

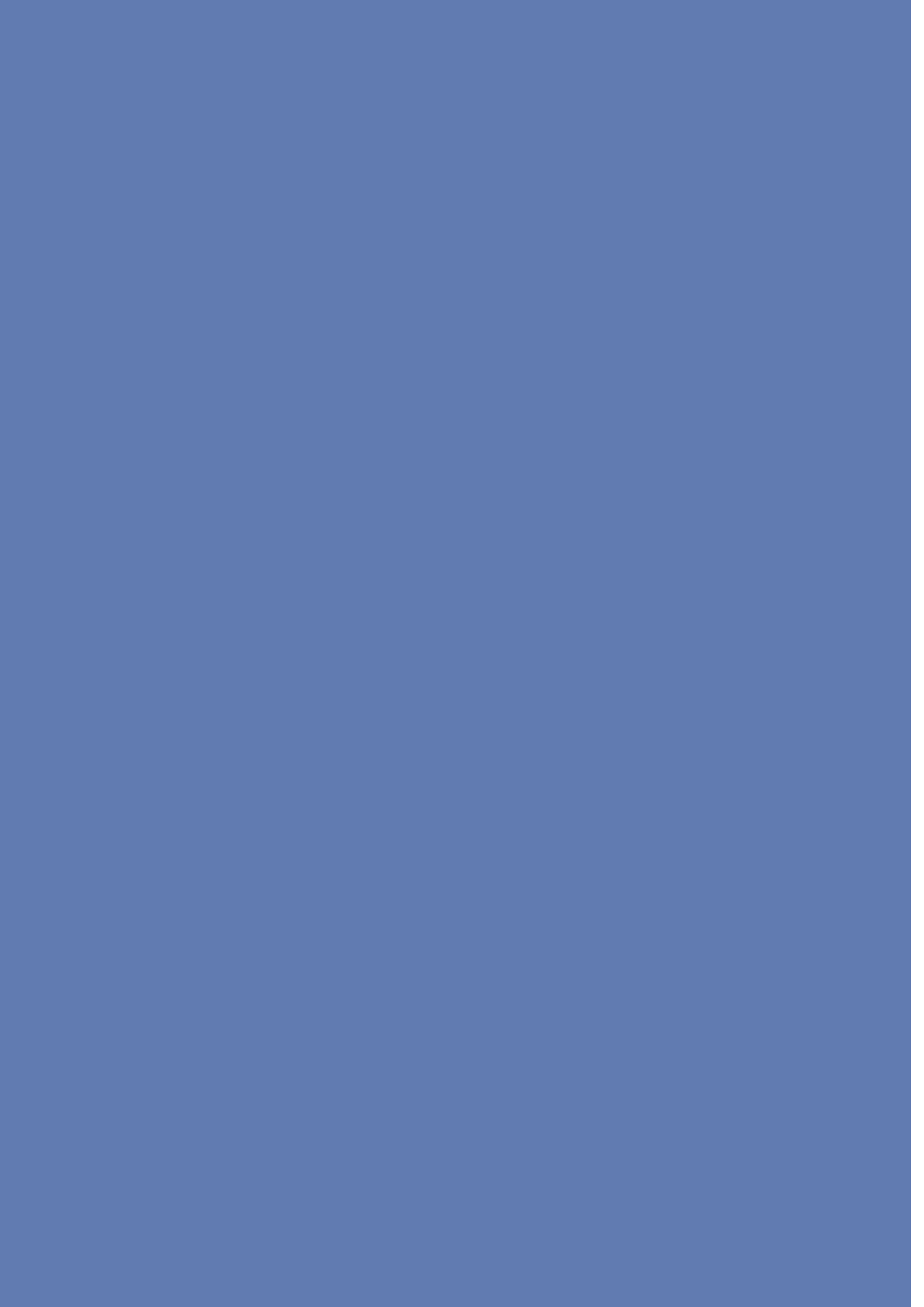


European Monitoring Centre  
for Drugs and Drug Addiction

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# ANNUAL REPORT 2011

THE STATE OF THE DRUGS PROBLEM IN EUROPE





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## Foreword

This year marks the 50th anniversary of the signing at the United Nations of the Single Convention on narcotic drugs, a cornerstone of the international drug control system. In presenting our annual assessment of the state of the European drug problem, it is hard not to be struck by how much this phenomenon has evolved over the last half-century. The complex drug problems we face today in Europe are shaped by many factors and do not exist in either social or geographical isolation. Our report recognises this fact as well as the need to take into account broader cultural developments and global trends, as both can have profound implications for the patterns of drug use and the associated harms that we face. The current economic difficulties experienced by many European countries are a part of the backdrop to our reporting; one that already is making itself felt as budgets for services become harder to find. Advances in information technology have transformed almost all aspects of our modern lives, and it is therefore not surprising that we now see an impact on the drug phenomenon. We see this concretely not only in the way that drugs are marketed and sold, but also in the arrival of new opportunities for prevention and treatment. The more joined-up world we live in is increasingly exploited by organised crime, which sees drugs as just one type of illicit commodity among others. Here again a global perspective is important, as the implications of drug use in Europe do not stop at our borders. Just one example of this is the way that the results of EU efforts to support social development in neighbouring countries are put at risk by changes in drug trafficking routes, which undermine the growth of fragile democratic institutions and feed corrupt practices.

It is important to acknowledge that this report is a collaborative achievement, and we express here our appreciation of all those who have contributed to its production. In particular, this report is only possible because of the hard work and dedication of our partners in the Reitox network of national focal points and the experts across Europe who have contributed to its

analysis. We are also indebted to other European and international agencies for the analysis they have provided. Our job, however, is not simply to collate the information provided by others. Our task is to provide a scientifically sound and independent analysis of the European drug problem. To do this, we need to interpret often-imperfect data. The EMCDDA's approach to analysis is both multi-indicator and cautious. Conclusions derived from one data set must be tested against other information sources; and we make no apologies for our conservatism in the interpretation made where information is poor. That said, the quality, quantity and comparability of information available on the drug situation in Europe continues to grow. This in itself represents a real achievement, and testifies to the value of cooperation and coordinated actions within the European Union.

