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Foreword

Cannabis is the illicit drug used most widely and most frequently in Europe; for those who experiment with banned substances in their youth, cannabis is the first, and in many cases the only, controlled drug they will experience. For most, use will be experimental, occasional and short-lived — but an important minority of consumers will go on to develop a long-term attachment to the drug and report periods of sustained and regular use. Over the last decade, our understanding of the potential problems that can be associated with the use of cannabis has grown substantially. Acute problems, though rare, can occur even among naive, occasional and inexperienced users — sometimes sufficiently serious to require emergency responses — with implications for drug prevention and harm-reduction activities. It is the chronic use of cannabis, however, that is of particular concern in the context of the need for drug-treatment interventions — and it is this area which is explored in detail in this new EMCDDA publication.

A substantive backdrop to this report is that we now see increasing numbers of young people presenting for, or being referred to, treatment for cannabis-related problems. Until a few years ago, the majority of those seeking treatment for their drug problems for the first time in their life were opioid users. However, that has changed, and now the largest group of first-time treatment entrants is those seeking help for problems related to cannabis use. Opioid use, it must be noted, still accounts by far for the greater burden on European drug-treatment services. Cannabis treatment covers a range of therapeutic interventions, some of which are relatively low-intensity. Nonetheless, it is clear that cannabis use now represents, and is increasingly recognised as, a major issue for European drug-treatment services and therefore an area of growing importance for defining what constitutes an effective and evidence-based approach.

It is, in my view, both timely and appropriate that the EMCDDA is addressing the treatment of cannabis use disorders when, in many parts of the world, the drug is high on the political agenda. However, it is important to note that regardless of discussions on the most appropriate control or regulatory frameworks for this drug, the question of how best to respond to those individuals who experience problems with their cannabis use remains an important one. This report is only possible because the evidence base in this area has grown substantially in recent years and many countries now have considerable experience of successful engagement with this client group. We are therefore indebted to the researchers and practitioners whose work is reflected here. Drawing on the research literature and experiential learning, this publication presents an in-depth and up-to-date review of what works in treating cannabis use disorders and maps out the geography of cannabis treatment in Europe.

Looking towards the future, the challenges we will face in this area are not easy to predict. We have observed seismic shifts in the cannabis market, with unprecedented changes in the way the drug is produced and distributed. There is also a growing debate on cannabis control, changes in patterns of use and, to some extent at least, a growing diversity in the implementation of control and regulatory frameworks used for this drug. Regardless of the implications of these factors on either the prevalence or patterns of cannabis use we will see in Europe, we can say, with some confidence, that providing effective treatment for those with cannabis use disorders is likely to be an objective of growing importance in European drug policy.

Wolfgang Götz
Director, EMCDDA

Executive summary

Background

Individuals with cannabis use disorders have historically presented in drug treatment settings in Europe; however, over the past several years, the numbers seeking treatment for problems related to cannabis use have increased, both in absolute and relative terms. In parallel, many countries in Europe have implemented, expanded or modified national treatment programmes to better serve this population.

This publication aims to provide experts and policymakers with an analysis of the latest information available on treatment for cannabis use to ensure that they have a firm foundation for decision-making. More specifically, it provides a review of recent research on available treatments for adolescent and adult cannabis users. In addition, it describes and analyses selected cannabis-specific programmes currently offered in the European Union and provides a brief overview of the availability and type of treatments for individuals with cannabis use disorders in each EU Member State. Finally, it compares indicators of treatment needs with estimated provision of treatment.

Methods and data sources

Materials and research publications from the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) were searched to identify all the systematic reviews, narrative reviews and individual studies (randomised controlled trials and observational studies) on the effectiveness of treatment for cannabis users (adolescents or adults) published between 2008 and 2012. Publications in three databases (PubMed, EBSCO and Google Scholar) were searched for terms related to treatment of cannabis-related disorders. Exclusion criteria were set for studies focusing only on either alcohol or tobacco.

Data on cannabis-specific treatment programmes in the 28 EU Member States, Turkey and Norway were obtained from the EMCDDA Annual reports and Statistical bulletins from 2008 to 2012 (EMCDDA 2008–2012a, b) and through an ad hoc data collection with the support of the EMCDDA's network of national focal points (the Reitox network).

Findings

A variety of evidence-based treatments were found to be available for cannabis use disorders. Compared with standard treatment in place (treatment as usual), these interventions are more effective in reducing the frequency and quantity of substance use, as well as the severity of substance use-related problems.

No individual empirically supported treatment emerged as being significantly more effective than any other empirically supported treatment. However, a combination of cognitive behavioural therapy (CBT) and motivational interviewing (MI) appeared to be more cost-effective than other treatment approaches in several studies.

While multidimensional family therapy (MDFT) may have some advantages (e.g. better treatment adherence) over other treatment approaches for adolescents, a combination of CBT, MI and contingency management (CM) appears to be the most effective treatment approach for adults.

Most countries in Europe offer evidence-based treatment programmes for cannabis use disorders. These follow either a general substance use treatment approach or a cannabis-specific approach.

Of the 30 European countries surveyed, all bar Sweden provided information on the provision of cannabis treatment. Fifteen of the countries provide at least one cannabis-specific treatment programme. In the remaining countries, individuals with cannabis use disorders are treated in the same programmes as individuals with other substance use disorders.

Treatment programmes are administered in both outpatient and inpatient settings by a variety of different service providers, including professionals, para-professionals and laypeople. The most frequently offered evidence-based cannabis-specific interventions in Europe are based on MDFT, CBT and MI/MET (motivational enhancement therapy). In most of the countries offering cannabis-specific treatment, coverage of the affected population is rated as 'good', and experts report that the majority of individuals in need of treatment for cannabis use disorders have access to treatment. A few countries, however, have only limited coverage, sometimes despite high overall levels of need. Less is known about the accessibility of treatment for cannabis use disorders in countries that do not offer cannabis-specific interventions.

Conclusions

Although many countries in Europe offer quite effective and comprehensive treatment programmes for cannabis use disorders, there is still potential for further improvement. In some cases, no evidence-based treatment for cannabis use disorders is offered; in other cases, availability may not be sufficient. Collaboration between treatment providers, general healthcare and the criminal justice system can help to reach people in need through referrals. While most of those receiving treatment for cannabis-related problems are treated in outpatient settings, treatment in inpatient settings is also reported by the majority of countries. Given the young age and often limited level of problems experienced by many cannabis users, Internet-based interventions are a promising approach which is already supported by some evidence.

Addressing shortcomings and limitations will help to increase the overall availability and quality of treatment for cannabis use disorders in Europe, which may reduce the potential long-term negative effects in this relatively young group of drug users. The high levels of cannabis use in some parts of Europe, coupled with growing challenges to the drug's status as a controlled substance and possible shifts in the social acceptability of the drug, underline the importance of meeting current treatment needs and remaining vigilant for future changes.

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The European Monitoring Centre for Drugs and Drug Addiction wishes to thank the authors for their work on this publication. In addition, the Centre is grateful to the members of the EMCDDA Scientific Committee who reviewed the manuscript.

Introduction

In Europe, cannabis is now the drug most often cited as the main reason for seeking help by those entering drug treatment for the first time in their life. This is a recent development, reflecting in part an expansion in the provision of treatment for problems related to cannabis use. It may also reflect the status of cannabis as the most used illicit drug, with an estimated 14.6 million Europeans aged 15–34 using the drug in the last year and 3 million using it daily or near-daily (EMCDDA, 2014b; Thanki et al., 2012). These developments have taken place against a backdrop of major change in the European cannabis market, which has been transformed over the past decade by the spread of domestic cultivation of the drug, lowering the barriers between producer and consumer; furthermore, the potency of cannabis products is increasing (EMCDDA, 2012a).

Treatment for cannabis-related problems, in contrast to treatment for problems related to heroin use, relies primarily on psychosocial approaches combining elements of classical psychotherapy with social support and care. Various psychological interventions to treat drug dependence exist, and these may be tailored to the needs of the users of one drug or they may be provided to users of any drug. With the large numbers entering treatment each year in Europe, where drug treatment is paid for largely from public funds, effectiveness is a key consideration for policy. Research into the effectiveness of treatment approaches for cannabis problems, however, is still relatively new, and when it was last reviewed by the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) no conclusive evidence was found for any specific treatment (Bergmark, 2008). The present publication includes an updated review of the literature on treatment for cannabis problems, with the aim of helping policymakers identify the interventions most likely to succeed.

This publication has two principal aims. The first is to examine the evidence base underlying interventions for cannabis-related problems. Among the main questions addressed are the following: 'For what interventions is there evidence of effectiveness?' and 'Does the evidence favour cannabis-specific interventions over general substance use treatment?' The second aim is to map the availability and provision of cannabis treatment in Europe, based on information from the 28 EU Member States, Turkey and Norway. Here, in addition to describing cannabis treatment programmes, the relationship between treatment needs and treatment provision is addressed.

The first chapter provides the reader with the background information necessary to understand the rest of the book. The topics covered include the prevalence of cannabis use in Europe and the social, health and legal consequences of use of the drug. The provision of treatment for cannabis users is looked at, as is the question of determining treatment need. In an overview of treatment for cannabis problems in Europe, a distinction is made between cannabis-specific and general substance use treatment approaches. The main psychosocial approaches to treating cannabis-related problems in Europe are described here. This chapter also describes the methods and sources of data used in the study.

In the second chapter, the evidence for the effectiveness of the various interventions is reviewed, with treatments for adolescents and adults considered separately. This chapter also reviews the research on telephone and Internet interventions. The chapter closes by examining the factors and mechanisms that influence effectiveness.

The treatments available in Europe for cannabis-related problems are reviewed in the third chapter. Information is presented on the treatment options available in each country, with a particular focus on the major cannabis-specific programmes in Europe. The fourth chapter looks at the calculation of unmet treatment needs.

The findings of the study are brought together in a final chapter, where the implications for policy and practice are assessed.

CHAPTER 1

Cannabis treatment in context: cannabis use, related problems and common treatment approaches

Cannabis in the European Union: use and problematic use

Population surveys indicate that cannabis is the most widely used illicit substance in most European countries. The most recent estimates suggest that 5 % of adults (15–64 years) in the European Union, or 18 million adult Europeans, used cannabis in the last year; 74 million adult Europeans reported having using cannabis at least once in their life (EMCDDA, 2014b). To put Europe into a global context, one can refer to the United Nations *World drug report 2013* (UNODC, 2013), which indicates that annual prevalence of cannabis use in Europe overall is above the global average but still below that of West and Central Africa (12.4 %), North America (10.7 %) and Oceania (10.9 %). However, there is considerable variation within Europe, with annual prevalence rates ranging from 0.3 % in Romania to 9.6 % in Spain. In terms of the demographics of the affected population, available data indicate that the typical cannabis user in Europe is a young male aged 15 to 24.

More than cannabis use as such, problematic use of the drug is highly relevant for the healthcare sector and policymakers. Data on regular use of cannabis, available from population surveys, can be used as an indicator of the prevalence of such problematic patterns of use in the population. Thanki et al. (2012) provided an overview on the prevalence of daily or almost daily cannabis use, defined as use on 20 or more days in the month prior to the survey. Results were based on self-reported data from large, probabilistic, nationally representative samples of the general population. The countries included represent more than 83 % of the population of the European Union and Norway. In these countries, between 3.5 % and 44 % of last-month cannabis users reported daily or near-daily use — an overall proportion of 25 %. The prevalence of daily or near-daily use in the adult population (15–64 years) ranged from 0.05 % to 2.6 % for these countries, resulting in an overall rate of 1 %. This equates to 3 million people who consume cannabis daily or almost daily. However, this must be considered a minimum estimate because of the possibility of under-reporting among survey participants and the higher probability of frequent users occurring outside the sampling frame of general population surveys. About two-thirds of daily or near-daily users are between 15 and 34 years old and three-quarters are male (EMCDDA, 2013a).

Cannabis problems are not driven only by the demand side; the supply side also plays a crucial role in these developments. Today, in the European Union, cannabis is predominantly consumed in two different forms: herbal cannabis (marijuana) and cannabis resin (hashish). Historically, cannabis resin was the most widely consumed cannabis product in western European countries (EMCDDA, 2012a). Over the past decade, there has been a major shift across Europe from the use of cannabis resin to the use of herbal cannabis products, partly driven by an increase in domestic production in the European Union. Today, herbal cannabis is the most used cannabis product in Europe overall. Cannabis resin remains the most widely used cannabis product only in countries in the south-west and north of Europe. Even in these countries, however, its use has declined considerably relative to that of herbal cannabis products.

In addition to cannabis resin and herbal cannabis, synthetic cannabinoids play a small, but possibly increasing, role in consumption. These synthetic substances bind to cannabinoid receptors in the central nervous system, producing similar effects to cannabis. They constitute a relatively new cannabis-like product, which is now available in most EU countries, and often less controlled than cannabis. Given the often higher potency and chemical differences of these substances, there may be specific risks different from those known for cannabis.

Health consequences of cannabis use

Although cannabis has historically been viewed as much less harmful than so-called 'hard drugs', such as opioids

and cocaine, the evidence indicates that cannabis may have serious health implications for some users.

A brief report compiled in 2011 by the US National Institute on Drug Abuse (NIDA) lists the main findings of research into the effects of cannabis on humans. Cannabis intoxication can negatively affect short-term memory, reduce reaction time and motor coordination, and impair judgement. Moreover, these cognitive and neurological impairments associated with cannabis intoxication could lead to risky behaviour (e.g. unprotected sex, driving while intoxicated). Consumption of high doses of cannabis can result in anxiety disorders and paranoia, or increase the risk of heart attack in vulnerable individuals. Long-term negative outcomes associated with cannabis use include dependence, poorer achievement-related outcomes, diminished life satisfaction, upper respiratory problems and increased risk of developing psychosis in vulnerable individuals. Cannabis dependence is a mental disorder with a distressing, chronic and relapsing nature.

In clinical settings, many cannabis users have been described as self-medicating for anxiety and depressive subclinical syndromes (anxiety, irritability, negative mood, physical symptoms and decreased appetite) (Weinstein et al., 2010). Individuals with cannabis dependence have been found to be six times more likely to have mood or anxiety disorders than those without cannabis dependence (Stinson et al., 2006). There is strong evidence from well-controlled prospective longitudinal studies for an association between cannabis use and increased risk of psychotic disorders (Moore et al., 2007), and specific genetic factors are emerging as plausible explanations for increased risk among a subgroup of users (van Winkel, 2011; Verweij et al., 2010). There is consistent evidence that cannabis use is correlated with poor clinical outcomes, relapse, remission and exacerbation of symptoms across many psychiatric disorders (Baker et al., 2010). A more recent study also points towards long-term negative effects for intellectual development if the drug is used regularly during adolescence (Meier et al., 2012). Others have pointed out that these associations may not necessarily be the result of the direct effects of cannabis use (Danovitch and Gorelick, 2012).

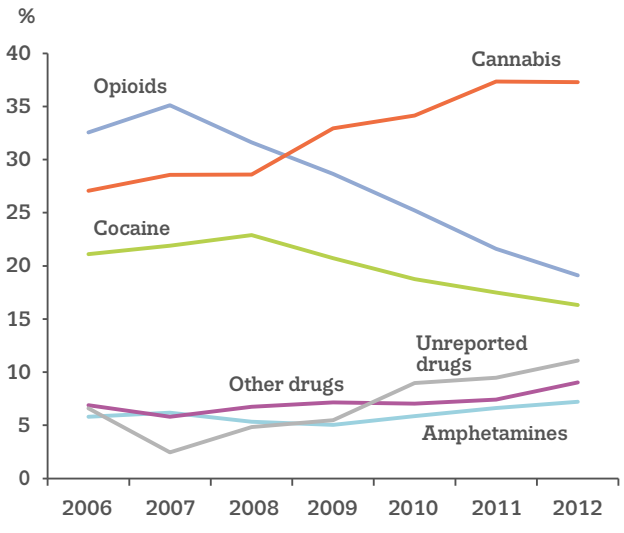
Although only a small proportion of intensive users may develop cannabis-related health problems, because of the non-trivial prevalence of intensive cannabis use within populations large numbers of people may develop such problems, making it a public health problem of some size (Copeland and Swift, 2009). Compared with users of other drugs, cannabis users are less likely to seek help for their drug problems. At an estimated 10 %, the share of cannabis-dependent users who seek help is the lowest for any illicit drug (Stephens et al., 2007). Perceived barriers to treatment include not being aware of treatment options, thinking treatment is unnecessary, not wanting to stop using cannabis and wanting to avoid the stigma associated with accessing treatment (Gates et al., 2012).

Trends in treatment provision for cannabis-related problems

The widespread use of cannabis across the European Union and the increase in the use of the drug over many years is reflected in the high number of cannabis users now seeking treatment. In 2012, 110 000 of those enrolling in specialised drug treatment in the European Union reported cannabis as the primary drug for which treatment was being sought (Table TDI-062 in EMCDDA, 2014a). Cannabis is the second most commonly reported primary drug in both inpatient (18 % of clients) and outpatient (26 % of clients) treatment settings (Tables TDI-050 and TDI-056 in EMCDDA, 2014a). All countries report admitting cannabis users for treatment in outpatient settings, and most countries also report cannabis users entering treatment in inpatient settings. Primary cannabis users account for more than 30 % of treatment entrants in Belgium, Denmark, Germany, France, Cyprus, Hungary, the Netherlands and Poland, for less than 10 % in Bulgaria, Estonia and Malta, and for between 10 % and 30 % in the remaining EU Member

FIGURE 1

First-time treatment entrants in the European Union by primary drug, 2006–12



Source: EMCDDA (2013c) Figure TDI-1 and EMCDDA (2014a) Table TDI-059.

States. The number entering treatment for the first time in their life is commonly used as an indicator of trends in treatment demand. Between 2006 and 2012, the number of cannabis users entering treatment for the first time in their life has increased, whereas first-time treatment admissions for heroin and cocaine have declined. Among first-time entrants to drug treatment, cannabis is now the primary substance most frequently reported (Figure 1).

Treatment needs and cannabis-related problems

The upward trend in the number of cannabis users entering drug treatment in Europe is no longer in step with the trend in prevalence of cannabis use among the general population. After many years of signalling increasing cannabis use, prevalence indicators now point to use of the drug having levelled off or, in some countries, gone into decline. The continued upward trend in treatment demand may reflect the delay typically observed between the onset of drug use, the development of harmful patterns of use and associated problems, and referral for treatment. The average cannabis user entering treatment in Europe is 26 years old and first used the drug at age 16. The overall trends may hide differences between different user groups. One possible scenario is that the prevalence of problem forms of cannabis use may still be on the increase while less problematic patterns of use are decreasing.

