and to conduct compared to studies within the field of treatment and assessment. Although it may be more challenging to implement the principles of evidence-based practice into the field of prevention, it is worth the effort. Solid evidence that prevention is effective will increase confidence for policy makers in this field, and consequently will increase budgets.

For prevention, we selected only three high-quality guidelines. This may have to do with the AGREE instrument that was used in this selection process. For the field of prevention, we identified some guidelines that are somewhat different from standard guidelines. These guidelines recommend a stepwise framework for how to develop prevention interventions for a local context. An example of such a stepwise guideline is 'The Canadian standards for

school-based youth substance abuse prevention' (Canadian Centre on Substance Abuse [CCSA], 2010). Such guidelines may be specific for the field of prevention, which is characterized by many different and interrelated factors that determine whether or not an intervention is effective, and can be a way to take these factors into account. Also, such an approach may be useful in different populations and contexts, making it possible to develop tailored interventions. It should be noted that it is challenging to find evidence for such stepwise guidelines, that consist of multiple steps which can be relevant for one population or context, but not for another. The AGREE-instrument evaluates whether there is evidence for each and every recommendation of a guideline. In order for stepwise guidelines to fulfill these criteria, the challenge is to include evidence for each and every step. Therefore, currently the AGREE-instrument may not be valid to assess the quality of such prevention guidelines. This illustrates the challenges for the field of evidence-based prevention and indicates the potential need for different criteria and assessment methods.

The identified guidelines provide some guidance on which interventions or approaches are effective to prevent, screen, assess or treat adolescent substance misuse. However, many relevant issues are not or only superficially covered in these guidelines. For example, we do not know which signals in adolescents are indicative of substance misuse and which instruments are valid and reliable to diagnose adolescent substance misuse and dependency. Furthermore, we do not know what the most effective treatments are (medication, psychosocial and combined) and whether self-help groups are effective for adolescents. With respect to prevention, we did not find consistent information on the age from which prevention interventions are effective, how education should be targeted and how to tune prevention initiatives in schools, community, family, and healthcare settings. All topics can be considered as topics for future research.

Since the development of the substance misuse guidelines, new information has become available. Particularly information on cannabis would be relevant for the target group of adolescents. For example, Newton, Teesson, Vogl, and Andrews (2010) found internet-based universal prevention programs among 13-year-old children improve their knowledge about alcohol and cannabis. Such programs may also reduce alcohol use twelve months after completion. Hendriks, Van der Schee, and Blanken (2011) demonstrated that MDFT (Multidimensional Family Therapy) and CBT (Cognitive Behavioral Treatment) reduce cannabis use and delinquent behavior in adolescents who misuse cannabis and Stanger, Budney, Kamon, and Thostensen (2009) provided support on the integration of contingency-management abstinence-based approaches in standard

treatments for cannabis misuse and dependence. More information is expected in the near future. For example, results of a multicountry trial evaluating multidimensional family therapy for adolescents misusing cannabis (INCANT trial, Rigter et al., 2010) will be useful for future updates of the guidelines.

Conclusion

Evidence-based guidelines are an important means to implement evidence-based medicine. We identified a substantial number of guidelines addressing substance misuse in adolescents, and of these nine were of high quality. Five high-quality guidelines focus on substance misuse in broad populations, including adolescents and only 4 provided recommendations specific for adolescents. This overview shows that only parts of the domain of the prevention, screening, assessment and treatment of adolescent alcohol and substance misuse is captured into high-quality guidelines and that evidence underpinning these high-quality guidelines is meager. To improve future guidelines, more evaluation studies in the population of adolescents are urgently needed as well as studies evaluating outcomes of implementing evidence-based guidelines.

Supporting information

Additional Supporting Information may be found in the online version of this article:

Appendix S1. Search terms for Medline.

Appendix S2. References to included guidelines.

Table S1. General characteristics of guidelines with recommendations specific on adolescent substance misuse.

Table S2. General characteristics of guidelines with recommendations of substance misuse including adolescents.

Table S3. List of excluded guidelines with main reason of exclusion.

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Key points

Key practitioner message

- Evidence-based guidelines provide recommendations about the most appropriate care for certain patient populations. Thirty-two guidelines on adolescent alcohol and drug misuse were found.
- Guidelines that are developed using rigorous methods are more likely to lead to the desired outcomes. Nine guidelines were developed rigorously.
- Four high-quality guidelines provided specific recommendations on adolescents: one on school-based prevention, one on community-based prevention and two on screening, assessment and treatment of alcohol misuse.
- The current level of evidence that underpins the recommendations in these high-quality guidelines is low. This means that further evidence may affect or change the recommendations.
- Systematic reviews such as those produced by the Cochrane Drug and Alcohol Group (www.cdag.cochrane.org) summarize available evidence, where high-quality guidelines are sparse.

Areas of future research

- Areas for future research that would support the development of evidence-based guidelines would include studies on signals that are indicative of alcohol or drug misuse among adolescents, studies on instruments that are valid and reliable to diagnose substance misuse and dependency among adolescents, and studies on effective adolescent-specific programs to treat substance misuse.
- Contingency management is recommended in several guidelines. However, this is based on studies among adults and on drug misuse. The extrapolation to adolescents and to alcohol misuse needs to be studied.
- The effects of evidence-based guidelines on adolescent substance misuse should be evaluated. Such analysis should include the effects on the process of care as well as patient outcomes and cost.

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