Finally, this annual report should not be read on its own, but as one part of our comprehensive annual reporting package. The data on which our analysis is based and extensive methodological notes can be found in the accompanying statistical bulletin. In more issue-focused publications linked to this year's report, we also explore in detail: the cost and funding of drug treatment, guidelines on the delivery of care, the cannabis market and overall mortality attributable to drug use. Country-specific information is available in detailed national reports and online country overviews. Our reporting is designed to be accessible to the general reader, strategically focused to serve our policy audience and sufficiently detailed to meet the needs of researchers, students and scientists. Whatever your perspective, we hope that our work will increase your understanding of the European drug situation. This is our mission, but moreover we believe that such understanding is a critical requirement to the development of effective drug policies and responses.

**João Goulão**

Chairman, EMCDDA Management Board

**Wolfgang Götz**

Director, EMCDDA





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- the heads of the Reitox national focal points and their staff;
- the services and experts within each Member State that collected the raw data for this report;
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- the European Parliament, the Council of the European Union — in particular its Horizontal Working Party on Drugs — and the European Commission;
- the European Centre for Disease Prevention and Control (ECDC), the European Medicines Agency (EMA) and Europol;
- the Pompidou Group of the Council of Europe, the United Nations Office on Drugs and Crime, the International Narcotics Control Board, the WHO Regional Office for Europe, Interpol, the World Customs Organisation, the Controlled Substances and Tobacco Directorate of Health Canada, the US Substance Abuse and Mental Health Services Administration, the Health Behaviour in School-aged Children study, the ESPAD project and the Swedish Council for Information on Alcohol and other Drugs (CAN);
- the Translation Centre for the Bodies of the European Union and the Publications Office of the European Union.

### Reitox national focal points

Reitox is the European information network on drugs and drug addiction. The network is comprised of national focal points in the EU Member States, Norway, the candidate countries and at the European Commission. Under the responsibility of their governments, the focal points are the national authorities providing drug information to the EMCDDA.

The contact details of the national focal points may be found on the EMCDDA website.