Overall, there is considerable regional variation in the prevalence of cannabis treatment, which cannot be explained by differences in the prevalence of use. Factors at national level may also influence the numbers entering treatment. Among these are the following: the proportion of users developing problematic patterns of use; the perceived risk and harm of cannabis use at population level and related policy decisions; differences in funding of treatment provision; and referrals for treatment from the criminal justice system. In addition, the availability, quality and price of cannabis products on the national market may have indirect effects on treatment needs and requests. Other factors influencing availability of treatment include funding mechanisms in the country, treatment systems and treatment organisation.

How the provision of treatment for cannabis-related problems relates to treatment needs is an important question for policymakers. Scientific findings have shown the existence of problematic acute and long-term effects of cannabis use. Some of these may be permanent, especially in the case of users who are adolescents or children. Cannabis-related problems are correlated with other mental health problems, and although causal or multiplying effects of the drug often remain unclear, they cannot be excluded. While a smaller percentage of cannabis users than users of other illicit drugs, such as heroin, seek treatment, the overall high prevalence of use results in a considerable number of cases where treatment is needed. This has clear implications from a public health perspective. Furthermore, the debate in some countries about decriminalisation of or changes in the regulations on cannabis consumption calls for reflection on the possible effects on treatment needs. While the impact that possible changes in the law may have on the use of cannabis is outside the scope of this publication, the need for evidence-based interventions for problematic users will continue.

Methods and sources of data

A search strategy was carried out to identify all relevant systematic reviews, narrative reviews and individual studies (randomised controlled trials and observational studies) on the effectiveness of treatment for cannabis users (adolescents or adults) published after 2008. Publications in three databases (PubMed, EBSCO and Google Scholar) were searched using the following search terms: cannabis, marijuana, treatment, therapy, counselling, evaluation, efficacy and effectiveness. Publications were selected for further inspection if at least one treatment approach was evaluated which was also used for treatment of cannabis use disorders, or if the study revealed relevant information concerning the factors which influence the effectiveness or the acceptability of these treatments. Studies focusing only on alcohol or tobacco were excluded. The results were summarised and compared with an earlier work on the same topic published in an EMCDDA monograph (Bergmark, 2008).

Data presented in this report regarding cannabis-specific treatment programmes in Europe were also obtained from a number of EMCDDA sources, provided either directly or indirectly through the Reitox network, made up of

national focal points in the 28 EU Member States, Turkey and Norway. The sources were as follows: EMCDDA Annual reports from 2008 to 2012; Reitox national reports to the EMCDDA from 2008 to 2012; Exchange on Drug Demand Reduction Action (EDDRA) online resources; the cannabis treatment section of Structured Questionnaire 27 (SQ27); the Cannabis-Specific Treatment National Focal Point Survey (CSTNFPS); and the Cannabis-Specific Treatment Programme Manager Survey (CSTPMS).

The EMCDDA Annual reports provided a yearly assessment of the drug problem in Europe, containing facts and figures on drug policy, use, trafficking and treatment in the 28 EU Member States, Turkey and Norway. The 2012 report was the most recent one available when the data for the current publication were collected. In 2013, the Annual report was succeeded by the European Drug Report.

Each year, Reitox national focal points provide the EMCDDA with a report detailing the drug phenomenon on a national basis.

The EDDRA online resources contain additional information on cannabis-specific treatment options (accessible at emcdda.europa.eu/themes/best-practice/examples).

The SQ27 is a routine data collection via a structured questionnaire that was last updated by the EMCDDA in 2011. The structured questionnaire addresses the policies and interventions that EU Member States, Turkey and Norway have established to provide evidence-based drug treatment; it also gathers information on measures that countries have taken to achieve and maintain a high quality of treatment service provision. The survey was sent to each national focal point. Of the 30 national focal points contacted to participate in this survey, 29 completed the survey (response rate 97 %). The survey included items assessing basic information about cannabis-specific treatment programmes offered in each country.

The CSTNFPS was a 15-item survey created and administered by the authors of this report in February 2013. The purpose of this survey was to gather basic data about currently available inpatient and outpatient cannabis-specific treatment programmes offered in European countries. The survey contained items assessing the following information: presence of cannabis-specific treatment programmes in the country, name of the programme, average waiting time for treatment, cost of treatment to participants, percentage of people in need who receive treatment, presence of cannabis-specific programmes for adolescents, sources of referral for the available programmes, and additional information regarding national cannabis use disorder treatment programmes. Of the 30 national focal points contacted to participate in this survey, 19 completed the survey (response rate 63 %).

The CSTPMS was a six-item survey created and administered by the authors of this report in March 2013. This survey was sent to managers of cannabis-specific treatment programmes who were identified by national focal points in the CSTNFPS. The survey contained items assessing the following information: name of the programme, description of the programme, standard dose of treatment, status of empirical evidence regarding the efficacy or effectiveness of the programme, and references to studies indicating efficacy or effectiveness. Of the 14 programme managers that were contacted to participate in the survey, nine, representing five countries and 10 different programmes, completed the survey (response rate 64 %). The purpose of this survey was to provide detailed information on individual cannabis-specific interventions.

The CSTNFPS and the CSTPMS were the primary sources of data used to characterise European cannabis-specific interventions in this report. For Member States that did not complete one of these surveys, data from one or more of the following sources were used: online resources, literature review, SQ27.

Delivery of treatment in Europe

Although subsidised national treatment programmes are common, there is no one treatment or intervention for cannabis use problems that is implemented in all Member States. Indeed, treatment for cannabis-related problems takes many forms across the European Union. Both evidence-based and non-evidence-based treatments are provided in Europe. In addition, treatment is offered in individual, group and family sessions and over the Internet. Treatment programmes are administered primarily in outpatient settings, although also in inpatient settings. Finally, treatment is administered by a variety of different service providers, including professionals (e.g. psychiatrists, psychologists), para-professionals (e.g. trained counsellors with other professional backgrounds) and laypeople (e.g. teachers and other individuals who work closely with at-risk individuals). Given the variety of treatment options currently available in the European Union, a major goal of the present report is to characterise the treatment of cannabis use disorders in Europe by providing in-depth, up-to-date information about the type and availability of treatments.

Although there is considerable diversity with regard to treatment approach for cannabis use disorders in the European Union, all treatment programmes can be roughly classified into one of two categories: cannabis-specific treatment and general substance use treatment. Cannabis-specific treatment programmes treat only those individuals with cannabis-related problems. Typically, such programmes use interventions that are designed for or tailored to the specific needs of this population. In contrast, general substance use treatment programmes treat individuals with cannabis-related problems alongside individuals with problems related to other drugs. Treatment is typically administered by the same service providers and involves the use of general, non-specific substance use or dependence interventions. Although general substance use treatment has historically been the typical form of care in the European Union, the term is not synonymous with consensus-based treatment as usual. In fact, many countries offer general substance use treatment programmes that incorporate evidence-based interventions. For example, in the United Kingdom, individuals with cannabis-related problems are offered general substance use treatment programmes that are based on cognitive behavioural interventions.

Both substance-specific and general treatment approaches for cannabis-related problems have advantages and disadvantages. Cannabis-specific programmes are designed to meet the specific service needs of cannabis users. In addition, group therapy interventions incorporated into cannabis-specific programmes may be more effective, as group members may benefit from an increased universality of experience in their interactions. In other words, since group members in these interventions engage in problematic use of the same substance, they may be better able to relate to each other's substance-related experiences and behaviours. Another advantage of cannabis-specific programmes over general substance use treatment programmes may lie in the reduced risk of typically younger, less problematic cannabis users mixing with more problematic, older users of other illicit substances.

General substance use treatment programmes may, however, offer some practical advantages over substance-specific approaches. General substance use treatment may be more cost-effective and easier to administer than separate programmes for a variety of substances. In addition, many of the demographic differences between cannabis users and users of other substances could be addressed by tailoring treatment to specific age groups or target populations, rather than specific substances. Alternatively, general substance use treatment services could be tailored to individual needs on a case-by-case basis. Finally, in support of general substance use treatment approaches, epidemiological and clinical literature indicates that the symptoms of cannabis dependence are similar to the symptoms of dependence on other substances (Budney, 2006). Moreover, the reasons given by cannabis users for seeking treatment and the treatment outcomes are similar to those for users of other substances (Dennis et al., 2002; McRae et al., 2003; Stephens et al., 1993).

EU Member States have taken different approaches to addressing cannabis treatment. The normal standard of care in the European Union has historically been general substance use treatment. Thus, general treatment programmes are widely available throughout the European Union, whereas only 15 of the 30 countries reporting to the EMCDDA currently offer treatments that are specific to cannabis.

Both general and specific approaches to treating cannabis-related problems exist and have been applied to meet the needs of people with cannabis-related disorders. The present publication evaluates both types of intervention. Programmes focused on cannabis problems are relatively recent additions to the array of drug treatment interventions available in Europe, and providing for the first time an EU-level overview of this class of treatment is one of the main aims of this publication. In the section 'Estimation of unmet treatment needs', Chapter 4, which compares indicators

of treatment needs with estimated provision of treatment for this target group, general substance use approaches are also included.

Psychosocial approaches used to treat drug-related problems

The term 'psychosocial approaches' covers all forms of structured psychological or social interventions that may be used to treat substance-related problems. In the studies identified by this review, these approaches include a variety of different programmes and concepts. Most interventions followed either an individual-centred approach or a family approach (summarised in Table 1). They differ considerably in their level of detail and theoretical basis. A more theoretical overview of addiction and its treatment can be found in Robert West's *Models of addiction* (EMCDDA, 2013b).

The main approaches are listed below, providing information on background, concept and practical application. It should be noted that the list is incomplete and the description of interventions is not theory-driven. Different approaches may share common techniques or be applied to the same target population. They approaches are listed alphabetically, to serve as a type of glossary when reading the outcome tables (Tables 3–6).

Assertive continuing care

Assertive continuing care (ACC) is one of several 'assertive' interventions available to treat substance use disorders. This approach aims to increase retention in treatment by placing the responsibility of making sure that sessions occur on the clinician (Godley et al., 2006).

Behavioural family therapy

Behavioural family therapy (BFT) is aimed at helping families going through difficulties in their relationships. This group treatment is learning-based and, thus, applies cognitive behavioural analysis of the problems presented by a family. It focuses on changing thought patterns and overt behaviour (Psychology Dictionary, no date).

Brief strategic family therapy

Brief strategic family therapy (BSFT) is a brief intervention used to treat adolescent drug use that co-occurs with other problem behaviours. These co-occurring problem behaviours include conduct problems at home and at school, oppositional behaviour, delinquency, associating with antisocial peers, aggressive and violent behaviour and risky sexual behaviour (Szapocznik et al., 2003).

Cognitive behavioural therapy

Cognitive behavioural therapy (CBT) is a psychotherapeutic treatment modality offered in individual or group format (Butler et al., 2006). It is empirically supported as a treatment for substance use disorders and has been shown to be effective in studies containing samples of primary cannabis users.

In general, CBT involves challenging irrational, negative thinking styles, which are thought to promote negative affective states, which in turn promote maladaptive

TABLE 1
Interventions for families and individuals

Target group	Intervention (acronym)
Family	Behavioural family therapy (BFT) Brief strategic family therapy (BSFT) Family process-only condition (FAM) Functional family therapy (FFT) Multidimensional family therapy (MDFT) Multisystemic therapy (MST) Structural ecosystems therapy (SET)
Individuals (adolescents or adults)	Assertive continuing care (ACC) Cognitive behavioural therapy (CBT) Contingency management (CM) Drug counselling (DC) Educational feedback (EF) Motivational interviewing and motivational enhancement therapy (MI/MET)

behaviours, such as problem cannabis use. In addition to helping clients develop new ways of thinking, CBT interventions promote the development of alternative coping skills and the implementation of behavioural strategies for reducing and eliminating problem behaviours such as illicit drug use.

CBT for substance-related disorders works by means of self-control training (e.g. stimulus control techniques), social and coping skills training and relapse prevention. When CBT is used to treat problem cannabis use specifically, initial treatment sessions often involve developing skills directly related to achieving and maintaining abstinence from cannabis. Later CBT sessions may focus on topics and skills indirectly related to maintaining abstinence.

Contingency management

Contingency management (CM) is a type of treatment used in the mental health and substance use fields. Patients' behaviours are rewarded (or, less often, punished) in line with treatment objectives and, generally, adherence to or failure to adhere to programme rules and regulations or their treatment plan (Griffith et al., 2000).

Drug counselling

Drug counselling (DC), delivered on an individual basis, addresses the symptoms of the drug addiction and areas of impaired functioning that are related to it, and the content and structure of the client's ongoing recovery programme (Mercer and Woody, 1999).

Educational feedback

Educational feedback (EF) (as described in Walker et al., 2011) involves two sessions with a counsellor delivering a PowerPoint presentation on current research and facts about cannabis. Based on questions elicited from the participating teenagers, clients are informed about the effects of cannabis on the body, sexual behaviour and pregnancy. Further topics could include the legalisation debate, legal issues, and cannabis and medicine.

Family process-only condition

Family process-only condition (FAM) focuses exclusively on working with family members to modify within-family interactions (Robbins et al., 2008).

Functional family therapy

Functional family therapy (FFT) is a short-term, high-quality intervention programme with an average of 12 sessions over a 3- to 4-month period. Services are delivered in both clinical and home settings, and can also be provided in a variety of other settings, including schools, child welfare facilities, probation and parole offices/aftercare systems and mental health facilities (Functional Family Therapy, no date).

Multidimensional family therapy

Multidimensional family therapy (MDFT) (Liddle et al., 2001) is a family systems-oriented outpatient intervention for adolescents and young adults. It is empirically supported as an effective treatment for cannabis use disorders. The intervention is designed to address problem cannabis use at four different levels: (1) the adolescent, (2) the adolescent's parents, (3) the adolescent's family, and (4) the adolescent's extra-familial network, which includes friends and peers in school, work and leisure settings. The principle underlying MDFT is that the family is instrumental in treating problem cannabis use by helping the adolescent to create new, developmentally adaptive lifestyle alternatives. Thus, interventions are aimed at improving family functioning, communication and accountability.

Motivational interviewing and motivational enhancement therapy

Motivational interviewing (MI) (Miller, 1983; Miller and Rollnick, 1991) is a therapeutic intervention typically offered in an individual therapy format. Since the focus of MI is to harness an individual's motivation to engage in the treatment process, interventions based on MI are often employed at the initial phase of substance use treatment to motivate the client to engage in the more intensive psychosocial treatments, which are skills-oriented (e.g. CBT). Motivational enhancement therapy (MET) relies heavily on the principles of MI. As these two concepts are strongly interrelated, they will be discussed together here and abbreviated as MI/MET.

MI/MET is empirically supported for substance use disorders and has shown to be effective for both adults and adolescents. MI/MET combines the transtheoretical model (Prochaska and DiClemente, 1982) with client-centred therapy and self-efficacy. It is particularly useful in treating individuals who are ambivalent about personal behavioural change, as is often the case with those presenting with cannabis use

problems. The primary goal of this treatment approach for cannabis use disorders is to explore and resolve ambivalence about cannabis use and facilitate and engage the client's intrinsic motivation to change problem behaviour.

Thus, MI/MET differs from other substance use treatments in that its purpose is not to impart information or skills. In contrast, it emphasises exploring and reinforcing the client's intrinsic motivation to engage in adaptive behaviours and refrain from addictive behaviours, while simultaneously supporting the client's autonomy. Techniques employed by MI/MET therapists include asking open-ended questions, providing affirmations to the client, listening reflectively and summarising the client's statements.

Multisystemic therapy

Multisystemic therapy (MST) is an intensive family and community-based treatment that addresses the multiple determinants of serious antisocial behaviour in chronic, violent or substance-using male or female juvenile offenders, ages 12 to 17, at high risk of out-of-home placement. The multisystemic approach views individuals as nested within a network of interconnected systems that encompass individual, family and extra-familial (peer, school, neighbourhood) factors. Intervention may be necessary in any one or a combination of these systems. Treatment sessions occur primarily with caregivers and other involved adults to make changes in the youth's environment that will in turn result in changes in the youth's behaviour. Individual therapy with the youth is not a routine component of MST. The primary goals of MST programmes are to decrease rates of antisocial behaviour and other clinical problems, improve functioning (e.g. family relations, school performance) and promote behaviour change in the client's natural environment (Episcenter, 2010).

Structural ecosystems therapy

Structural ecosystems therapy (SET) is a manualised family- and ecological-based intervention for adolescent drug use (Robbins et al., 2003). The within-family components of SET are (a) joining with family members, (b) tracking and eliciting family interactions to assess family relationships, (c) reframing to create a context for behaviour change to occur, and (d) restructuring maladaptive family relationships. The ecological components of SET include assessment of and intervention in the adolescent's and family's relationships with his or her peer group and school and with the juvenile justice system. SET is intended to be delivered over 12–16 family therapy sessions (e.g. sessions conducted with multiple family members) and 12 ecosystemic therapy sessions (e.g. sessions with family members and individuals from the family's social ecology) (Robbins et al., 2008).

Control conditions

Studies on the effectiveness of interventions have to prove that a change in the behaviour or state of a person is due to the treatment condition. The general approach is to use control conditions for comparison, which do not include the specific measure under research. In the studies analysed here, the following interventions have been used as controls.

Community service

Community service (CS) is a type of punishment that involves working for the community. CS is used as a control condition in some studies.

Delayed feedback

Delayed feedback (DF) is the name given by Walker et al. (2011) to the intervention provided to the participants assigned to the control arm. Participants in the DF condition were not assessed until the 3-month follow-up.

Delayed treatment control

Delayed treatment control (DTC) compares the effect of the intervention with no intervention during this period in the control arm. To motivate subjects to participate in such studies and for ethical reasons, the same treatment is then — at a later stage — provided to the control group. This design cannot control for the effects of positive expectations in the control arm.

Intention-to-treat analysis

Intention-to-treat (ITT) analysis is a quality criterion for studies, whereby the outcome is calculated on the basis of those initially assigned to the intervention, whether they received the intervention or not.

Treatment as usual

Treatment as usual (TAU) is used in experimental studies as a control condition against which the effects of an intervention can be compared. Instead of specifying the treatment, in this case, the (new) form of treatment being tested is compared with the routine type of intervention.

2

CHAPTER 2

Effectiveness of interventions: review of recent research on available treatments

Overall, 65 studies were found that fulfilled the inclusion criteria: 26 were reviews, 9 of which included a meta-analysis. The majority (31) of the remaining 39 individual studies were randomised controlled trials. As one meta-analysis and one randomised controlled study contributed information on effectiveness as well as on factors of influence, the total number of studies is smaller than the sum of all subgroups (see Table 2).

The studies were heterogeneous in terms of design. In most of the primary studies, subjects were randomly assigned to an active intervention and to a control condition for comparison. The control condition was either an alternative active intervention, a combination of interventions, treatment as usual or a delayed treatment control. Measures of substance use were provided through self-report or a combination of self-report and biochemical measures of substance use. Baseline measurements were made of study outcome variables including abstinence, quantity and frequency of cannabis use and other substance use, number and severity of use-related problems, DSM-IV (American Psychiatric Association, 2000) dependence symptoms and other problem behaviours. Studies generally reported following study participants for periods of 1 to 12 months. Most studies provided information on loss of study participants over time, which is a common occurrence in clinical trials. The number of study dropouts was counted and a retention rate calculated. Methodologically strong studies included measures of quality assurance, for example using a manual to guide the intervention, providing some type of training and supervision of study counsellors and assessing treatment fidelity using audio or video recordings of the therapy sessions.

None of the 26 reviews identified were published by European research groups; the majority were from the United States or Australia. Only three of the 39 individual studies were European ones; these three looked at the effectiveness of cannabis-specific brief motivational enhancement for adolescent cannabis users (McCambridge et al., 2008) and the efficacy of MDFT for adolescents in the Netherlands (Hendriks et al., 2011) and Germany (Tossmann et al., 2012). The two later studies were part of the International Need of Cannabis Treatment (INCANT) collaboration.

TABLE 2

Type and number of studies included in the review

	Adolescents		Adults		Studies on tele-interventions	Factors influencing effectiveness of treatment	Total
	General substance use treatment programmes	Cannabis-specific treatment programmes	General substance use treatment programmes	Cannabis-specific treatment programmes			
Meta-analyses	3	1	4	0	1	1 (3)	9
Reviews	7	1	1	5	1	2	17
Randomised controlled trials	4	6	3	5	8	6 (3)	31
Quasi-experimental study and observational studies	3	0	0	1 (1)	2 (2)	2 (2)	8
Total	**17**	**8**	**8**	**11**	**12**	**11**	**65**

(1) Pre/post, (2) observational, (3) one study also listed under 'Adults'.

Research on treatment for adolescents

The literature on the effectiveness of treatment for adolescents is considerably less developed than the corresponding literature on adults, but recent empirical studies have begun to provide more insight into the effectiveness of cannabis-specific treatment in this population.

Overall, the search strategy identified 25 publications on interventions for adolescent cannabis users.

Eight publications were about cannabis-specific treatment for adolescents with cannabis use disorders: one meta-analysis (Bender et al., 2010), one literature review (Copeland and Swift, 2009) and six randomised controlled trials (Hendriks et al., 2011; Martin and Copeland, 2008; McCambridge et al., 2008; Stanger et al., 2009; Tossmann et al., 2012; Walker et al., 2011).

Seventeen publications addressed adolescent cannabis users in general substance use treatment programmes. Among these publications, there were three meta-analytical reviews (Baldwin et al., 2012; Jensen et al., 2011; Tanner-Smith et al., 2013), seven literature reviews (Barnett et al., 2012; Becker and Curry, 2008; Griffin and Botvin, 2010; Hogue and Liddle, 2009; Macgowan and Engle, 2010; Rowe, 2012; Waldron and Turner, 2008), three randomised controlled trials (Godley et al., 2011; Liddle et al., 2008; Robbins et al., 2011), one effectiveness trial (Letourneau et al., 2009), two observational studies (Lott and Jencius, 2009; Ramchand et al., 2011) and one quasi-experimental study (Hunter et al., 2012).

Cannabis-specific treatment for adolescents

Interventions targeting the individual

We identified six randomised controlled trials (involving 905 participants) performing various combinations of MI/MET, CBT and CM (Table 3).

Two studies provide information on MI/MET applied alone without further treatment elements. Walker et al. (2011) compared MET with an 'educational feedback control' intervention and a delayed feedback control group. The study was conducted on 310 cannabis users aged 14 to 19 years old, who were assigned to one of the three groups. At the 3-month follow-up, both active treatments showed significant reductions in cannabis use, with participants in the motivational enhancement condition showing greater reductions. After 12 months, reductions in use and use-related problems were still significant for both groups, but between-group differences had disappeared. Two further randomised controlled trials did not find significant treatment effects for a school-based MI intervention for adolescent cannabis users (McCambridge et al., 2008; Walker et al., 2011). Both of these studies compared the effectiveness of a single session of MI against drug information and advice in reducing cannabis use.

Given that each treatment approach has specific strengths and limitations, clinical researchers have begun to combine different treatments in efforts to increase overall effectiveness. The most common approach is a combination of elements designed to strengthen clients' motivation to change (MI, MET) and elements targeting thoughts, emotions and behaviours that are implicated in substance use (CBT). Researchers have also evaluated whether CM adds to the efficacy of combined treatment interventions.

Martin and Copeland (2008) conducted a randomised controlled trial examining the effectiveness of a two-session CBT and MI combination treatment compared with a 3-month delayed treatment control condition in a sample of 40 people aged between 14 and 19 years. They found that, compared with the control condition, MI/CBT produced significantly greater reductions in the frequency of cannabis use per week, the quantity of cannabis used per week and the number of DSM-IV dependence symptoms at the 3-month follow-up.

Stanger et al. (2009) found that an additional element of CM improves the efficacy of MET/CBT interventions. In the study, 69 adolescents were randomly assigned to one of two groups, both of which received MET/CBT and a twice-weekly drug-testing programme. Both groups additionally took part in an incentive programme (i.e. CM intervention). In the experimental condition, incentives were abstinence-based, whereas incentives were attendance-based in the control group. Results revealed that cannabis abstinence was significantly greater in the experimental condition during treatment. After treatment, cannabis use tended to rise, but at 9 months it stabilised at a level lower than baseline.

The CANDIS study, by Hoch et al. (2012), tested the effectiveness of a programme for cannabis use disorders that blends aspects of CBT and MI in a sample of 122 participants over the age of 16 years who had been diagnosed with cannabis dependence. Subgroup analyses showed that teenagers could benefit from the programme, and abstinence rates at the end of treatment were comparable between them and the adult subgroup in the study. More details on the study can be found in Table 5, as the study focused on an adult target group.

TABLE 3
Adolescents: cannabis-specific treatment

Reference	Design	Number of participants/ studies	Age group (years)	Target	Population characteristics	Treatment	Outcome
Reviews							
Bender et al., 2010	Meta-analysis	17 s	–	Individual, family	Cannabis use	Individual and family-based interventions	Individual and family-based treatments have roughly equivalent moderate effect sizes in reducing cannabis use.
Copeland and Swift, 2009	Review	–	–	Individual, family	Cannabis use	CBT, CM, family-based interventions	Brief CBT and CM have the strongest empirical support; family-based interventions may be particularly effective adjunctive treatment options for adolescents.
Individual studies							
Hendriks et al., 2011	RCT	109 p	13–18	Family	Cannabis use	a. MDFT b. CBT	Adolescents in both treatments showed significant and clinically meaningful reductions in cannabis use from baseline to 1-year follow-up.
Tossmann et al., 2012	RCT	120 p	13–18	Individual	Cannabis use	a. MDFT b. CBT	Participants in both treatments significantly reduced their cannabis use in the 12-month follow-up. MDFT was significantly more effective than TAU in reducing cannabis use.
Stanger et al., 2009	RCT	69 p	14–18	Individual	Marijuana abuse and dependence	a. CM, MET/CBT b. MET/CBT	Integrating CM abstinence-based approaches with other empirically based outpatient interventions provides an alternative and efficacious treatment model for adolescent substance abuse or dependence.
Hoch et al., 2012	RCT	122 p	16–44	Individual	Cannabis use	a. MET/CBT/problem-solving training b. DFC	Subgroup analyses for teenagers found abstinence rates at the end of treatment comparable with those for the adult subgroup in the study (for more information, see Table 5).
Martin and Copeland, 2008	RCT	40 p	14–19	Individual	Cannabis use	a. MI/CBT b. DFC	Compared with the control condition, MI/CBT produced significantly greater reductions in the frequency of cannabis use per week, the quantity of cannabis use per week and the number of DSM-IV dependence symptoms at the 3-month follow-up.
McCambridge et al., 2008	RCT	326 p	16–19	Individual	Cannabis use	a. MET-1 b. Information and advice	No differences were found between MET and drug information and advice.
Walker et al., 2011	RCT	310 p	14–19	Individual	Cannabis use	a. MET b. EF c. DFC	Participants in both the MET and EF conditions reported significantly fewer days of cannabis use and negative consequences compared with DFC. Reductions in use and problems were sustained at 12 months, but there were no differences between MET and EF interventions.

Abbreviations: CBT, cognitive behavioural therapy; CM, contingency management; DFC, delayed feedback control; EF, educational feedback; FFT, functional family therapy; MDFT, multidimensional family therapy; MET, motivational enhancement therapy; MI, motivational interviewing; MST, multisystemic therapy; p, participants; RCT, randomised controlled trial; s, studies; TAU, treatment as usual.

Copeland and Swift (2009) concluded that brief CBT treatment approaches have the most empirical support; however, they found that CM (e.g. monetary reward for abstinence) and family-systems approaches may be particularly effective adjunctive treatment options for adolescents.

Family-based interventions

Studies examining the effectiveness of family-based interventions on cannabis use are scarce. The few studies available suggest that family-based interventions are effective approaches for treating cannabis disorders in adolescents. We identified one meta-analysis of 15 randomised controlled evaluations of interventions to reduce adolescent cannabis use published between 1960 and 2008 (Bender et al., 2010), one review (Copeland and Swift, 2009); and two RCTs involving 229 patients between 13 and 18 years of age.

Hendriks et al. (2011) compared the effectiveness of MDFT and CBT for treatment of cannabis use disorders in a randomised trial. They found that both interventions were equally effective in reducing cannabis use in a sample of adolescents from the Netherlands. In a German sample, Tossmann et al. (2012) compared the effectiveness of MDFT and an individual therapy combining elements of CBT and MET in the treatment of cannabis use disorders. The results revealed that MDFT was significantly more effective than CBT in reducing cannabis use.

These results are consistent with a previous review for the EMCDDA by Bergmark (2008), which reviewed results from the Cannabis Youth Treatment Study (Dennis et al., 2004), a large (600 participants), randomised, multisite trial comparing the effectiveness of five different cannabis treatment conditions: five sessions of MET and CBT, 12 sessions of MET and CBT, family support network, the adolescent community reinforcement approach and MDFT. The results of the study revealed that treatment outcomes were very similar across sites and conditions; however, a combination of MET and CBT emerged as the most cost-effective treatment. In addition, Bergmark (2008) found that research concerning the effectiveness of family-based substance use treatment produced mixed results. While some of the studies included in his review found strong support for the effectiveness of family-based treatments (Ozechowski and Liddle, 2000; Prendergast et al., 2002; Stanton and Shadish, 1997; Williams and Chang, 2000), others reported contradictory findings (Dennis et al., 2004; Waldron et al., 2001). Bergmark concluded that the treatment modality has less impact on treatment outcome than the context in which treatment is delivered and the individual's motivation to engage in treatment.

General treatment of substance use disorders

Interventions targeting the individual

Among the reviews addressing treatments for adolescent substance use in general, we identified 17 publications, 7 of which are narrative reviews, including 143 studies, and 3 are meta-analyses, including 90 studies (see Table 4).

Findings show that most treatments that aim to reduce substance use appear to be beneficial for adolescents. Although Waldron and Turner (2008) found no clear differences in effectiveness between the treatment approaches, behaviour-based interventions emerged as 'well-established' (Waldron and Turner, 2008) or 'probably efficacious' (Macgowan and Engle, 2010), or showed evidence of immediate superiority (Becker and Curry, 2008). Motivational interventions were found to be 'promising' (Macgowan and Engle, 2010), or also showed evidence of immediate superiority (Becker and Curry, 2008).

Jensen et al. (2011) conducted a meta-analysis (5 471 participants, 21 studies) to determine the effectiveness of MI interventions on adolescent substance use. Their results revealed that MI interventions have a small yet significant effect on substance use at both post-treatment and follow-up assessments. These results suggest that adolescent substance users treated with MI interventions can make significant gains in treatment and maintain these gains even after treatment has ended.

Barnett et al. (2012) conducted a systematic review of 39 studies, conducted between 1998 and 2011, examining the effectiveness of MI on substance use. They found that two-thirds of the studies reported a statistically significant reduction in substance use. No significant differences were found between motivational interventions that used feedback and those that did not use feedback. In addition, their review included seven randomised controlled trials that focused specifically on the treatment of cannabis use with MI. Of these seven studies, five found significant effects for the MI intervention compared with control conditions, including a study that found that MET reduced cannabis use at post-treatment, 3-month and 12-month follow-up assessments.

In an observational study, Ramchand et al. (2011) compared the effectiveness of community-based outpatient treatment and MET combined with five sessions of CBT (MET/CBT5) in a sample of 605 adolescents (mean age 15.7 years) meeting at least one of the criteria of abuse or dependence (DSM-IV-TR; American Psychiatric Association, 2000). Adolescents receiving the MET/CBT5 condition exhibited greater reductions in substance use frequency, substance use problems and illegal behaviours 12 months after treatment entry than those allocated to a community-based outpatient treatment.

A second quasi-experimental study by the same research team administered the same CBT/MET combination treatment in a community practice setting (involving 2 751 adolescents) and replicated the findings from the previous study (Hunter et al., 2012). Furthermore, under these better-controlled conditions, it showed that participants receiving MET/CBT5 had better results at the 12-month evaluation than the control group.

Godley, S., et al. (2010) compared a MET/CBT 7-session intervention with another outpatient treatment (Chestnut's Bloomington outpatient treatment) in a sample of 320 adolescents. Both interventions significantly reduced cannabis use over 12 months; however, the MET/CBT combination was more cost-effective.

In community-based treatment studies with samples of polysubstance users, results on the effectiveness of CM were mixed. Lott and Jencius (2009) found that adolescents participating in a CM programme had significantly lower rates of positive opioid and cocaine urine samples than adolescents treated without CM. However, no significant differences were found for all other drug classes, including cannabis, although rates were trending lower in adolescents treated with CM.

Family-based interventions

Although studies on the effectiveness of family-based general substance use treatment interventions on cannabis use are scarce, there is some evidence that the family-based intervention is an effective approach for treating general substance use in adolescents. In particular, we identified two meta-analyses, five reviews and one RCT.

Comparing pre–post effect sizes, Tanner-Smith et al. (2013) found that adolescents in almost all treatment modalities showed reductions in substance use; however, family-based interventions were found to be more effective than comparison treatment conditions. Becker and Curry (2008) found evidence of 'immediate superiority' for ecological family therapy. Waldron and Turner (2008) regarded MDFT and functional family therapy as 'well-established', and brief strategic family therapy, behavioural family therapy and multisystemic therapy as 'probably efficacious' models for substance use treatment.

Baldwin et al. (2012) concluded from their meta-analysis of four studies that family-based interventions (e.g. brief strategic family therapy, functional family therapy, MDFT, or multisystemic therapy) had statistically significant, but modest, effects compared with alternative treatments for substance use. Interestingly, the authors observed larger, but insignificant, effects when comparing family-based treatments with no-treatment control groups. The authors concluded that this counter-intuitive result was likely to have resulted from underpowered analyses of these comparisons. In addition, the meta-analysis did not have enough power to determine if different family-based approaches had different levels of effectiveness.

Some recent research has focused on the effects of brief strategic family therapy (BSFT) on adolescent substance use. Griffin and Botvin (2010) found in their review of effectiveness literature that treatment with brief strategic family therapy (including eight studies) produced significant pre–post reductions in cannabis use, and other substance use, compared with a no-treatment control group in one study. However, compared with treatment as usual (i.e. standard treatment offered at community mental health centres), brief strategic family therapy was not found to be significantly more effective in reducing adolescent substance use in a recent individual randomised controlled trial including 471 adolescents (Robbins et al., 2011).

Multidimensional family therapy (Liddle et al., 2001), another family-based treatment approach, has also received some empirical support. Liddle et al. (2008) compared the effectiveness of MDFT and a peer group intervention with young teens (mean age 13.7 years) in a randomised controlled trial recruiting 83 patients. From the beginning of treatment until the last follow-up assessment at 12 months, MDFT showed superior effectiveness in reducing substance use frequency and substance use problems. EMCDDA (2014c) conducted a systematic review of literature comparing MDFT with other treatments for adolescent substance use (including five studies). They concluded that MDFT is an empirically supported intervention for substance use

TABLE 4
Adolescents: general treatment of substance-related disorders

Study	Design	Number of participants/ studies	Age (years) (1)	Target	Population characteristics	Treatment	Outcome
Reviews							
Baldwin et al., 2012	Meta-analysis	24 s	–	Family	Substance use	BSFT, FFT, MDFT, MST, TAU	Family-based interventions had statistically significant, but modest, effects compared with alternative treatments for substance use. Larger, but insignificant, effects were observed when family-based treatments were compared with no-treatment control groups.
Barnett et al., 2012	Review	39 s	–	Individual	Substance use	MI	67 % of the reviewed studies reported a statistically significant reduction in substance use. There were no significant differences found between motivational interventions that used feedback and those that did not use feedback.
Becker and Curry, 2008	Review	31 s	–	Family	Substance use	CBT, MI, family-based interventions	Ecological family therapy, brief motivational interventions and CBT showed evidence of immediate superiority.
Griffin and Botvin, 2010	Review	8 s	–	Family	Substance use	BSFT	BSFT produced significant pre–post reductions in cannabis use, and other substance use, compared with a no-treatment control group in one study.
Hogue and Liddle, 2009	Review	14 s	–	Individual	Substance use	Family-based interventions	Family-based interventions can play a significant role in cannabis-related disorders.
Jensen et al., 2011	Meta-analysis	21 s	–	Individual	Substance use	MI	MI interventions have a small, but significant, effect on substance use in both post-treatment and follow-up assessment.
Macgowan and Engle, 2010	Review	34 s	M = 19	Individual	Substance use	Behaviour therapies; MI	Behaviour therapies were 'probably efficacious', and MI interventions were found to be 'promising'.
Rowe, 2012	Review	–	–	Family	Substance use	Family-based interventions	Adolescent-focused family-based interventions show the most consistent and strongest findings in recent studies.
Tanner-Smith et al., 2013	Meta-analysis	45 s	–	Family	Substance use	Family-based interventions	Adolescents in almost all treatment modalities evidenced reductions in substance use; however, family-based interventions were found to be more effective than comparison treatment conditions.
Waldron and Turner, 2008	Review	17 s	–	Family	Substance use	CBT, family-based interventions	MDFT, FFT and group CBT emerged as well-established models for substance use treatment.