## Introductory note

This annual report is based on information provided to the EMCDDA by the EU Member States, the candidate countries Croatia and Turkey, and Norway. The statistical data reported here relate to the year 2009 (or the last year available). Graphics and tables in this report may reflect a subset of EU countries; the selection may be made on the basis of those countries from which data are available for the period of interest, or to highlight certain trends.

Analysis of trends is based only on those countries providing sufficient data to describe changes over the period specified. Figures for 2008 may substitute for missing 2009 values in trend analysis of drug market data; for the analysis of other trends, missing data may be interpolated.

Background information and a number of caveats that should be borne in mind when reading the annual report are presented below.

### Drug supply and availability data

Systematic and routine information to describe illicit drug markets and trafficking is still limited. Production estimates of heroin, cocaine and cannabis are obtained from cultivation estimates based on fieldwork (sampling on the ground) and aerial or satellite surveys. These estimates have some important limitations, linked for instance with variations in yield figures or with the difficulty of monitoring crops such as cannabis, which may be grown indoors or are not restricted to certain geographical areas.

Drug seizures are often considered as an indirect indicator of the supply, trafficking routes and availability of drugs. They are a more direct indicator of drug law enforcement activities (e.g. priorities, resources, strategies), while also reflecting both reporting practices and the vulnerability of traffickers. Data on purity or potency and retail prices of illicit drugs may also be analysed in order to understand retail drug markets. Retail prices of drugs reported to the EMCDDA reflect the price to the user. Trends in price are adjusted for inflation at national level. Reports on purity or potency, from most countries, are based on a sample of all drugs seized, and it is generally not possible to relate the reported data to a specific level of the drug market. For purity or potency and retail prices, analyses are based on the reported mean or mode or, in their absence, the median. The availability of price and purity data may be

### Accessing the annual report and its data sources on the Internet

The annual report is available for downloading in 22 languages on the EMCDDA website. The electronic version contains links to all online sources cited in the annual report.

The following resources are available only on the Internet.

The 2011 statistical bulletin presents the source tables on which the statistical analysis in the annual report is based. It also provides further detail on the methodology used and about 100 additional statistical graphs.

The national reports of the Reitox focal points give a detailed description and analysis of the drugs problem in each country.

Country overviews provide a top-level, graphical summary of key aspects of the drug situation for each country.

limited in some countries and there may be questions of reliability and comparability.

The EMCDDA collects national data on drug seizures, purity and retail prices in Europe. Other data on drug supply comes from information systems and analyses of the United Nations Office on Drugs and Crimes (UNODC), complemented by additional information from Europol. Information on drug precursors is obtained from the European Commission, which collects data on seizures of these substances in the EU, and the International Narcotics Board (INCB), which is involved in international initiatives to prevent the diversion of precursor chemicals used in the manufacture of illicit drugs.

The data and estimates presented in this report are the best approximations available, but must be interpreted with caution, as many parts of the world still lack sophisticated information systems related to drug supply.

### Prevalence of drug use as measured by general population surveys

Drug use in the general or school population can be measured through representative surveys, which provide estimates of the proportion of individuals that report having used specific drugs over defined periods of time. Surveys also provide useful contextual information on patterns of use, sociodemographic characteristics of users and perceptions of risks and availability.

The EMCDDA, in close collaboration with national experts, has developed a set of core items for use in adult surveys (the 'European Model Questionnaire', EMQ). This protocol has now been implemented in most EU Member States. However, there are still differences in the methodology used and year of data collection, and this means that small differences, in particular between countries, should be interpreted with caution.

Surveys are expensive to conduct and few European countries collect information each year, although many collect it at intervals of two to four years. In this report, data are presented based on the most recent survey available in each country, which in most cases is between 2006 and 2009. Prevalence data for the United Kingdom refer to England and Wales, unless otherwise stated, although separate data for Scotland and Northern Ireland are also available.