TABLE 4 (continued)

Study	Design	Number of participants/ studies	Age (years) (1)	Target	Population characteristics	Treatment	Outcome
Individual studies							
Godley et al., S., 2010	RCT	320 p	M = 15.9	Individual	Substance use	a. CBOP + ACC b. CBOP c. MET/CBT7 + ACC d. MET/CBT7	All interventions significantly reduced cannabis use over 12 months; however, the MET/CBT7 intervention was more cost-effective. There were no statistically significant findings with regard to the incremental effectiveness of ACC following outpatient treatment.
Hunter et al., 2012	Quasi-experimental study	2 751 p	–	Individual	Substance use	a. MET/CBT5 b. TAU	Participants who received MET/CBT5 fared better than comparable participants in the control group on five out of six 12-month outcomes.
Letourneau et al., 2009	Effectiveness trial	127 p	11–17	Family	Substance use	a. MST b. TAU	At the 12-month follow-up, participants in the MST condition exhibited significantly reduced substance use relative to the control group.
Liddle et al., 2008	RCT	83 p	M = 13.7	Family	Substance use	a. MDFT b. Peer group intervention	MDFT showed superior effectiveness in reducing substance use frequency and substance use problems until the last follow-up assessment at 12 months.
Lott and Jencius, 2009	Observational study	347 p	12–18	Individual	Substance use	a. MET/CBT/12-step facilitation b. MET/CBT/12-step facilitation + CM	Adolescents participating in a CM programme had significantly lower rates of positive opioid and cocaine urine samples than adolescents treated without CM. However, no significant differences were found for all other drug classes, including cannabis, although rates were trending lower in adolescents treated with CM.
Ramchand et al., 2011	Observational study	605 p	M = 15.7	Individual	Substance use	a. MET/CBT5 b. TAU	Adolescents receiving the MET/CBT5 condition exhibited greater reductions in substance use frequency, substance use problems and illegal behaviours 12 months after treatment entry compared with a community-based outpatient treatment.
Robbins et al., 2011	RCT	471 p	–	Family	Substance use	a. BSFT b. TAU	Compared with TAU, BSFT was not found to be significantly more effective in reducing adolescent substance use.

(1) Indicated as range or mean age, where available.
Abbreviations: ACC, assertive continuing care; BSFT, brief strategic family therapy; CBOP, Chestnut's Bloomington outpatient treatment; CBT, cognitive behavioural therapy; CM, contingency management; FFT, functional family therapy; M, mean; MDFT, multidimensional family therapy; MET, motivational enhancement therapy; MI, motivational interviewing; MST, multisystemic therapy; p, participants; RCT, randomised controlled trial; s, studies; TAU, treatment as usual.

and that it is slightly superior to most other treatments (e.g. CBT, MET) in terms of treatment adherence and long-term maintenance of treatment gains. MDFT also appeared to be more effective in reducing severity of substance use and related problems than CBT; however, this conclusion was not supported for studies in which participants were being treated for cannabis use disorders. Thus, with regard to treatment for problem cannabis use, MDFT appears to be comparable to other evidence-based treatments. Finally, the authors argued that some of the benefits of MDFT may be attributable to a larger dose of treatment compared with brief interventions (e.g. MI, MET, CBT).

Multisystemic therapy has been classified as a 'probably efficacious' family-based treatment for substance use disorders in a review of 17 studies (Waldron and Turner, 2008). Letourneau et al. (2009) compared multisystemic therapy in a sample of 127 juvenile sex offenders with services that are typically provided to this group in the United States. At the 12-month follow-up, young people in the multisystemic therapy condition exhibited significantly reduced substance use relative to the control group.

Conclusions

Interventions for adolescents with cannabis use disorders address young people at early stages of their cannabis-using careers. They take into account a young person's current risk behaviour and his or her general relationship to drugs, as well as associated physical, mental or psychosocial problems. Research on the efficacy of such interventions is still scarce compared with treatment studies of other child and adolescent disorders, such as anxiety, attention deficit hyperactivity disorder (ADHD) and depression (Gilvarry, 2000; Liddle et al., 2008). Nevertheless, this review of the current literature indicates that the knowledge base for treating children and adolescents with cannabis use problems is growing, albeit slowly. Among the studies reviewed here, more attention is given to general substance use treatment models that take into account the developmental stage and special needs of young people, rather than simply generalising (potentially age-inappropriate) adult programmes to this group (Pumariega et al., 2004).

Findings from meta-analyses and RCTs indicate that adolescents with cannabis use problems generally benefit from various treatment approaches. Aggregated data from recently published meta-analyses and reviews provide strong evidence for the efficacy of treatments targeting adolescent substance use in general (Baldwin et al., 2012; Barnett et al., 2012; Becker and Curry, 2008; Griffin and Botvin, 2010; Hogue and Liddle, 2009; Jensen et al., 2011; Macgowan and Engle, 2010; Rowe, 2012; Tanner-Smith et al., 2013; Waldron and Turner, 2008). Positive treatment effects were shown for MET (Barnett et al., 2012; Becker and Curry, 2008; Jensen et al., 2011; Macgowan and Engle, 2010), CBT (Becker and Curry, 2008; Macgowan and Engle, 2010; Waldron and Turner, 2008), CM (Lott and Jencius, 2009) and various types of family interventions (Baldwin et al., 2012; Becker and Curry, 2008; Griffin and Botvin, 2010; Hogue and Liddle, 2009; Liddle et al., 2008; Rowe, 2012; Tanner-Smith et al., 2013; Waldron and Turner, 2008). Generally, abstinence was a less common outcome than reduction in the frequency of cannabis use.

Research on treatment for adults

A range of behaviour-based treatment options have been studied for the treatment of cannabis dependence. These include MET and a combination of CBT and CM. We reviewed the most recent studies on treatment options for cannabis dependence in adults, including interventions for those with co-occurring cannabis use and psychiatric symptoms.

Cannabis-specific treatment for adults

For adults with cannabis use problems, no cannabis-specific programmes were found targeting their families.

A small number of studies were found that target the adult population of people with cannabis-related disorders who also show co-occurring psychiatric problems. As this group shows specific needs and may differ from others with respect to effectiveness of interventions, it is presented separately in this section.

Interventions targeting the individual

Psychosocial approaches involving CBT, MI/MET or CM were investigated in 10 studies identified through the search strategy. In particular, Weinstein et al. (2010) examined whether CBT was effective in treating cannabis withdrawal syndrome in a sample of 26 individuals diagnosed with cannabis dependence. They found that only 20 % of the participants remained abstinent after 6 months. The remainder of the participants either relapsed prior to the 6-month follow-up (30 %) or dropped out of the treatment programme prior to receiving the full 12-week dose of CBT (50 %).

In a recent randomised controlled trial examining the effects of MI on cannabis use specifically, Stein, L., et al. (2011) found that MI was more effective in reduced cannabis use than an assessment control condition at the 3-month follow-up. These effects were not observed, however, at the 6-month follow-up, except for participants who entered the trial with a desire to abstain from cannabis use. This finding suggests that motivation to abstain from substance use when entering treatment may moderate treatment efficacy.

In an attempt to increase the effectiveness of cannabis use treatment for adults, combinations of various treatment approaches have been utilised. Similarly to the adolescent literature, the evidence suggests that the most effective combined treatment for adults is a combination of CBT, MI and CM.

In a randomised controlled clinical trial, Hoch et al. (2012) examined the effectiveness of CANDIS, a treatment programme for cannabis use disorders combining aspects of CBT and MI. A sample of 122 patients diagnosed with cannabis dependence was randomly assigned to a 10-session CANDIS intervention, which consisted of MET, CBT and psychosocial problem-solving training, or to a delayed treatment group. Analyses revealed that about half of the active treatment group achieved abstinence at post-treatment (49 %) and maintained abstinence at the 6-month follow-up (45 %). In addition, compared with the control group, participants in the intervention condition exhibited significantly lower frequency of cannabis use, addiction severity, number of disability days and overall level of psychopathology.

When the effectiveness of CM, CBT/MET and CBT/MET/CM was compared with a case management control condition in a randomised controlled trial, the CBT/MET/CM condition was found to be associated with the highest rates of cannabis abstinence at follow-up assessment for up to one year (Kadden and Litt, 2011).

These findings appear to be in contradiction with the outcome of Carroll et al. (2012), which compared the effectiveness of four different treatments for cannabis use (CBT alone, CM for abstinence alone, CBT with CM for homework completion, CBT with CM for abstinence) on a sample of 127 young adults, 94 % of whom were referred for treatment by the criminal justice system. Individuals in the combined treatment groups had worse outcomes (i.e. lower abstinence rates). The authors concluded that a combination of cannabis use treatments may not be effective in a population of individuals involved with the criminal justice system.

General treatment of substance use disorders in adults

As with the studies on adolescents, the search strategy identified a number of studies on substance use disorders in adults in which cannabis use may be involved, although not exclusively (see Table 6).

A large body of research exists on the effectiveness of CBT for the treatment of substance use disorders. To provide a quantitative summary of this research, Magill and Ray (2009) conducted a meta-analysis of 53 randomised controlled trials examining the effectiveness of CBT in the treatment of adults diagnosed with alcohol or substance use disorders. The authors found a small, but statistically significant, effect of treatment. The effect of CBT was largest in cannabis studies, but tended to diminish over time. In addition, gender was found to be a potential moderating factor, making CBT more effective for women than for men.

A meta-analytical review of 34 randomised controlled studies of treatments for polysubstance use found that a combination of CBT and CM is the best approach for treating adult substance use disorders (Dutra et al., 2008). However, this finding must be interpreted cautiously, as only two studies included in the meta-analysis contained a condition in which a combination (CBT/CM) treatment was administered. Yonkers et al. (2012) examined the effectiveness of a CBT/MET combination treatment compared with brief advice about substance use from obstetricians in a sample of pregnant women with substance use disorders. No significant differences were observed between treatment groups, suggesting that in this population even brief treatments may be effective in reducing substance use. Consistently with these results, a brief intervention targeting risky behaviours associated with cannabis use was shown to reduce risky cannabis-related behaviour (e.g. driving after cannabis use) in a sample of college students (Fischer et al., 2013).

There is also a large empirical literature on the effectiveness of MI-oriented approaches for the treatment of substance use disorders. Lundahl et al. (2010) conducted a meta-analysis of 119 treatment studies. MI was found to have a consistent small effect on substance use in general, and cannabis use specifically, compared with weak comparison groups (e.g. waiting list, written materials, non-specific treatment as usual). However, compared with a specific treatment, no significant effect for MI was observed, suggesting that its effects are equivalent to those of other specific treatments (e.g. CBT, 12-step). The authors concluded that MI may be more cost-effective,

TABLE 5
Adults: cannabis-specific treatment

Study	Design	Number of participants/ studies	Age (years) (1)	Population characteristics	Treatment	Outcome
Reviews						
Baker et al., 2010	Review	7 s	–	Cannabis use and psychosis	CBT, MI, psychoeducation, computer-delivered CBT	An intensive combination of CBT and MI is the most effective treatment for individuals with co-morbid psychotic and mood disorders.
Benyamina et al., 2008	Review	–	–	Cannabis use	Combinations of CBT, MET, CM	CBT and MET have proven their efficacy in several randomised controlled trials. Brief therapies have also been associated with good compliance and efficacy. Combinations with CM have shown improved treatment compliance and reduced cannabis use.
Danovitch and Gorelick, 2012	Review	37 s	–	Cannabis use	CBT, MET, CM, SEP, MDFT, 12-step facilitation	A combination of CBT, MET and CM is the most effective approach for cannabis treatment; however, the authors note that data from treatments in randomised trials show that fewer than 20 % of the participants achieve long-term abstinence.
Elkashef et al., 2008	Review	16 s	–	Cannabis use	Combinations of CBT, MET, CM	Behavioural therapies are efficacious for facilitating abstinence from cannabis.
Hjorthøj et al., 2009	Review	41 s	–	Cannabis use and schizophrenia	Combinations of CBT, MI, CM	MI alone or CBT alone had no effect on cannabis-related treatment outcomes; however, these treatments showed efficacy in reducing the use of other substances.
Individual studies						
Carroll et al., 2012	RCT	127 p	M = 25.7	Cannabis use	a. CM abstinence b. CM abstinence/CBT c. CBT d. CBT/CM	When the effectiveness of four different treatments for cannabis use was compared, individuals in the combined treatment groups had worse outcomes (i.e. lower abstinence rates). The authors concluded that combination cannabis use treatments may not be effective in a population of individuals involved with the criminal justice system.
Fischer et al., 2013	RCT	134 p	M = 20.4	Cannabis use	a. Cannabis BI b. Health BI c. Both	A brief intervention targeting risky behaviours associated with cannabis use was shown to reduce risky cannabis-related behaviour in a sample of college students.
Hoch et al., 2012	RCT	122 p	M = 24.1 16–44	Cannabis use	a. MET/CBT/problem-solving training b. DFC	Half of the active treatment group achieved abstinence at post-treatment and maintained abstinence at the 6-month follow-up. In addition, compared with the control group, participants in the intervention condition exhibited significantly lower frequency of cannabis use, addiction severity, number of disability days and overall level of psychopathology.
Kadden and Litt, 2011	RCT	240 p	–	Cannabis use	a. CM b. CBT/MET c. CBT/MET/CM d. Case management	The two CM conditions had superior abstinence outcomes: CM-only had the highest abstinence rates at post-treatment, and the MET/CBT/CM combination had the highest rates at later follow-ups.
Stein, M., et al., 2011	RCT	332 p	18–24	Cannabis use	a. CBT2 b. Control condition	MI was more effective in reducing cannabis use than an assessment control condition at the 3-month follow-up. These effects were not observed, however, at the 6-month follow-up, unless participants entered the trial with a desire to abstain from cannabis use.
Weinstein et al., 2010	Pre–post	26 p	M = 33.9	Cannabis use	CBT10/MET/relapse prevention	Only 20 % of the participants remained abstinent after 6 months. The remainder of participants either relapsed prior to the 6-month follow-up or dropped out of the treatment programme prior to receiving the full 12-week dose of CBT.

(1) Indicated as range or mean age, where available.
Abbreviations: BI, brief intervention; CBT, cognitive behavioural therapy; CM, contingency management; DFC, delayed feedback control; M, mean; MDFT, multidimensional family therapy; MET, motivational enhancement therapy; MI, motivational interviewing; p, participants; RCT, randomised controlled trial; s, studies; SEP, supportive-expressive psychotherapy.
All studies target the individual drug user.

as it can be administered in less time (e.g. one or two sessions) than is required for other treatment programmes, yet produces comparable effects.

Smedslund et al. (2011) conducted a meta-analysis of the effectiveness of MI for substance use that included only randomised controlled trials (59 studies; 13 342 participants). The results revealed that the effects on substance use were strongest when MI was compared with no-treatment control groups. Furthermore, the effect was stronger at post-intervention and tended to attenuate at short- and medium-term follow-up. No significant effect was found for long-term follow-up. In contrast with the findings from Lundahl et al. (2010), no significant difference of effects was found between MI and treatment as usual.

The research on the effectiveness of CM shows that it may enhance substance use treatment for adults, in a similar way to that which has been demonstrated in programmes targeting adolescent substance use. Stitzer et al. (2010) conducted an incentive-based abstinence programme in a large sample of stimulant users (803 participants). In a multisite randomised trial, participants were randomly assigned to treatment as usual, with or without a prize draw incentive programme. Individuals in the incentivised condition had a higher retention rate in the treatment programme and lower substance use than those in the non-incentivised treatment condition. Similar results were found in a study of homeless, non-treatment-seeking men who have sex with men (Reback et al., 2010). In that study, participants in the CM condition achieved greater reductions in stimulant, alcohol and methamphetamine use than those in the control group. Reductions in substance use were maintained at the 9- and 12-month follow-up evaluations. While cannabis use was common among study participants, cannabis use did not differ significantly between the CM group and the control group.

Dual diagnosis

Treatment of patients with dual diagnosis — substance use and co-occurring psychiatric problems — has been considered in a specific line of investigation. Two reviews were identified, which included 48 studies (Table 5). Hjorthøj et al. (2009) reviewed the literature on treatment of cannabis dependence in individuals with schizophrenia spectrum disorders. They found that MI alone or CBT alone had no effect on cannabis-related treatment outcomes; however, these treatments showed efficacy in reducing the use of other substances.

From a review of the literature focusing on cannabis treatment for individuals with co-morbid psychotic and mood disorders, Baker et al. (2010) concluded that effective cannabis treatment in this population requires longer or more intensive psychological interventions rather than brief interventions. Specifically, they argued that an intensive combination of CBT and MI is the most effective treatment approach.

When looking at general treatment, Cleary et al. (2009) concluded from their review of psychosocial treatments for individuals with substance use disorders and co-morbid severe mental illness that a combination of CBT and MI was most effective (Table 6). Specifically, they found that a combination of these treatments produced both improvement in mental health and reduction in substance use. In contrast, MI alone resulted in only short-term reduction in substance use, and CBT alone did not appear to have a significant effect on measured treatment outcomes.

Conclusions

Generic versus cannabis-specific treatment programmes for adults

Given the relative dearth of evidence-based cannabis-specific interventions in the drug research literature and the considerable heterogeneity of cannabis use disorder patients' characteristics and treatment needs, the diversity of treatment settings, patient populations and countries where the studies were conducted is very welcome and needed. It seems quite likely that there is no 'one-size-fits-all' intervention for all these cases.

Most of the effective general and cannabis-specific interventions reported in the literature are based on the same therapeutic strategies. As no study has systematically compared the treatment outcomes (e.g. willingness to participate and retention in treatment, abstinence, reduction in cannabis use) of cannabis-specific interventions with those of general substance use treatments for cannabis users, the question of the superiority of one approach to the other remains unanswered. Nevertheless, there are signs that 'keeping treatment specific to cannabis' can be important in facilitating dependent cannabis users to enter treatment.

Dual diagnosis

Individuals with cannabis use and co-morbid psychotic or affective disorders (Baker et al., 2010; Hjorthøj et al., 2009) may not benefit sufficiently from MI or CBT alone; they may need a longer or more intensive psychotherapeutic treatment, combining MI and CBT

TABLE 6
Adults: general substance use treatments

Study	Design	Number of participants/ studies	Age (years) (1)	Population characteristics	Treatment	Outcome
Reviews						
Cleary et al., 2009	Review	54 s	–	Substance use	Combinations of CBT, MET, CM	A combination of CBT and MI was most effective. Specifically, the authors found that a combination of these treatments produced both improvement in mental health and reduction in substance use, whereas MI alone resulted only in short-term reduction in substance use, and CBT alone did not appear to have a significant effect on measured treatment outcomes.
Dutra et al., 2008	Meta-analysis	34 s	M = 34.9	Substance use	CM, relapse prevention, CBT, CBT/CM	Psychosocial treatments are more efficacious for cannabis use than for polysubstance use. A combination of CBT and CM is the best approach for treating adult substance use disorders.
Lundahl et al., 2010	Meta-analysis	119 s	–	Substance use, behaviour change	MI, MET	MI was found to have a consistent small effect on substance use in general, and cannabis use specifically, compared with weak comparison groups. However, compared with a specific treatment, no significant effect for MI was observed.
Magill and Ray, 2009	Meta-analysis	53 s	–	Substance use	CBT	The effect of CBT was largest in cannabis studies and in studies with a no-treatment control as the comparison condition. In addition, gender was a potential moderating factor, such that the effect of CBT may be larger for women than for men.
Smedslund et al., 2011	Meta-analysis	59 s	–	Substance use	MI, TAU, assessment and feedback, other active treatment	Effects on substance use were strongest when MI was compared with no-treatment control groups. Furthermore, the effect was stronger at post-intervention and tended to attenuate at short- and medium-term follow-up. No significant effect was found for long-term follow-up. No significant difference of effects was found between MI and TAU.
Individual studies						
Reback et al., 2010	RCT	131 p	M = 36.4	Substance use	a. Healthy behaviour promotion + CM b. Healthy behaviour promotion	Participants in the CM condition achieved greater reductions in stimulant, alcohol and methamphetamine use than those in the control group. Reductions in substance use were maintained at the 9- and 12-month follow-up evaluations.
Stitzer et al., 2010	RCT	803 p	Methadone maintenance, M = 42; psychosocial counselling, M = 36	Substance use	a. TAU/CM b. TAU	Individuals in the CM condition had a better retention rate in the treatment programme and reduced substance use further than those in the non-CM treatment condition.
Yonkers et al., 2012	RCT	168 p	Age groups: 16–19; 20–34; ≥ 35	Substance use	a. MET/CBT b. Brief advice	No significant differences were observed between treatment groups in a population of pregnant women.

(1) Indicated as range or mean age , where available.
Abbreviations: CBT, cognitive behavioural therapy; CM, contingency management; M, mean; MET, motivational enhancement therapy; MI, motivational interviewing; p, participants; RCT, randomised controlled trial; s, studies; TAU, treatment as usual.

with standard pharmacotherapy (Baker et al., 2010). However, there is a notable lack of studies addressing cannabis use disorder patients with schizophrenia spectrum disorders or anxiety disorders and individuals with further dual diagnoses (e.g. alcohol use disorders, polydrug use, ADHD, personality disorders). Knowledge about how to treat these highly prevalent medical conditions remains very limited.

Intervention types

As described in the narrative review section of this report, various empirically supported treatments are available for adults with cannabis use disorders. Randomised studies have been performed on different combinations of MET, CBT and CM. One study combined psychosocial problem solving, as developed by D'Zurilla and Goldfried (1971), with MET and CBT (Hoch et al., 2012). These efficacy studies were mostly conducted in clinical settings with a limited number of study sites. No published studies on family interventions for adults with cannabis use disorders were found. Twelve-step programmes were absent from the literature on psychosocial interventions for cannabis dependence, unlike that on other substance use disorders. Their utilisation, long-term efficacy and potential role as an integrated component of psychosocial interventions for cannabis dependence have not been examined until now. Notably, no individual empirically supported treatment emerged as being significantly more effective than any other empirically supported treatment. Because the underpinnings of these therapeutic models are complementary, researchers have focused less on treatment superiority and more on identifying effective combinations (Danovitch and Gorelick, 2012).

Treatment effects

Aggregated empirical evidence on general substance use treatments indicates that motivational enhancement has small effects on substance use in adult patient populations (Lundahl et al., 2010). Effects were largest at post-treatment and when MI was compared with no treatment (Smedslund et al., 2011). Compared with a specific treatment or treatment as usual, no significant effects were found (Lundahl et al., 2010; Smedslund et al., 2011). All of the systematic reviews and meta-analyses consistently found that a combination of MET and CBT is most effective in reducing the frequency and quantity of substance use, as well as the severity of substance use-related problems and mental health problems. Whereas CM has not always been seen as a practical strategy for many clinicians, evidence suggests that CM is a very efficient adjunct to the treatment of adult substance use disorders, where it helps in fostering retention or improving substance-related treatment outcomes (Dutra et al., 2008). Combinations of MET, CBT and CM are also considered the most effective cannabis-specific treatment approach (Benyamina et al., 2008; Danovitch and Gorelick, 2012). Both narrative reviews confirm earlier findings from the systematic Cochrane review on psychosocial interventions for adults with primary cannabis use disorders (Denis et al., 2006).

Adults with cannabis use disorders seem to benefit from various intervention types. The strongest and most enduring treatment effects are found in secondary outcomes such as reductions in the frequency of cannabis use, the number of dependence symptoms, the severity of cannabis dependence or the number and severity of cannabis-related problems (e.g. Danovitch and Gorelick, 2012). It has to be noted that moderation and harm reduction are not accepted as treatment goals by many healthcare providers and other stakeholders (e.g. Hoch et al., 2012). Therefore, response rates, particularly regarding abstinence from cannabis, leave much room for improvement. Questions about the optimal duration, intensity and type of treatment, setting and moderating factors (e.g. gender, co-morbidity, culture, family cohesion) need to be further examined in future research.

Research on telephone and online interventions

Most recently, new formats for these approaches have been tested. Minimal interventions reported in the literature include postal (Norberg et al., 2012), computerised (Budney et al., 2011; Carroll et al., 2009; Godley, M., et al., 2010; Tossmann et al., 2011) and telephone-based interventions (Gates et al., 2012). These general or cannabis-specific interventions have the potential to increase access to treatment and lead to benefits such as reduced substance use, motivation to change, retention and increased knowledge about the substance. This can be achieved especially in uncomplicated cases of substance use and related problems (Rooke et al., 2013). However, Hoch et al. (2014) argue that tele-interventions cannot completely replace a live clinician, as some patients may be unwilling to use web-based interventions or need personal assistance as a result of complex impairment and more severe problems.

Here we review research into interventions using telecommunications — Internet, telephone, messaging

services — to reach clients and treat cannabis use disorders. The characteristics of the studies included in the present analysis can be found in Table 7.

Studies conducted to date have produced promising outcomes in the treatment of numerous behavioural and psychological disorders. Reviewing 12 studies of computer-based interventions for drug use disorders, for example, Moore et al. (2011) found that, compared with treatment as usual, computer-based interventions led to less substance use, higher motivation to change, better retention and greater knowledge of presented information.

In the field of substance use disorders, Carroll et al. (2008) examined whether biweekly access to computer-based training adds incremental value to standard CBT treatment in an outpatient community setting. The 77 participants were randomly assigned to standard treatment or standard treatment plus computer-based training in CBT (CBT4CBT). The results revealed that participants in the CBT4CBT group had significantly fewer positive urine specimens and exhibited longer continuous periods of abstinence during treatment. Carroll et al. (2009) followed up this research with a study examining whether CBT4CBT was more effective than treatment as usual over a 6-month period. Results revealed that, compared with those in the treatment as usual condition, participants in the CBT4CBT condition slightly reduced their substance use over the course of the study period. The effect remained significant even after controlling for treatment retention, substance use outcomes and exposure to other treatment during the follow-up period.

Sinadinovic et al. (2012) examined the effectiveness of an Internet-based screening and brief intervention (eScreen.se) on reducing substance use. The 202 participants were randomised to either the treatment condition or an assessment-only control group. Although both groups showed a significant decrease in self-reported substance use, the Internet-based treatment group exhibited a significantly larger decrease in substance use frequency.

Budney et al. (2011) published results of a feasibility study comparing a computer-delivered version of MET/CBT/CM with a therapist-delivered version. For the non-randomised, 12-week comparison study, 38 adults were assigned to either the computer-delivered MET/CBT/CM or the therapist-delivered MET/CBT/CM. No significant differences were found between the conditions in terms of attendance, retention and cannabis use outcomes. Although these results are promising, they need to be replicated in studies using randomised controlled designs before firm conclusions can be drawn.

Tossmann et al. (2011) conducted a randomised controlled study evaluating the effectiveness of a 3-month online drug-related information and prevention programme. Cannabis users seeking web-based treatment were recruited to participate in the study and were assigned to either a waiting list control condition or the treatment condition. Of the 1 292 subjects included in the trial, a total of 206 took part in both the pre-test and post-test assessments. Participants in the treatment condition showed a significantly stronger reduction in cannabis use than those in the control group. In the per-protocol analyses, moderate to strong effects were found for reduction in the frequency of cannabis use and the quantity of cannabis consumed. Small to moderate effects were observed on secondary outcomes (e.g. use-related self-efficacy, anxiety, depression and life satisfaction). The same research group (Jonas et al., 2012) evaluated the effectiveness of a one-session, online intervention based on MI. Young alcohol and cannabis users (302 participants) were randomised to either a group that received chat-based MI or a group that received feedback on a previous self-test. Intention-to-treat analysis yielded no differences between the groups. In both groups, there was a significant time-effect in alcohol use and readiness to change. Another approach, using a mobile phone as a medium, was tested by Laursen (2010). Based on qualitative interviews, she found initial evidence that information on cannabis use delivered via short message service (SMS) could help young people reduce their consumption of cannabis.

Interventions for substance use disorders delivered via telephone have also been shown to be effective. Godley, M., et al. (2010) examined whether telephone-based continuing care was as effective as usual continuing care in preventing substance use relapse. Participants were randomised into one of the two treatment groups. At the 3-month follow-up, participants in the telephone-based care group reported significantly fewer substance-related problems than the face-to-face group; however, significant differences were not found at the 6-month follow-up. Gates et al. (2012) expanded on the Godley, M., et al. (2010) study. In a randomised controlled trial, they examined the efficacy of a telephone-based cannabis use intervention. The 160 participants were randomised to a telephone-based intervention that contained components of CBT and MI or to a delayed treatment control condition. Results revealed that the participants in the treatment condition exhibited greater reductions in dependence symptoms and substance-related problems at both follow-up assessments. Furthermore, they reported greater confidence in their ability to reduce cannabis use at four weeks and a greater percentage of abstinent days at 12 weeks.

TABLE 7
Characteristics of studies evaluating telephone and online interventions

Study	Design	Number of participants/ studies	Age (years) (1)	Population characteristics	Treatment	Outcome
Reviews						
Moore et al., 2011	Review	12 s	M (range) = 23–47	Substance use	Computer-based interventions for drug use	Compared with TAU, computer-based interventions led to less substance use and greater motivation to change, better retention and greater knowledge of presented information.
Tait et al., 2013	Meta-analysis	10 s	11–16 and ≥17		a. Several type of Internet- and computer-based interventions; b. No intervention, only assessment	Internet- and computer-based interventions appear to be effective in reducing cannabis use.
Individual studies						
Arnaud et al., 2012	RCT	800 p	16–18	Substance use	a. Feedback/MI/advice b. Assessment-only control group	Arnaud and colleagues have published only a study protocol.
Budney et al., 2011	Comparison study	38 p	a. M = 32.7; SD = 10.5 b. M = 32.9; SD = 8.7	Cannabis use	a. Therapist-delivered MET/CBT/CM b. Computer-delivered MET/CBT/CM	There were no significant differences between the conditions in terms of attendance, retention and cannabis use outcomes.
Carroll et al., 2008	RCT	77 p	M = 41.6; SD = 10.2	Substance use	a. TAU b. TAU/computer-based training in CBT	Participants in the CBT4CBT group had significantly fewer positive urine specimens and exhibited longer continuous periods of abstinence during treatment.
Carroll et al., 2009	RCT	77 p	M = 41.6; SD = 10.2	Substance use	a. TAU b. TAU/computer-based training in CBT	Compared with TAU, participants in the CBT4CBT condition slightly reduced their substance use over the course of the study period.
Gates et al., 2012	RCT	160 p	M = 36.0; SD = 10.1	Substance use	a. Telephone-based MI/CBT b. DTC	Participants in the treatment condition exhibited greater reductions in dependence symptoms and substance-related problems at both follow-up assessments.
Godley, M., et al., 2010	RCT	104 p	M = 31.6; range = 19–56	Substance use	a. TCC b. UCC	At the 3-month follow-up, participants in the telephone-based care group reported significantly fewer substance-related problems than did the face-to-face group; however, significant differences were not found at the 6-month follow-up.
Jonas et al., 2012	RCT	302 p	M = 24.2; SD = 5.8	Cannabis use	a. Chat-based MI b. Feedback on a preceding self-test	ITT analysis yielded no differences between the groups. In both groups, there was a significant time-effect in alcohol use and readiness to change.
Laursen, 2010	Qualitative interviews	12 p	Adolescents	Cannabis use	Information on cannabis use via SMS	Along with other factors, SMS motivated the participants to reduce their level of cannabis use or to maintain a reduced level.
Sinadinovic et al., 2012	RCT	202 p	a. M = 33.2 b. M = 31.9	Substance use	a. Internet-based screening and brief intervention b. Assessment-only control group	Both groups showed a significant reduction in substance use. Participants in the Internet-based treatment group exhibited a significantly larger reduction in substance use frequency.
Tossmann et al., 2011	RCT	206 p	M = 24.7; SD = 6.8	Cannabis use	a. Online based CBT/MI b. DTC	Participants in the treatment condition showed a significantly greater reduction in cannabis use than those in the control group. Small to moderate effects were observed on secondary outcomes (e.g. use-related self-efficacy, anxiety, depression, life satisfaction).

(1) Indicated as range or mean age, where available.
Abbreviations: CBT, cognitive behavioural therapy; CM, contingency management; DTC, delayed treatment control; ITT, intention to treat; M, mean; MET, motivational enhancement therapy; MI, motivational interviewing; p, participants; RCT, randomised controlled trial; s, studies; SD, standard deviation; SMS, short message service; TAU, treatment as usual; TCC, telephone continuing care; UCC, usual continuing care.

Tait et al. (2013) conducted a systematic review of 10 randomised controlled studies, which included about 4 125 participants aged 11 years or older. The authors concluded that Internet treatment can reduce cannabis use in the short term.

Conclusions

Telephone and online interventions are still under investigation. Nevertheless, they can offer a good opportunity for those who are not prepared to seek treatment in healthcare centres, and especially for young people, who are very comfortable with the use of the Internet and telecommunications. Moreover, the relatively low costs can be appealing, especially for countries that are facing the prospect of providing treatment for large numbers of intensive cannabis users.

Factors and mechanisms influencing effectiveness

In addition to studies investigating the effectiveness of treatment, some researchers have tried to identify the determinants of treatment success (see Table 8).

Bergmark (2008) cites results that indicated that increases in treatment dosage did not produce significantly better treatment outcomes for adolescents. This result is consistent with previous research indicating that even brief interventions can influence cannabis use. For example, McCambridge and Strang (2005) found that a 1-hour face-to-face MI session significantly reduced weekly frequency of cannabis use compared with a no-treatment group. These findings have major real-world implications for the implementation of effective cannabis-treatment protocols, including the potential for reduced cost and increased availability of treatment.

Tanner-Smith et al. (2013) found that longer duration of general substance use treatment was associated with smaller improvements. This is in agreement with earlier work that suggests that longer duration of treatment does not necessarily produce better treatment outcomes (Dennis et al., 2004).

A brief intervention targeting risky behaviours associated with cannabis use was shown to reduce risky cannabis-related behaviour (e.g. driving after cannabis use) in a sample of college students (Fischer et al., 2013).

The type of substance used and the type of treatment provided may not be the only determinants of treatment success. Rather, there are several moderating factors that have a profound impact on the effectiveness of treatment. For instance, Hendriks et al. (2012) found in a secondary analysis that co-morbid psychiatric problems moderated the effectiveness of different substance use treatment modalities. They found that MDFT was more effective for adolescents with a previous diagnosis of conduct disorder, oppositional defiant disorder or internalising problems. Participants without these co-morbid psychiatric conditions benefited much more from CBT. In addition, Hendriks et al. found evidence that older adolescents (17–18 years old) benefited more from CBT, whereas younger adolescents benefited more from MDFT. Additionally, Stein, L., et al. (2011) found some evidence for moderating effects of depression on the effectiveness of treatment for cannabis use among incarcerated adolescents. Their study demonstrated that MI significantly reduced cannabis use among incarcerated adolescents, but only in a group with low depression symptoms. Relaxation training was a more effective approach for adolescents in their sample with high depression symptoms.

Some research suggests that cultural factors may moderate the effectiveness of substance use treatment. A study comparing the effectiveness of a culturally adapted version of CBT and standard CBT for substance use in Latino adolescents found that treatment outcomes were moderated by ethnic identity and familism (Burrow-Sanchez and Wrona, 2012). Specifically, their results revealed that Latino adolescents with high levels of ethnic identity and familism benefited significantly more from the culturally adapted treatment than Latino adolescents who were low on these cultural variables. In addition, Robbins et al. (2008) compared the effectiveness of regular BSFT and BSFT enhanced with ecological interventions. Latino adolescents benefited more from the ecologically enhanced BSFT, but African American adolescents did not, suggesting that ethnicity may moderate treatment effectiveness in some cases.

Family-level factors may also moderate the effectiveness of substance use treatment. In an unpublished study, Mermelstein (2011) examined the influence of family cohesion on substance use severity in adolescents admitted to a residential substance use treatment centre. Results suggested that family cohesion level was significantly and inversely related to substance use severity. In agreement with these findings, Henderson et al. (2009) found that improved parental monitoring of the adolescent partially mediated the effect of MDFT on reduced substance use. Perhaps some of the

TABLE 8

Characteristics of studies evaluating factors and mechanisms influencing effectiveness of cannabis or substance use treatments

Study	Design	Number of participants/ studies	Age (years) (1)	Population characteristics	Treatment	Outcome
Reviews						
Baker et al., 2010	Review	7 s	Adults	Cannabis use	CBT, MI, psychoeducation, computer-delivered CBT	An intensive combination of CBT and MI is the most effective treatment for individuals with co-morbid psychotic and mood disorders. Studies also indicate that effectively treating the mental health disorder with standard pharmacotherapy may be associated with a reduction in cannabis use.
Kadden and Litt, 2011	Review	–	Adults	Substance use		Self-efficacy is an important mediator of the effectiveness of substance use treatment. In addition, self-efficacy may serve as a moderator of treatment effectiveness, such that individuals who are high in self-efficacy exhibit better treatment outcomes.
Magill and Ray, 2009	Meta-analysis	53 s	Adults	Substance use	CBT	CBT was most efficacious with cannabis users. Effects were larger with women than with men.
Individual studies						
Burrow-Sanchez and Wrona, 2012	RCT	35 p	M = 15.5; SD = 1.3; range = 13–18	Substance use	a. CBT b. Culturally accommodated CBT	Latino adolescents with high levels of ethnic identity and familism benefited significantly more from the culturally adapted treatment than Latino adolescents who were low on these cultural variables.
Garner et al., 2008	Predictor analysis	295 p	M = 15.5; SD = 1.3	Substance use		Adolescents reporting higher levels of therapeutic alliance also reported higher levels of social support and greater problem recognition and had more reasons for quitting. Moreover, therapists tended to report a higher level of therapeutic alliance with older adolescents, suggesting that adolescent age may serve as an additional factor moderating treatment effectiveness.
Henderson et al., 2009	RCT	83 p	M= 13.7; SD = 1.1; range = 11–15	Substance use	a. MDFT b. Peer group intervention	Improved parental monitoring of the adolescent partially mediated the effect of MDFT on reduced substance use.
Hendriks et al., 2012	RCT	109 p	range = 13–18; a. M = 16.6; SD = 1.3 b. M = 16.9; SD = 1.2	Cannabis use	a. MDFT b. CBT	Co-morbid psychiatric problems moderated the effectiveness of different substance use treatment modalities. MDFT was more effective for adolescents with a previous diagnosis of conduct disorder, oppositional defiant disorder or internalising problems. Participants without these co-morbid psychiatric conditions benefited much more from CBT. In addition, older adolescents (17–18 years old) benefited more from CBT, whereas younger adolescents benefited more from MDFT.
Mermelstein, 2011	Observational study	139 p	M = 16.2	Substance use	a. Families admitted to a residential substance use treatment centre b. Non-clinical comparison sample	Results suggested that family cohesion level was significantly and inversely related to substance use severity.
Robbins et al., 2008	RCT	190 p	M = 15.8; SD = 1.2; range = 12–17	Substance use	a. SET b. FAM c. CS	Latino adolescents benefited more from the ecologically enhanced BSFT than from a regular version of BSFT. African American adolescents did not, suggesting that ethnicity may moderate treatment effectiveness in some cases.
Stein, M., et al., 2011	RCT	332 p	M = 20.5; SD = 1.8; 18–24	Cannabis use	a. MI b. Assessment-only	Individuals with a high initial desire to refrain from substance use have more successful treatment outcomes.
Stein, L., et al., 2011	RCT	162 p	M = 17.1; SD = 1.1; range = 14–19	Alcohol and cannabis use	a. MI b. Relaxation training	MI significantly reduced cannabis use among the participants, but only in a group with low depression symptoms. Relaxation training was a more effective approach for adolescents with high depression symptoms.