Of the three standard time frames used for reporting survey data, lifetime prevalence (use of a drug at any point in one's life) is the broadest. This measure does not reflect the current drug use situation among adults, but can be helpful to understand patterns of use and incidence. For adults, the EMCDDA's standard age ranges are 15–64 years (all adults) and 15–34 years (young adults). Countries using different upper or lower age limits include: Denmark (16), Germany (18), Hungary (18), Malta (18), Sweden (16) and the United Kingdom (16–59). The focus is on the last year and last month time frames (use during the last 12 months or last 30 days before the survey; for more information, see the EMCDDA website). For school students, lifetime and last year prevalence are often similar, as illicit drug use before age 15 is rare.

The European school survey project on alcohol and other drugs (ESPAD) uses standardised methods and instruments

to measure drug and alcohol use among representative samples of school students who turn 16 during the calendar year. In 2007, data were collected in 35 countries, including 25 EU Member States, Croatia and Norway. The results of the fifth round, conducted in 2011 with participation of 23 out of the 27 Member States together with Croatia and Norway, will be published in 2012.

The 'Health behaviour in school-aged children' (HBSC) survey is a WHO collaborative study which investigates children's health and health behaviour, and has included questions about cannabis use among 15-year-old students since 2001. The third round of this survey with questions about cannabis use was conducted in 2009–10 with the participation of 23 out of the 27 EU Member States together with Croatia and Norway.

### Treatment demand

In reports on treatment demand, 'new clients' refers to those who have entered treatment during the calendar year for the first time in their lives and 'all clients' refers to all those entering treatment during the calendar year. Clients in continuous treatment at the start of the year in question are not included in the data. Where the proportion of treatment demands for a primary drug is given, the denominator is the number of cases for which the primary drug is known.

### Interventions

Information on the availability and provision of various interventions in Europe is generally based on the informed judgment of national experts, collected through structured questionnaires. However, for some indicators, quantitative monitoring data are also available.





## Commentary

# Seeing the big picture: drug use in Europe today

### The drug situation in perspective

In many respects, this year's report is one of contrasts. On the one hand, drug use appears to be relatively stable in Europe. Prevalence levels overall remain high by historical standards, but they are not rising. And in some important areas, such as cannabis use by young people, there are positive signs. On the other hand, there are worrying indications of developments in the synthetic drugs market and, more generally, in the way drug consumers now use a wider set of substances. Polydrug use, including the combination of illicit drugs with alcohol, and sometimes, medicines and non-controlled substances, has become the dominant pattern of drug use in Europe. This reality presents a challenge to both European drug policies and responses. A comprehensive policy framework for addressing psychoactive substance use is still lacking in most Member States, and treatment services are having to adapt their practice to meet the needs of clients whose problems span multiple substances. Similarly, targeting and assessing the impact of measures to reduce drug supply requires consideration to be given to the overall market for psychoactive substances. Without this wider perspective, gains made in relation to one drug may result in a displacement of use to other products. This report contains many examples of how the European illicit drug market is dynamic, innovative and quick to adapt to both opportunities and control measures.

### The European model under review

Europe has, by global standards, a well-developed, mature and arguably relatively effective approach to responding to illicit drug use. At EU level, this is articulated through the current EU drug strategy and its action plan, which represents a unique example of long-term cooperation and knowledge exchange at transnational level. The achievements of the latest EU drug strategy are currently under review. Most Member States now have relatively consistent and well-developed drug strategies that, to a large extent, reflect a common model. Despite these positive developments and an overall increase in service provision for those with drug problems,

pronounced differences still exist between countries, particularly in respect to investments made in demand reduction interventions. Addressing these discrepancies will be an important challenge for future EU policies in this area.

The European model can be characterised as pragmatically balancing drug supply reduction and demand reduction objectives, as well as acknowledging the importance of both human rights and community safety. This approach permits both concerted action and cooperation in law enforcement and border control efforts to limit drug supply, as illustrated by current programmes targeting heroin importation routes from Afghanistan, cocaine trafficking via the Atlantic and West Africa and synthetic drug production. It also permits innovative developments in the area of treatment and harm reduction, one example of which is heroin-assisted treatment, which is of growing interest to a number of European countries and is the subject of a new EMCDDA review.