(1) Indicated as range or mean age, where available.

Abbreviations: BSFT, brief strategic family therapy; CBT, cognitive behavioural therapy; CS, community service; FAM, family process-only condition; MDFT, multidimensional family therapy; M, mean; MI, motivational interviewing; p, participants; RCT, randomised controlled trial; s, studies; SD, standard deviation; SET, structural ecosystems therapy.

effectiveness of family-based treatments for substance use disorders is because these treatments also address family-level factors that can moderate the effectiveness of treatment.

Therapeutic alliance serves as a major factor influencing the effectiveness of treatment in a variety of domains (Martin et al., 2000) and, therefore, is likely to play a key role in determining the effectiveness of substance use treatment. Garner et al. (2008) examined whether therapeutic alliance influenced the effectiveness of substance use treatment. They found that adolescents reporting higher levels of therapeutic alliance also reported higher levels of social support and greater problem recognition and had more reasons for quitting. Moreover, they found that therapists tended to report a higher level of therapeutic alliance with older adolescents, suggesting that adolescent age may serve as an additional factor moderating treatment effectiveness.

Kadden and Litt (2011) reviewed literature examining whether increases in self-efficacy mediate the association between substance use treatment and successful treatment outcomes. The results of their review indicate that self-efficacy is an important mediator of the effectiveness of substance use treatment. In addition, their results revealed that self-efficacy may serve as a moderator of treatment effectiveness, such that individuals who are high in self-efficacy exhibit better treatment outcomes.

Stein, M., et al. (2011) found that initial desire to quit may be an important predictor or moderator of treatment outcome, regardless of the specific substance use treatment that is utilised, such that individuals with a high initial desire to refrain from substance use are more likely to have a successful treatment outcome.

Finally, the effectiveness of treatment may be moderated by characteristics of the population being treated, such as gender (Magill and Ray, 2009), involvement in the criminal justice system (Carroll et al., 2012) and co-morbid psychopathology (Baker et al., 2010). Therefore, it is important to be aware of factors that may influence treatment, in order to find the best match between patient and treatment approach.

Study characteristics

The studies identified and included in this review were heterogeneous in terms of their research designs and methods and the formats used. Type of intervention and treatment intensity (i.e. number and frequency of therapy sessions) varied largely, too. In most studies, the patients were randomly assigned to an active intervention and to a comparison. The latter was either an alternative active intervention or combination of interventions, treatment as usual or a delayed treatment control. Measures of substance use were provided through self-report or self-report combined with biochemical measures of substance use. Outcome variables measured at baseline and assessed at follow-up included, for example, abstinence, quantity and frequency of cannabis use and other substance use, number and severity of use-related problems, DSM-IV dependence symptoms and other problem behaviours. Studies generally reported following study participants for periods of between 1 and 12 months. Most studies provided information on loss of study participants over time, which is a common occurrence in clinical trials. The number of study dropouts was counted and a retention rate was calculated. Methodologically strong studies included measures of quality assurance, for example using a manual to guide the intervention, providing training and supervision of study counsellors, and assessing treatment fidelity using audio or video recordings of the therapy sessions.

Recent findings in perspective

The results of this review are in line with findings previously published by the EMCDDA (Bergmark, 2008). All of the studies included in Bergmark's review were consistent in that they found that cannabis dependence treatment, regardless of modality, was more likely to result in abstinence than no treatment (Budney et al., 2000, 2006; Carroll et al., 2006; Copeland et al., 2001; Marijuana Treatment Project Research Group, 2004; Stephens et al., 2000). It remained unclear, however, whether the relative effectiveness of the treatment depended more on the type of treatment offered or the duration of the treatment. The Marijuana Treatment Project Research Group (2004) found some evidence suggesting that brief interventions were somewhat less effective than longer interventions; however, more research is needed in this area before firm conclusions can be reached.

Bergmark (2008) also reviewed several studies comparing the effectiveness of different treatment modalities. The treatments that were reviewed included MET, CBT, CM and combinations of these approaches. Based on his review, Bergmark concluded that a combination of MI interventions, behavioural and

cognitive coping skills, and incentives was the most effective approach to treatment (Budney et al., 2000; Budney et al., 2006).

Bergmark found that a combination of motivational interventions, behavioural and cognitive coping skills, and incentives was most effective in the treatment of cannabis use disorders for adults. Benyamina et al. (2008) and Elkashef et al. (2008) supported this position. Still, it is worth highlighting the conclusion of Danovitch and Gorelick (2012) from their review of randomised trials: less than 20 % of those treated for cannabis-related problems achieved long-term abstinence.

To date, no medication has been found to be broadly effective in the treatment of cannabis use disorders, although a number of pharmacological approaches are being pursued (Danovitch and Gorelick, 2012). Psychosocial interventions, mainly focusing on psychotherapeutic approaches, are therefore the only type of treatment available for this target group.

3

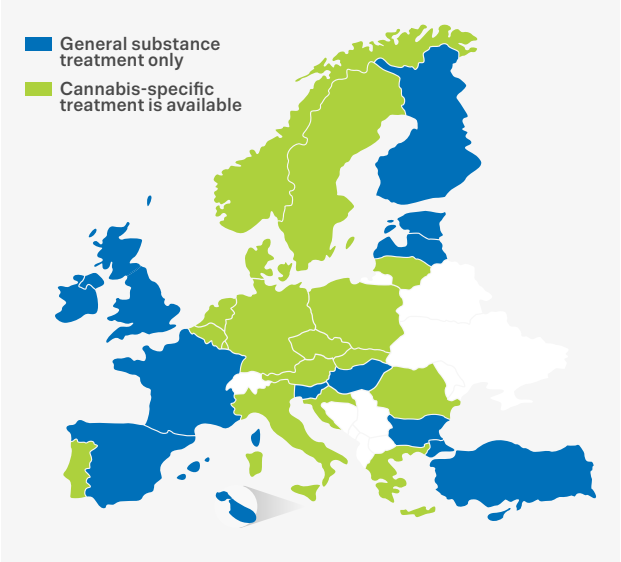
CHAPTER 3

Treatment of cannabis use disorders in Europe

The options available for treating individuals with cannabis use problems vary widely across the European Union. For example, the Netherlands reports one of the most comprehensive cannabis-specific treatment systems, offering two inpatient and two outpatient programmes specialising in the treatment of cannabis-related problems. These programmes are provided free of charge and available to the majority of those in need of treatment. In the United Kingdom, cannabis-specific treatment programmes are not provided, but considerable resources are devoted to treating individuals with cannabis use disorders through general substance use programmes, which may be tailored to individual needs on a case-by-case basis. This chapter brings together information from these countries and 28 others to present, in the first part, an overview on the approaches to treating cannabis use disorders across Europe, providing the most recent information on the programmes available in each country. In the second part, selected cannabis-specific programmes offered in European countries are described.

FIGURE 2

Existence of specialised treatment programmes for cannabis users in European countries



Source: SQ27 dataset (section on specific cannabis treatment), 2011; Cannabis-Specific Treatment National Focal Point Survey (CSTNFPS), 2013.

Treatment availability

The European picture

Information on the type of treatment offered to those with cannabis-related problems was gathered in 2011 and 2013. In 2011, out of the 30 countries affiliated to the EMCDDA, 17 reported the provision of substance-specific treatment for cannabis-related problems. This information was updated in 2013 by a survey of national focal points (CSTNFPS) conducted by the authors of this report. When the information provided through this survey is combined with the 2011 data, it emerges that cannabis-specific treatment programmes are available in 15 countries (Figure 2). As more than one-third of the Member States did not provide updated information in the 2013 survey, it is not possible to make a definitive statement on whether the number of European countries offering cannabis-specific programmes had increased or decreased since 2011 (Table 9).

In both 2011 and 2013, countries were asked to provide expert assessments of the coverage of treatment relative to needs — that is, the proportion of those in need estimated to have access to treatment (see Table 9 for rating scale). In the 2011 survey, of the 18 countries reporting provision of cannabis-specific treatment, 8 reported that treatment coverage was rare or limited and 10 reported extensive or full treatment coverage. Five countries stated that they were planning to implement cannabis-specific treatment approaches by 2014.

The main focus of this overview is cannabis-specific treatment. Where no specific intervention was reported, information is provided on how generalised substance use services cater for the needs of those with cannabis problems.

TABLE 9

Availability of cannabis-specific treatment (CST) in European countries

Country	CST available	CST coverage (1)	Implementation of CST planned (2)	Type of treatment offered
Belgium	Yes	Full	n.a.	CBT, MDFT, MI
Bulgaria (3)	No	n.a.	Yes	n.a.
Czech Republic (3)	Yes	Rare	n.a.	–
Denmark	Yes	Full	n.a.	CBT
Germany	Yes	Extensive	n.a.	CANDIS, CAN Stop, Quit the Shit, Realize It!, MDFT
Estonia	No	n.a.	Yes	n.a.
Ireland (3)	No	n.a.	No	n.a.
Greece	Yes	Full	n.a.	–
Spain	No	n.a.	–	n.a.
France	No	n.a.	No	n.a.
Croatia (3)	Yes	Full	n.a.	–
Italy (3)	Yes	Extensive	n.a.	–
Cyprus	No	n.a.	Yes	n.a.
Latvia	No	n.a.	No	n.a.
Lithuania (3)	Yes	Extensive	n.a.	–
Luxembourg (3)	Yes	Extensive	n.a.	CANDIS
Hungary	No	n.a.	Yes	n.a.
Malta	No	n.a.	–	n.a.
Netherlands	Yes	Extensive	n.a.	MDFT, CBT
Austria (4)	Yes	–	n.a.	CANDIS
Poland	Yes	Rare	n.a.	CANDIS (5)
Portugal	Yes	Limited	n.a.	–
Romania (3)	Yes	Limited	n.a.	–
Slovenia	No	n.a.	–	n.a.
Slovakia	Yes	Full	n.a.	CBT, MI
Finland	No	n.a.	–	n.a.
Sweden (4)	Yes	Extensive	n.a.	
United Kingdom	No	n.a.	–	n.a.
Turkey (3)	No	n.a.	–	n.a.
Norway (3)	Yes	Limited	n.a.	Out of the Fog

(1) Expert rating. Rating scale: full: nearly all people in need of help would obtain it; extensive, a majority but not nearly all of them would obtain it; limited, more than a few but not a majority of them would obtain it; rare, just a few of them would obtain it.
(2) Implementation of specific cannabis treatment is planned within the next three years.
(3) No information for 2013 or later.
(4) Information from national focal point, 2014.
(5) Personal communication, Hoch, 2014.
Abbreviations: CBT, cognitive behavioural therapy; MDFT, multidimensional family therapy; MI, motivational interviewing; n.a., not applicable; –, no information available.
Source: SQ27 dataset (section on cannabis-specific treatment), 2011; Cannabis-Specific Treatment National Focal Point Survey (CSTNFPS), 2013.
For further information see the EMCDDA *Annual report 2012*, pp. 42–43, and the 2012 *Statistical bulletin* (available at emcdda.europa.eu/stats12).

Country descriptions

The most recent information available on treatment for cannabis use disorders in each of the 28 EU Member States, Turkey and Norway is presented in this section.

Belgium

Belgium provides cannabis-specific treatment through the Cannabis Clinic. Adolescents with cannabis use problems are offered MDFT, and adults with cannabis use problems are offered CBT, MI and group therapy. National coverage of the affected population is rated as comprehensive, as nearly all individuals in need of treatment are estimated to have access to a cannabis-specific treatment programme. Treatment is administered in an outpatient setting.

For more information about the Cannabis Clinic, visit the website chu-brugmann.be/fr/med/psy/cannabis.asp

Bulgaria

According to the most recent available data, cannabis-specific treatment programmes are not offered in Bulgaria. Individuals with cannabis use problems typically receive psychosocial treatment that is tailored to their individual symptoms and needs. The majority of patients with cannabis use problems are treated via non-governmental organisations, public and private clinics, in outpatient settings and through Internet-based consultations.

Czech Republic

The Czech Republic reports the existence of a cannabis-specific treatment programme. However, no additional information is available about the type of treatment provided or the settings in which treatment is administered. In the Czech Republic, coverage of the affected population is rated as very limited, as only a small percentage of individuals in need of treatment for cannabis use problems are estimated to have access to cannabis-specific treatment.

Denmark

Cannabis-specific treatment programmes are available throughout Denmark. While most large municipalities offer one, the nature of the programme offered differs from municipality to municipality. Cannabis treatment programmes offered in Denmark are seldom manual-based, predetermined cannabis programmes; rather, the treatment programmes are based on a variety of cognitive behavioural and psychoeducational techniques adjusted to the particular group of clients receiving treatment. Admission to cannabis-specific treatment in Denmark is open only to those who cite cannabis as their principal drug of use. The majority of the available programmes are based on individual counselling and psychotherapy. Special programmes are also offered for adolescents with cannabis use disorders. Coverage of the affected population in Denmark is rated as extensive, as the majority of those who are in need of treatment are estimated to have access to it.

Germany

Germany offers a variety of cannabis-specific treatment programmes, including specialised programmes for adolescents with cannabis use problems. These programmes include CANDIS, Quit the Shit, Realize It, MDFT and CAN Stop. The available programmes use a range of modalities, including individual therapy, group therapy, systems therapy and Internet-based counselling. All cannabis-specific interventions in Germany are offered on an outpatient basis. The majority of individuals in need of treatment for cannabis use disorders in Germany are estimated to have access to treatment through a cannabis-specific programme.

More information about cannabis-specific programmes offered in Germany can be found on the following websites:

- CANDIS: candis-projekt.de
- Realize It: realize-it.org
- Quit the Shit: quit-the-shit.net
- CAN Stop: canstop.med.uni-rostock.de

Estonia

Estonia does not offer cannabis-specific treatment programmes. Nevertheless, general substance use treatment is available to all those who wish to receive treatment for problems related to cannabis use. Treatment for cannabis use disorders is typically provided in psychiatric hospitals through individual substance use treatment plans.

Ireland

Ireland does not offer cannabis-specific treatment programmes. Individuals with cannabis use problems receive psychological outpatient interventions in the context of the general substance use treatment system. No additional information is available on the types of interventions offered.

Greece

Greece offers a family systems cannabis-specific treatment programme through the ATRAPOS early intervention programme. The programme draws interventions from MDFT and multisystemic therapy and is targeted specifically at adolescents and young adults. In addition, 11 other treatment programmes offered in the country mainly treat problem cannabis users; however, these programmes are not cannabis-specific. All available programmes are offered on an outpatient basis.

More information about the ATRAPOS programme can be found on the website okana.gr

Spain

Cannabis-specific treatment programmes are not offered in Spain. Most of the substance use treatment programmes follow a 'patient type' approach as opposed to a 'substance' approach. Nevertheless, individuals with cannabis use problems who require professional support or treatment can receive free, government-subsidised treatment, in both inpatient and outpatient settings. Spain offers three treatment programmes, described below.

The Abuse/Addiction Treatment Programme for Adults is administered in drug addiction centres in Madrid. The intervention uses biopsychosocial interventions and is provided by a multidisciplinary team. Treatment is administered in both individual and group formats. A substantial proportion of those treated through this programme use cannabis as their primary drug.

The Abuse/Addiction Treatment Programme for Young People is targeted at individuals younger than 25 years old. This treatment programme is also administered in drug addiction centres in Madrid. Adolescents and young adults with substance use problems are treated by a specialised team according to a specific treatment protocol. In 2012, 84 % of the 14- to 18-year-olds and 66 % of the 19- to 24-year-olds who received treatment through this programme reported cannabis as their primary drug.

The Prevention Programme is aimed at users who have been penalised by the criminal justice system for drug use or possession. The programme is designed to prevent the development of dependency in casual users. In 2012, 81 % of those referred to the programme had been penalised for a cannabis-related offence.

France

France does not offer cannabis-specific treatment programmes. However, the *Consultations Jeunes Consommateurs* programme was initially introduced as a prevention programme for cannabis users. The scope of the treatment programme was expanded in 2008 to include all illicit substances used by adolescents and young adults. So, while these centres are no longer seen as cannabis-specific programmes in France, this substance continues to be the most common primary illicit substance among individuals receiving treatment through the programme. Coverage of treatment for cannabis-related problems is rated as comprehensive, as nearly all those in need are estimated to have access to treatment. In addition, substance use treatments are available that are targeted specifically at adolescents, including those with cannabis-related problems.

More information about treatment for cannabis-related problems in France can be found on the website drogues.gouv.fr/etre-aide/lieux-daccueil/consultations-jeunes-consommateurs/

Croatia

Croatia reported offering a cannabis-specific treatment programme in 2011. Updated information on the status of this programme is not available. The most recent estimate indicates that nearly all those in need have access to treatment for cannabis use. Treatment is provided via counselling centres specialising in the treatment of cannabis users.

Italy

Italy offers cannabis-specific treatment programmes, but no information is available on the type of treatment offered or the setting in which treatment is typically administered. The most recent estimate indicates that the majority of those in need of treatment for cannabis use problems in Italy have access to cannabis-specific treatment programmes.

Cyprus

Cyprus does not offer a cannabis-specific treatment programme. In Cyprus, individuals with cannabis use problems are treated in outpatient facilities that primarily provide psychosocial treatments. Treatment for cannabis users is mainly provided by public agencies specialising in adolescent drug treatment, as well as by private clinics and non-governmental organisations.

Latvia

In Latvia, cannabis-specific treatment programmes are not available. According to the most recent data, treatment for individuals with cannabis use problems is provided in outpatient settings and involves psychosocial interventions. Additional information on the specific nature of the psychosocial interventions is not available.

Lithuania

Lithuania offers cannabis-specific treatment programmes that involve counselling, detoxification, psychosocial interventions and rehabilitation. The majority of those in need of treatment for cannabis use problems are estimated to have access to treatment. No additional information is available on the specific types of treatment programmes that are offered or the settings in which treatment is administered.

Luxembourg

Luxembourg offers cannabis-specific treatment programmes, which also include CANDIS (Hoch, personal communication, 10 November 2014). Coverage of the affected population is rated as extensive, as the majority of those in need of treatment for cannabis use problems are estimated to have access to treatment. No additional information is available on the specific types of treatment programmes that are offered or the settings in which treatment is administered.

Hungary

In Hungary, cannabis-specific treatment programmes are not available. Those with problems related to cannabis use, as well as individuals with problems related to other substances, are treated by public service providers, non-governmental organisations and commercial services providing general outpatient and inpatient substance use treatment. Treatment includes medically assisted interventions and psychosocial interventions.

Malta

Malta does not offer cannabis-specific treatment programmes. No additional information is available on treatment for cannabis use problems in this country.

Netherlands

The Netherlands has one of the most comprehensive cannabis-specific treatment systems in the European Union. The country offers a variety of cannabis-specific programmes in both inpatient and outpatient settings. Outpatient options include CBT and MDFT (for adolescents and young adults). Inpatient cannabis-specific treatment is offered through the Mistral and Bauhuus clinical programmes. These treatment programmes are estimated to be accessible to the majority of individuals in need of treatment.

More information about cannabis-specific programmes offered in the Netherlands can be found on the following websites:

CBT and MDFT: brijder.nl/Verslaving/zorgprogramma/hulp-voor-jongeren,intensieve-gezinsbehandeling

Mistral: brijder.nl/Service/contact/locaties-zuid-holland

Bauhuus: vnn.nl/advies-hulp/jongeren/opname-in-een-kliniek/bauhuus/

Austria

In November 2013, CANDIS became the first cannabis-specific treatment programme to operate in Austria. Primary cannabis users are often treated in the general substance use treatment services. This is particularly the case in outpatient settings and has been increasingly observed in inpatient settings. For example, about 90 % of the participants in the *Konsumreduktionsgruppen*, a general substance use support group offered by Checkit! in Vienna, are cannabis users. In fact, when this service was initially implemented, the focus was on cannabis. Since then, however, the *Konsumreduktionsgruppen* has extended its services to adolescents and young adults who use other substances.

Poland

Poland offers CANDIS as a cannabis-specific treatment. This programme is provided on an outpatient basis at healthcare centres and clinics throughout the country. Although 60 drug experts have been trained in this programme and 30 services throughout the country provide it, the coverage of the affected population is rated as limited, as only a small percentage of those in need of treatment for cannabis problems are estimated to have access to treatment. There are no treatment options available that are tailored specifically to adolescents with cannabis use disorders. From January 2014, the programme has accepted adolescents as well as adults, and the number of trained experts has increased to 110 (Hoch, personal communication, 10 November 2014).

Portugal

Portugal offers cannabis-specific treatment programmes within a public network of prevention, treatment and

rehabilitation centres (called CRIs, centres for integrated responses). CRIs are accessible throughout the country, providing a nationwide network of coverage for drug addiction interventions. Each CRI develops an intervention for at-risk cannabis users who do not yet meet the criteria for abuse or dependence. Interventions are based on a targeted prevention framework, which includes psychoeducation, counselling and social skills training. Referral for more intensive treatment will occur if it is judged to be necessary. The PIAC programme administered at a CRI in Oporto is an example of a programme that treats cannabis abuse and dependence. The interventions typically involve psychotherapy and only seldom require a combination of psychopharmacotherapy and psychotherapy. If psychiatric co-morbidity is present, it is addressed in specialised CRI units. The CRI at UD-C Taipas in Lisbon is an example of this type of intervention.

Romania

The most recent available data indicate that Romania offers cannabis-specific treatment programmes; however, coverage of the affected population is rated as very limited, as only a small percentage of those in need of treatment are estimated to receive treatment through the available programmes. No additional information is available on the types of treatments offered and the settings in which treatment is administered in Romania.

Slovenia

Slovenia does not offer cannabis-specific treatment programmes. Treatment for individuals with cannabis use problems is provided by non-governmental organisations and public health institutions. No additional information is available about treatment options for cannabis-related problems in this country.

Slovakia

Slovakia provides cannabis-specific treatment programmes in both outpatient and inpatient settings. The cannabis-specific programmes in Slovakia are based on CBT and MET interventions. Coverage of the affected population is rated as comprehensive, as nearly all individuals in need of treatment are estimated to have access to treatment. Special programmes do not exist for adolescents with cannabis use problems.

More information about the treatment of cannabis use disorders in Slovakia can be found on the website cpldz.sk/

Finland

Finland does not offer cannabis-specific treatment programmes. Specialised treatment for those with substance use problems include outpatient care (A-Clinics, youth centres), short-term inpatient care (detoxification units), longer-term rehabilitative care (rehabilitation units), support services (day clinics, housing services and subsidised housing) and peer support activities. In addition to the units providing specialised services for those with substance use problems, increasing numbers are treated within primary social and healthcare services, including social welfare offices, child welfare services, mental health clinics, health centre clinics, hospitals and psychiatric hospitals. The Finnish system emphasises that substance use treatment alone is often insufficient and that the individual in treatment should receive assistance in solving problems related to income, living situation and employment.

Sweden

No information is available regarding the availability of treatment for cannabis use problems in Sweden.

United Kingdom

The United Kingdom adheres to an inclusive view of substance use treatment and has implemented services that are tailored to individual needs. Thus, there are only a few cannabis-specific services or groups, and these services are often part of a larger substance use treatment service. Most interventions for treating cannabis-related problems are provided as part of the wider substance use treatment system. The mainstay of treatment is evidence-based psychosocial interventions. The United Kingdom also has young people's substance misuse services, which are commissioned and delivered separately from adult substance use treatment. The majority of adolescents and young adults accessing specialist drug and alcohol interventions have problems with alcohol (37 %) or cannabis (53 %). Treatment for young adults and adolescents often involves psychosocial, harm reduction and family interventions, rather than treatment for addiction, which is required by most of the adults but only some of the young people referred for treatment for cannabis use.

More information about the treatment of cannabis use disorders in the United Kingdom can be found in the UK

clinical guidelines (National Treatment Agency for Substance Misuse, 2007).

Turkey

Turkey does not offer cannabis-specific treatment programmes. Available data indicate that those with cannabis use problems receive detoxification treatment followed by psychosocial treatments. No additional information is available on the treatment of those with cannabis-related problems in Turkey.

Norway

Norway offers a cannabis-specific treatment programme, *Ut av taka* (Out of the Fog). The programme has two target populations: (1) adolescents and young adults with cannabis-related problems and (2) employees in urban districts whose day-to-day work involves contact with affected young people. The programme is a group-oriented outpatient treatment. Coverage is rated as limited, however, as only a few of those in need of treatment are estimated to have access to the programme.

Selected cannabis-specific treatment programmes in Europe

A number of programmes have been developed in Europe specifically to treat people with cannabis-related disorders. For a better understanding of the concepts behind these programmes and to provide, where possible well-evaluated, examples of such programmes, this chapter examines some of them in more detail. While it is not intended to give a comprehensive description of all available cannabis-specific interventions in Europe, the major cannabis-specific treatment programmes currently existing in Europe are included here.

An overview of selected programmes is presented at the end of the section, listing the European countries where these interventions have been implemented (Table 10).

Realize It

Realize It is a cannabis-specific treatment programme for adolescents and young adults aged between 15 and

Realize It

Individual session I: Introduction to treatment programme, create a self-monitoring diary, define individual goals regarding cannabis use (within the programme period), define specific goal to be accomplished by the next session.

Individual session II:
- Evaluate progress towards goal 1
- Define goal 2

Individual session III:
- Evaluate progress towards goal 2
- Define goal 3

Individual session IV:
- Evaluate progress towards goal 3
- Define goal 4

Two modules:
- Problem solving
- Reduce cannabis consumption

Self-control strategies:
- Identify risky situations
- Develop coping strategies
- Overcome stressful situations
- Plan a cannabis-free spare time activity

Individual session V: Evaluate progress towards goal 4 and overall treatment goal.

Group sessions: Group sessions are focused on increasing awareness of risky situations and the development of coping strategies. The counsellor serves as a moderator of group discussions. Group sessions last two hours, take place on a weekly basis and contain between three and six participants. Participants are strongly encouraged to attend at least one group session during the course of treatment.

Source: Realize It overview obtained from the Realize It programme manager on 27 June 2013.

30 years. The programme includes five individual sessions and at least one group session. Individuals who exhibit signs of problematic alcohol use or limited problem-solving skills have the option of participating in a 3-session alcohol reduction module, a 3-session problem-solving skills module or both. Thus, the typical dose of treatment ranges from 6 to 12 sessions. The individual sessions are based on the principles of brief solution-focused therapy (Berg and Miller, 2000). Individuals in treatment learn how to define individual behavioural goals with regard to their problem cannabis use. In addition, a major objective of the treatment programme is to help clients develop self-regulation and self-control skills. For instance, clients learn how to identify successful strategies for limiting cannabis use by examining their entries in a drug diary. The group session provides individuals in treatment with an opportunity to share their successful strategies with others. Communication between the counsellor and clients in both the individual and group sessions relies heavily on the principles of MI. At present, this programme is available only in Germany, where it is offered in outpatient drug-counselling centres and is administered by social workers.

More information about Realize It can be found on the website: realize-it.org

CANDIS

CANDIS (Hoch et al., 2012) is an outpatient intervention for adolescents (over 16 years old) and adults that was created specifically to treat cannabis use disorders. The programme is empirically supported in the treatment of problem cannabis use. This intervention is offered only in an individual therapy format and the standard dose of treatment is 10 sessions, spanning a period of 8 to 12 weeks. CANDIS consists of three programme modules: (1) MET, (2) CBT and (3) psychosocial problem-solving training (PPT). The aim of the programme may be either total abstinence from cannabis or reduction in cannabis use. Treatments, such as CANDIS, which combine aspects of CBT and MI have been shown in empirical research to be efficacious treatments for cannabis use disorders.

CANDIS is currently offered in Germany, Austria, Luxembourg, Poland and Switzerland. In Germany, CANDIS is administered by psychologists, psychiatrists and social workers. The programme is primarily provided in outpatient settings, but is sometimes offered in inpatient settings in Germany. In Poland, CANDIS is conducted by addiction therapy specialists in outpatient facilities.

Conceptual elements of CANDIS

Motivational enhancement therapy (MET)
- Miller and Rollnick (2002)
- Interventions to stimulate motivation to change

Cognitive behavioural therapy (CBT)
- Aetiology of cannabis use disorder (biological, psychological, social aspects)
- Understanding cannabis use patterns (functional analysis)
- Development of an individual change concept and goal setting
- Quit day preparation (skills training, stimulus control and enforcement of alternative behaviours)
- Relapse prevention (strategies to cope with urges, craving and high-risk situations)
- Improve social skills, cannabis refusal skills and social support
- Management of co-morbid mental disorders (anxiety, depression, substance use disorders)

Psychosocial problem-solving training (PPT)
- D'Zurilla and Goldfried (1971)
- Identify and solve problems

Standard sessions in CANDIS

- **Session 1**: Diagnostic feedback and enhancement of motivation to change
- **Session 2**: Enhancement of motivation to change
- **Session 3**: Understanding cannabis use patterns
- **Session 4**: Goal setting and target day preparation
- **Session 5**: Debriefing of target day and management of craving
- **Session 6**: Relapse prevention
- **Session 7**: Psychosocial problem solving
- **Session 8**: Psychosocial problem solving
- **Session 9**: Co-morbidity
- **Session 10**: Social skills training and treatment termination

Source: Hoch et al. (2011)

For more information about CANDIS in Germany and Poland see candis-projekt.de

CAN Stop

CAN Stop is an intervention for adolescent and early adult cannabis users (aged 14–21 years) offered throughout Germany. The CAN Stop programme consists of eight 90-minute group treatment sessions. Group size typically ranges from 6 to 12 clients. The treatment programme primarily uses CBT and MI interventions and techniques. CAN Stop is conducted by laypeople, that is, individuals from a broad range of professional backgrounds who have experience working with the target group and who have attended a one-day training seminar. CAN Stop was specifically developed in such a way that it could be easily implemented in various contexts. It is currently offered in inpatient and outpatient medical settings, juvenile detention facilities and substance use treatment settings.

CAN Stop: treatment overview ([1])

Session 1: You CAN Stop!
Participants are introduced to the Can Stop group training model. The trainer informs participants about the schedule and the group rules. Following a 'get to know each other' exercise, participants begin to build up an atmosphere of trust. Then, the diary in which participants will document their cannabis consumption is explained with the help of examples. In the second part of the session, participants are asked to reflect on the disadvantages and advantages of consuming cannabis.

Session 2: Knowledge is power!
Participants receive psychoeducation on the consequences of cannabis consumption for the brain and general health. Subsequently, participants complete a 15-question quiz addressing topics relating to cannabis consumption including origin, active ingredients, addiction, impact on health, detectability, psychosis and legal matters. With the help of illustrations and diagrams, processes in the brain are explained. Furthermore, participants learn the criteria of addiction and rate their own status on a scale from 'non-problematic' to 'misuse' or 'addiction'.

Session 3: Find your strengths!
Diary entries are evaluated and discussed. First, achievements in reducing cannabis consumption are reinforced. The main focus in this session is identifying individual strengths and resources that can help change cannabis consumption behaviour. The aim is to promote positive self-perception and strengthen participants' self-confidence.

Session 4: Express your emotions!
The role of emotions in cannabis consumption is discussed, as emotions often trigger consumption. Participants are instructed to think about how typical consumption situations are associated with their emotional state. In the second part of the session, participants work together in the group to develop alternative coping strategies for dealing with these emotions.

Session 5: Doesn't everyone get stoned?
The fifth and sixth sessions focus on the topic 'Cannabis and peers'. In Session 5, the perceived norms of participants' own consumption are contrasted with peer norms. Subsequently, the participants' own social environment is discussed. Participants then reflect specifically on the interaction between the peer group and consumption behaviour. Acquaintances and friends who are abstinent are praised and cannabis-independent interests are reinforced. With the help of the group, concrete steps to reconnect with abstinent contacts or friends are developed.

Session 6: Just say No!
The main focus of the sixth session is tempting social situations and the refusal of cannabis use in these situations. On the basis of their diary entries, participants are instructed to identify typical individual (social)

situations that are tempting. The aim is to increase awareness of situations where there is an increased risk of consumption. On this basis, strategies are developed to help participants cope with such situations and to enable them to avoid cannabis use.

Session 7: Relapse prevention
The aim of the seventh session is to identify individual signs or predictors of relapse and to find strategies to prevent relapse. Using their diaries, participants explore their individual consumption and risk situations and group them into different risk categories in accordance with Marlatt's risk classification system. Finally, they rank their risk situations. With the help of a role-play exercise and the 'angel-devil-dialogue' metaphor, associations between cognitions and cannabis consumption are discussed. Playful cognitive and behaviour strategies are developed to avoid future risky situations.

Session 8: Emergency and goodbye
In the eighth session, the aim is to consolidate what has been learnt so far. Furthermore, an emergency plan is developed. The difference between a 'slip' and a full relapse is explained. The participants search for possible reinforcers for abstinence and connect their programme goals (e.g. abstinence or reduction) with a concrete symbol. Finally, participants create an individual 'emergency kit' in the form of a matchbox that contains helpful cognitions. The programme closes with the presentation of an individual certificate to each participant.

Source: CAN Stop treatment overview obtained from CAN Stop programme manager on 27 June 2013.

More information about CAN Stop can be found on the website canstop.med.uni-rostock.de

([1]) Translated from German.

Out of the Fog

The Out of the Fog (*Ut av tåka*) cannabis-specific intervention is designed to target two groups: (1) adolescents and young adults (aged 15–25 years) who are motivated to stop using cannabis and (2) first-line employees (e.g. teachers, mentors, social workers) in urban districts who come into contact with these individuals on a daily basis. The programme emphasises the integral role played by multisystemic support in reducing cannabis use.

The Out of the Fog 'quit smoking hash' course in Oslo involves intersectoral cooperation and aims to develop local competence and methods, based on experiences from Sweden and Denmark. The initiative has helped professionals to offer young people in their city ward an opportunity to quit smoking cannabis, both through groups and individually. Young people are reached earlier than they were before.

Much of the effort involved in Out of the Fog is directed towards training personnel and working together with city wards in Oslo to enable them, in the longer term, to run these courses on their own and offer them to young people in their ward. Some city wards have run groups in cooperation with Out of the Fog. The wards are also given guidance, and there is cooperation on follow-up. The project is also working on making the 'quit smoking hash' course and method better known and on developing the methodology. In total, 98 people were followed up through the project in the first half of 2012. This is more than in the whole of 2011, when the total number was 64.

Similar courses aimed at weaning people off cannabis are also held in several other Norwegian towns and cities. Such courses may reach young people who would not otherwise seek help for their drug problems. Increased focus on and knowledge about cannabis use problems in social and healthcare services will enable more young people to seek help for their problems at an earlier stage (see the 2012 Reitox national report for Norway).

Quit the Shit

Quit the Shit (Tossmann et al., 2011) is an Internet-based counselling programme that takes place over a 50-day period. The programme targets adolescents and young adults, and the interventions used in the programme are based on solution-focused therapy. Thus, interventions are geared towards helping the client to establish effective self-control and self-regulation skills. Quit the Shit is administered by trained counsellors over email and through online chat. The programme is free and, since it is offered online, can be used anonymously. The programme consists of four consecutive phases: (1) registration, (2) admission chat, (3) online diary and feedback, and (4) termination chat. The registration phase involves gathering personal information from the client that is relevant to substance use counselling and programme evaluation. After the client has registered for the programme, the admission phase begins. This phase involves an initial 50-minute online chat with a counsellor. The objective of this chat is to clarify the client's substance use situation, determine cannabis use goals and identify coping strategies. After admission, the online diary is activated. Clients record all relevant aspects of their cannabis use in an online diary for the next 50 days. During this period, clients receive written feedback once a week from their counsellor. The feedback relates to cannabis use levels, the psychosocial situation of the participant and the counselling process. On completion of the 50-day online diary phase, the counsellor conducts a termination chat with the client. The objective of this chat is to review progress towards the client's cannabis use goals, identify which individual strategies were most effective in reducing cannabis use and determine whether further professional help is required.