### Risk of localised HIV epidemics among drug injectors may be growing

Following reductions in the overall spread of HIV in the European Union, the focus on HIV prevention as a primary public health objective for drug policy has become less evident. However, this year's analysis raises the worrying prospect that the potential risk for new localised HIV epidemics may be growing. The economic downturn affecting many European countries may be increasing the vulnerability of communities while, at the same time, limiting the ability of Member States to provide adequate responses. The historical evidence is clear: if the conditions exist, drug-related HIV infections can spread rapidly within vulnerable communities. Furthermore, the gains made in the European Union in reducing the drug-related spread of HIV have not been seen in many of our neighbouring countries, where transmission of the virus, related to both injecting drug use and unsafe sex, continues to be a major public health problem. Recently, political and economic developments have increased migration from these affected regions towards EU Member

States, which can put further pressure on already stretched services.

A particular concern, therefore, is that the conditions now exist in a number of EU Member States, including those that have not previously experienced significant drug-related HIV epidemics, which now make them potentially vulnerable to future problems. Greece, historically a low-prevalence country, reported a local HIV outbreak among injectors in 2011, and the situation in a number of eastern Member States is also worrying, as illustrated by rising rates of infection in Bulgaria. The picture is also looking less positive in some countries that had made progress in addressing drug-related HIV/AIDS epidemics, with gains made in recent years in tackling new infections in Estonia and Lithuania, for example, now looking increasingly fragile, as both these countries report recent increases in infections.

### **Opioids trends: the need to understand market dynamics**

Internationally, and particularly in North America, there has been increasing concern about the availability and misuse of prescription opioids, mainly painkillers. The extent of this phenomenon in Europe is difficult to access from the data currently available. Moreover, direct comparisons between the European Union and other parts of the world are difficult to make, due in large part to the considerable differences that exist in prescribing patterns and regulations. Currently, illicit synthetic opioid use in Europe appears mainly to involve the consumption of substitution drugs diverted from drug treatment. In addition, some countries in northern and central Europe are now reporting the use of fentanyl, which is likely manufactured illicitly outside the European Union. The appearance of this drug is of particular concern and, overall, given the situation elsewhere, a good argument exists for improving our capacity to monitor trends in the misuse of psychoactive products intended to be used only for therapeutic purposes.

As synthetic opioids are used illicitly mainly in place of heroin, information on their use can provide insights into the overall heroin market. Currently, an important question in this area is the extent to which supply reduction measures are now impacting on the availability of heroin on the streets of Europe. The possibility that supply reduction measures are reducing the heroin availability in Europe is supported by indications that some, but not all, EU countries experienced a heroin drought in late 2010, and that this may also have effected some non-EU countries, such as Russia and Switzerland. An alternative explanation put forward to explain this apparent shortage

referred to a recent outbreak of poppy blight in some parts of Afghanistan. However, on closer inspection, this association is probably tenuous, although other events in Afghanistan and some significant successes resulting from cooperation between Turkish and EU police forces may have played a role. Any short-term supply problems, however, have to be viewed in the context of the long-term, relatively stable heroin market in Europe.

Despite the importance of information on heroin availability to understanding the dynamics of the illicit drug market Europe, it is worth noting how difficult it is currently to comment on this issue with authority. More sophisticated attempts are now being made to better achieve this based on analysis of both production and use data. However, for a number of technical reasons, considerable caution is still merited when drawing conclusions on this sensitive topic. Good indicators of market availability in Europe are largely lacking, for example. Estimates of opium production in Afghanistan are frequently taken at face value, despite the fact that such calculations are in many ways methodologically challenging. Also, suggestions of opium production in other countries in Asia are rarely considered. Moreover, models of heroin flows often include the existence of 'stocks' of stored opium or heroin — although there is limited empirical evidence to support this assumption. Elucidating the relationship between opium production and heroin availability is further complicated by the existence of different trafficking routes into, and sub-markets within, the European Union, and by the significant time lag that is believed to exist between the harvest of opium in Afghanistan and its appearance as heroin on the streets of Europe.

### **Are overdose deaths just the tip of the iceberg?**

The typical fatal overdose victim in Europe is a man in his mid to late thirties, with a long history of opioid problems. Attendance in drug treatment, particularly substitution treatment, is known to reduce the risk of overdose. However, despite a dramatic increase in treatment availability over the years, the number of users dying of drug overdose in Europe has remained stable. Reducing overdose fatalities therefore represents a major challenge for drug services across Europe. Some innovative programmes are currently under evaluation and development in this area, often targeting those events that are known to be particularly risky for opioid users, such as leaving prison or dropping out of treatment. While this work is important, it will only address part of the problem. Studies suggest that overdose deaths may represent somewhere between a third and two thirds of the overall



mortality among problem drug users. Other major causes of death among drug users include AIDS, suicide and trauma. The implications of this finding are discussed in detail in a publication accompanying this report, and strongly point to the high level of excess mortality in this population and the role that services can play in reducing the human costs of long-term drug problems.

### Has the cocaine bubble burst?

Over the last decade, cocaine has established itself as the most commonly used stimulant drug in Europe, even though high levels of use are only found in a restricted set of countries. Commentators have noted that part of the appeal of this substance is its image, with cocaine use often portrayed as being part of an affluent and fashionable lifestyle. The reality of regular cocaine use is different, however. The positive image may be increasingly challenged by the growing recognition of cocaine-related problems, which are manifest in increased hospital emergencies, deaths and treatment demands related to this drug. The financial cost associated with regular cocaine consumption may make it a less attractive option in countries in which austerity is now the order of the day. New data raise the question as to whether the popularity of this drug has now peaked. Recent surveys show some decline in use in the countries with the highest prevalence levels, although the picture elsewhere is less clear. Supply data is also equivocal. The amount of cocaine seized has fallen considerably since 2006, and overall both the price and the purity of the drug have also decreased. However, in contrast to volume, the number of seizures has continued to rise, and there is evidence that traffickers are continuing to adapt their practices in response to interdiction efforts; and as they do so, there is the risk of a diffusion in use into new areas.

### MDMA on the rebound

In recent years, the European ecstasy market went through a period in which the availability of tablets containing MDMA became increasingly rare. Commonly, 'ecstasy' tablets sold on the illicit market contained other drugs, often a piperazine, with the result that some of those buying what they believed to be an illicit drug were in fact buying a non-controlled substance. The scarcity of MDMA in ecstasy tablets appears to have been related to a shortage of the main precursor, PMK, possibly reflecting the success of interdiction efforts. However, the most recent data point to increasing MDMA availability, with some reports noting the existence of very high dosage tablets and high purity powders.

Current MDMA production methods now appear to be based on either safrole or, increasingly, on imported chemicals, such as PMK-glycidate and alpha-phenylacetoacetonitrile, that are structurally similar,

## At a glance — estimates of drug use in Europe

The estimates presented here relate to the adult population (15–64 years old) and are based on the most recent data available (surveys conducted between 2001 and 2009/10, mainly 2004–08). For the complete set of data and information on the methodology see the accompanying statistical bulletin.

### Cannabis

Lifetime prevalence: about 78 million (23.2 % of European adults)

Last year use: about 22.5 million European adults (6.7 %) or one in three lifetime users

Last month use: about 12 million (3.6 %)

Country variation in last year use: overall range 0.4 % to 14.3 %

### Cocaine

Lifetime prevalence: about 14.5 million (4.3 % of European adults)

Last year use: about 4 million European adults (1.2 %) or one in three lifetime users

Last month use: about 1.5 million (0.5 %)

Country variation in last year use: overall range 0.0 % to 2.7 %

### Ecstasy

Lifetime prevalence: about 11 million (3.2 % of European adults)

Last year use: about 2.5 million (0.7 %) or a fifth of lifetime users

Country variation in last year use: overall range 0.1 % to 1.6 %

### Amphetamines

Lifetime prevalence: about 12.5 million (3.8 % of European adults)