Screening: evaluate stage of change (transtheoretical model), obtain sociodemographic data, evaluate for cannabis use or dependence (DSM-IV), determine patterns of cannabis consumption

One-on-one chat:

- Introduction to treatment programme, creation of cannabis use diary, definition of individual goals (within the programme period).

50-day diary:

- Self-monitoring.
- Document consumption patterns.
- Daily summary.

Six modules:

- Identify disadvantages and advantages of consuming cannabis.
- Identify risky situations.
- Come up with alternative (drug-free) activities.
- Write farewell letter to substance.
- Develop and implement problem-solving skills.
- Identify personal strengths and resources.
- Read weekly written feedback:
- Motivation enhancement.
- Develop coping strategies.

Final chat evaluating progress towards treatment goals and providing referral if necessary

Source: Quit the Shit treatment programme overview obtained from the Quit the Shit treatment programme manager on 27 June 2013.

More information about Quit the Shit can be found on the website quit-the-shit.net

TABLE 10
Overview of selected European cannabis-specific treatment programmes

Treatment name	Country provided	Target population	Treatment format	Treatment providers	Treatment setting	Evidence-based?	Additional notes
ATRAPOS	Greece	Adolescents, young adults (< 25 years old)	Individual, group	Unknown	Unknown	Unknown	Family-oriented interventions (e.g. family members can attend therapy groups)
CANDIS	Austria, Germany, Luxembourg, Poland	Adolescents (> 16 years old), adults	Individual	Psychologists, psychiatrists, social workers, addiction therapy specialists	Outpatient	Yes	Interventions based on CBT and MI
CAN Stop	Germany	Adolescents, young adults (< 22 years old)	Group	Laypeople with experience with target group	Inpatient, outpatient	Unknown	
CBT	Belgium, Denmark, Netherlands, Slovakia	Adults, adolescents	Individual, group	Psychologists, psychiatrists, trained therapists	Outpatient, inpatient	Yes	Inpatient therapy only offered in Slovakia
MDFT	Belgium, Germany, Netherlands	Adolescents, young adults (< 25 years old)	Family-systems, multisystemic	Psychologists, psychiatric nurses, trained therapists	Outpatient, inpatient	Yes	Inpatient therapy only offered in the Netherlands
MI/MET	Slovakia, Belgium	Adults, adolescents	Individual, group	Psychologists, psychiatrists	Outpatient, inpatient	Yes	
Out of the Fog	Norway	Adolescents, young adults (< 25 years old)	Unknown	Laypeople with experience with target group	Unknown	Unknown	
Quit the Shit	Germany	Adolescents, young adults	Individual	Trained counsellors	Online, telemedicine	Yes	Interventions based on solution-focused therapy
Realize It!	Germany	Adolescents, young adults (< 30 years old)	Individual, group	Social workers	Outpatient	Yes	Interventions based on solution-focused therapy and MI

Abbreviations: CBT, cognitive behavioural therapy; MDFT, multidimensional family therapy; MET, motivational enhancement therapy; MI, motivational interviewing.

4

CHAPTER 4
Estimation of unmet treatment needs

The last chapter showed how European countries vary in the way they handle treatment needs for cannabis-related problems. Some focus on special programmes and approaches whereas others use a more generic system of treatment provision, which can be adapted to needs at an individual level. The extent to which treatment needs are met by any of these treatment offers is an important question. In this chapter, estimates of treatment provision — taking into account both specific and generic approaches — per country are presented and discussed in relation to indicators of treatment needs.

This approach has to be seen as a first attempt to compare needs and provision of treatment for cannabis-related problems at a European level. In the absence of a European instrument to assess the treatment needs of this clientele, a proxy indicator is used. Studies have shown a high correlation between regular, especially daily, use of cannabis and cannabis-related disorders. This permits 'daily or near-daily use' prevalence to be used as a proxy for problematic cannabis use. It is assumed that those using the drug daily or almost daily would be the target group for cannabis treatment. While acknowledging that not all individuals using the drug on a daily or near-daily basis would be in need of or would benefit from cannabis treatment, the size of this group can serve as a crude estimate of possible treatment needs.

For each country, a national estimate was calculated from (1) the prevalence of cannabis use in the last month, as measured in the most recent national surveys, and (2) the percentage of daily or near-daily users among this group, as reported by national focal points to the EMCDDA in a separate study (EMCDDA, 2012b).

Treatment provision was calculated on the basis of reports of clients who had been in specialised drug treatment in Europe who cited cannabis as their primary drug. This information is collected through the treatment demand indicator (TDI) for each calendar year. Only outpatient treatment numbers were used in the calculations for two reasons. First, the majority of reported admissions for primary cannabis problems to specialised drug treatment facilities in Europe are treated in outpatient settings. Second, those entering inpatient treatment are often referred from outpatient services, raising the possibility of double-counting and thereby overestimating the overall numbers entering treatment for cannabis problems.

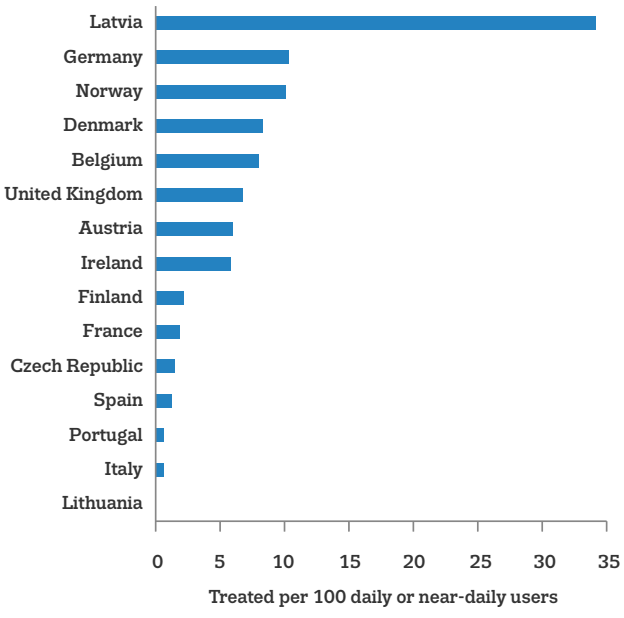
As treatment monitoring in many countries covers only parts of the drug treatment system, a correction factor for under-coverage (as reported by the national focal points) was used to calculate the total number of treated cases.

The resulting numbers are presented in Figure 3. The ratio of treated cases per daily or near-daily user is understood as a rough indicator of the coverage of treatment needs for those with cannabis-related problems.

Considerable variation exists between countries in the ratio between the number of treated cases with cannabis as the primary drug and the number of daily or near-daily cannabis users. Seven out of the 15 countries

FIGURE 3

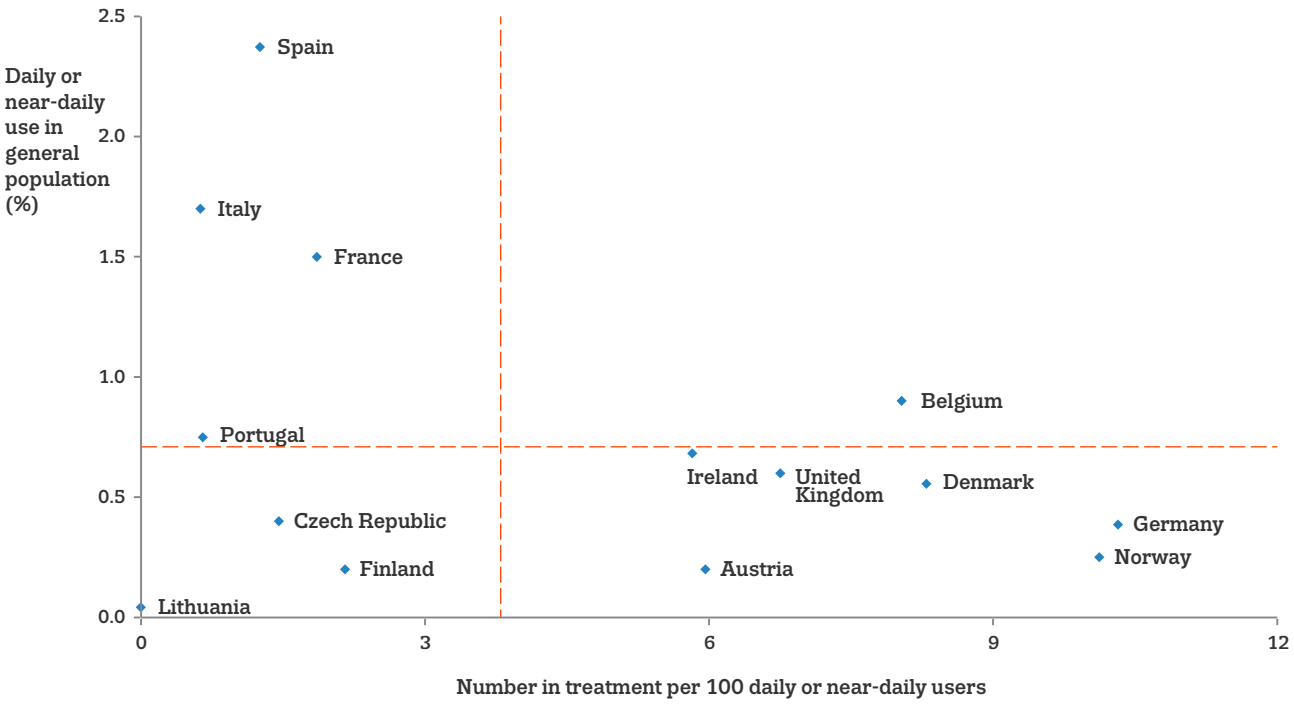
Treated cannabis cases per 100 daily or near-daily users



NB: Treatment data for Denmark, Portugal, Sweden and the United Kingdom refer to 2011; data for other countries refer to 2012.

FIGURE 4

Ratio between annual number of cases treated for cannabis use problems per 100 daily or near-daily users and prevalence of daily or near-daily cannabis use



NB: Dashed lines represent average values. Latvia, with a daily use of 0.7 % and 34.2 in treatment per 100 daily users, is off-scale and is not plotted on the graph.

for which such detailed data are available report between 5 and 10 treatment cases per 100 daily or near-daily users. This is equivalent to 1 person receiving treatment for each 10 to 20 daily users in a given year. Latvia has a still higher value, which reflects the very low prevalence of daily cannabis use assessed in the country. Some other countries have extremely low ratios of around or below 1 per 100.

By adding the level of prevalence to this analysis, it is possible to provide national policymakers with an indication of how cannabis treatment in their country stands both in relation to potential needs and in relation to other European countries. As Figure 4 shows, a high prevalence of daily or near-daily use in the population does not always coincide with a high level of treatment provision. Two examples of this are Spain and Portugal. In these countries, which present a rather high prevalence of daily or near-daily cannabis use, the ratio of treatment cases to daily or near-daily users is very low compared with the European average.

Although the majority of the countries report that drug treatment is provided to most or all of those asking for it, there are still several European countries in which available cannabis use treatment programmes cover only a very limited proportion of the population in need of treatment. In these countries, and in others with only limited treatment availability, additional resources could be devoted to programmes aimed at increasing the accessibility of quality treatments for those with cannabis-related problems.

Specific treatment for specific substances?

Looking at treatment offered for cannabis-related problems throughout Europe, two approaches are evident: (1) cannabis-specific treatment, which is targeted at a specific age group (adolescents or young adults) and the risks and harms associated with the use of the drug, and (2) general substance use treatment, which is tailored to the individual needs of the cannabis user seeking treatment. In terms of treatment organisation and settings, general approaches may appear to have certain disadvantages. Treating users of different drugs together may lead to mixing of older and younger users, more marginalised and problematic users and well-integrated users, which is unwanted both by public health services and by drug users. By offering only

standard treatment facilities and approaches, services may not attract all of the cannabis users who could benefit from this type of treatment.

However, comparing the evidence for specific and generic interventions, there seems to be no firm basis for a conclusion in favour of cannabis-specific treatment: both approaches have shown similar levels of effect. This is not unexpected, as both types of intervention are built on the same psychotherapeutic and educational approaches, which have shown their efficiency frequently under different conditions: MI, MET and CBT for adults, with some additions based on family systems theory and therapy for younger people.

While cannabis is by far most the prevalent illicit drug in Europe, it is not the only one. There are many other substances in use, often changing, with unclear risk profiles and user groups. The discussion on the treatment of drug problems related to new psychoactive substances has just started. What lessons can be learnt from the past 10 years' discussion on treatment for cannabis use for this target group of 'recreational users'? First, it is important to gather more information on the users. More knowledge about their consumption patterns, other drugs used and drug-related physical, mental and social harms is required to understand the possible treatment needs of this specific group of users. As with the treatment of those dependent on alcohol, nicotine or cannabis, and based on the evidence available for patients with substance use disorders, it is very likely that combinations of MET, CBT, CM and family-based interventions will be effective for this target group. General treatment approaches may already exist in many treatment services, where staff are trained and sufficiently experienced in these approaches.

5

CHAPTER 5
Conclusions

The observation of Bergmark (2008) that for cannabis use disorders all treatments appear to work still seems apt. Our review of the literature published since 2008 found no conclusive evidence for the superiority of any specific treatment to others. Treatment context and the individual's choice in entering treatment are more important determinants of outcome than treatment modality. The evidence does not show that specialised cannabis use treatment offers cannabis users better outcomes than general substance use treatment — both approaches can work. These findings are reassuring given that the options available for treating cannabis-related problems vary widely across the European Union.

Despite the cooperation of experts in almost all EU countries, the picture of cannabis treatment that emerges is incomplete. For many of the treatment options provided in Europe, especially the general substance use approaches, at best only limited information is available. In contrast, detailed information is available for most of the cannabis-specific programmes covered by this study: all of those are based on therapeutic strategies with the highest evidence for effectiveness — although only four of these programmes have been tested for efficacy.

Questions can be raised about how the available evidence may inform the treatment of cannabis use problems in European countries. Recent research on moderators for treatment effectiveness show that 'culture' may be a relevant factor in determining the failure or success of an intervention (Burrow-Sanchez and Wrona, 2012; Robbins et al., 2008). The evidence base, however, is largely made up of published treatment studies carried out in the United States or Australia. To what extent are published evidence-based CBT programmes transferable to diverse European treatment settings? Are cultural adaptations of these approaches needed? These are research questions that ought to be addressed.

Comparing indicators of treatment needs and treatment provision, the overall situation in Europe looks positive. In most countries, there seems to be an adequate level of treatment provision in relation to needs. However, some of the countries with quite high levels of use, and possibly high levels of need, have reported relatively low levels of treatment provision, which may indicate the existence of unmet treatment needs.

Although the bulk of cannabis problems are treated in outpatient settings, primary cannabis users nevertheless account for almost one in every five of those entering inpatient drug treatment. Whereas about half of the countries offer cannabis-specific outpatient interventions, cannabis-specific residential treatment options are offered only in the Netherlands and Slovakia. Demand for inpatient treatment for cannabis problems is likely to increase in the future, if the overall demand for cannabis treatment continues to rise.

Internet-based interventions present a promising area for further development, as they can reach a much broader group of cannabis users, which may benefit from preventative and treatment interventions.

Closely related to the issue of rising demand for treatment are the legal issues associated with cannabis use and treatment. A substantial proportion of those presenting with cannabis use problems in Europe are referred by the criminal justice system. Changes in criminal justice referral practices and the emphasis on rehabilitation and treatment over punishment and correction will continue to have an impact on who is referred for treatment, who receives treatment and, ultimately, the availability of treatment in Europe. Depending on policy, rates of referrals for treatment could increase or decrease regardless of actual changes in the prevalence of cannabis-related problems. Issues relating to the legal status of cannabis have the potential to affect criminal justice referral policy and practice, and perhaps even the nature of treatment for cannabis problems. For example, decriminalisation of cannabis could lead to treatment programmes setting moderation of cannabis use, rather than complete abstinence, as a treatment goal.

Other directions for the future growth of treatment provision in Europe include the implementation of adolescent-specific drug use treatment in more countries and a growth of multisystemic therapies to treat this population. From the data analysed in this

study, it appears that programmes designed specifically for adolescents exist in only half of the countries that offer cannabis-specific treatment; the data do not reveal how many of the other countries offer treatment programmes targeted at adolescents. As adolescents account for a large proportion of those with problematic cannabis use in the European Union, meeting the needs of this population will depend on more countries offering adolescent-specific treatments, such as family and multisystemic therapy.

The low rates of treatment seeking, retention and continuous abstinence (which is still the primary treatment goal of treatment providers and health insurance companies in many EU countries) associated with cannabis treatment may suggest that there is considerable room for improvement in the interventions.

As well as the development of new therapeutic strategies, a diversification of existing approaches is needed, tailoring treatment to the characteristics and needs of this heterogeneous group of clients (e.g. co-morbidity, gender, referral from the criminal justice system). More effective approaches to early interventions and secondary prevention are needed for children, teenagers and young adults. Moreover, further work is need on improving treatment for specific groups of users, including those with dual diagnoses, prisoners, female and pregnant cannabis abusers and certain groups of elderly cannabis abusers. The function of prolonged cannabis-associated neurocognitive deficits in the treatment process (and their reversibility) needs to be examined, as does the effectiveness of cognitive remediation therapy in this group of patients. Research into new and effective pharmacological approaches to treatment of cannabis dependence is still under way and much needed. Finally, the questions of treatment organisation and differential indication ('which patient benefits most from an intervention, delivered by which type of health professional in which setting?'), and the need for education, training and case-related supervision for treatment providers, need to be addressed.

Glossary

Cannabis: a plant-based substance containing tetrahydrocannabinol (THC), a psychoactive substance. In Europe, it is typically marketed in two forms: herbal cannabis or 'marijuana' and cannabis resin or 'hashish'. Cannabis is a controlled substance throughout the European Union.

Cannabis-specific treatment: a treatment whose target population is limited to individuals with cannabis use disorders.

Cannabis use disorders: this term refers to either cannabis abuse or cannabis dependence. Both of these disorders are characterised by problematic cannabis use (i.e. cannabis use that causes distress, dysfunction or both in the user's life). Cannabis dependence is indicative of a more problematic pattern of use than cannabis abuse. Full descriptions of both of these disorders, including symptoms and associated features, can be found in the *Diagnostic and statistical manual of mental disorders*, 4th edition, text revision (American Psychiatric Association, 2000).

General substance use treatment: a treatment whose target population is individuals with substance use disorders. Thus, treatment is not targeted at users of one specific substance.

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