Last year use: 1.5–2 million (0.5 %) or up to a sixth of lifetime users

Country variation in last year use: overall range 0.0 % to 1.1 %

### Opioids

Problem opioid users: estimated at between 1.3 and 1.4 million Europeans

About 700 000 opioid users received substitution treatment in 2009

Principal drug in more than 50 % of all drug treatment requests

Drug-induced deaths: about 7 600, with opioids being found in around three quarters

though not identical, to the controlled precursors hitherto used. A parallel exists here with developments in the 'legal highs' area, where non-controlled products replace controlled ones. These chemicals are selected with two aims in mind: the new substance should not be subject to current controls, and it should be easily converted into a precursor necessary for MDMA synthesis. This illustrates again the considerable adaptability shown by synthetic drug producers. A related phenomenon has been observed in the amphetamine market, where precursors have been chemically 'masked' to avoid existing border and sales control mechanisms. As producers become more technically sophisticated and seek out new ways to circumvent interdiction efforts and regulations, the possibility to modify and reconvert substances represents another challenge to current drug control approaches.

### **New psychoactive substances: getting our response right**

The rapid emergence of many new non-controlled psychoactive substances represents a growing challenge for current models of drug control.

In 2010, a record 41 new substances were reported to the European early-warning mechanism, and preliminary data for 2011 show no sign of decline. This reflects both the continuing introduction of new substances and products into the marketplace and the increasing use of proactive measures to identify new substances. The Internet is one of the main marketplaces for these substances, and preliminary results from the latest EMCDDA online survey (July 2011) show that the number of online shops selling psychoactive products continues to increase. Sales practices in this area also appear to have become more sophisticated, with more evidence of measures taken to restrict access and protect the identity of buyers and sellers. Moreover, reports have come to light of illicit drug sales being conducted using restricted websites. It is unclear to what extent this kind of development will represent a significant future threat, but given the speed at which changes have occurred in this area, there is a need to remain vigilant.

### **Improving our capacity for detecting new drugs**

The legal mechanism that supports the European early-warning system is currently under review. The European Commission has conducted an assessment noting both the strengths of the existing system and the need to increase Europe's capacity to respond to the pace of developments in this area. Although Europe has been at the forefront of detecting new psychoactive substances, the global dimensions of this problem were made clear

in discussions at a technical symposium hosted by the EMCDDA in 2011. International experts confirmed that products containing new psychoactive substances are now available in many parts of the world, including the Americas, the Middle East, Oceania and parts of Asia, and that identifying an ever-increasing range of substances in a rapidly changing market is a common problem. The expert consensus emerging from this meeting was that the challenges presented by new drugs will require more proactive monitoring of the market and sharing of forensic information as well as improved identification of the health problems arising from the use of these substances.

### **Predicting the future: new products and interplay between markets**

Most new psychoactive substances reported to the early-warning system have been either stimulants or synthetic cannabinoids, largely reflecting the market for illicit drugs in Europe. It is likely that new substances of these types will continue to enter the market. In addition, producers appear to be exploring other substances with a psychoactive action that may be attractive to consumers. A large and accessible research literature exists that can be exploited for this purpose, and there is concern that the results of pharmaceutical research may be harnessed to provide more of the new psychoactive substances appearing in the future.

Much of the policy focus in this area has been on the legal status of new substances; however, it is also important to see them in the context of the overall drug market. As an example, users report that as well as Internet sales, mephedrone (see Chapter 8) was also sold through the same illicit supply networks as used for drugs such as ecstasy and cocaine. In addition, and as mentioned earlier, non-controlled psychoactive substances may be tableted as ecstasy and sold on the illicit market. Conversely, the controlled drug PMMA has recently been identified in some products advertised as 'legal highs'. Taken as a whole, developments in this area are worrying as they are suggestive of a growing interplay between the 'legal highs' and illicit drug markets.

### **Cannabis: policy dilemmas**

Cannabis remains Europe's most popular illicit drug, but it is also the one on which public attitudes are most divergent. This is reflected in the recent Eurobarometer study of youth attitudes to drug use, which found that views on cannabis prohibition were more mixed than for other drugs. Globally, no clear direction in the development of cannabis policies is evident. Interesting

examples of policy development here include the USA and the Netherlands. In the USA, there has been a move towards liberalising the availability of herbal cannabis for medical purposes in some states. In the Netherlands, policymakers now appear to be taking an increasingly robust stance against domestic cannabis production and the operational rules applied to ‘coffee shop’ sales.

The extent to which policy changes influence cannabis use is a much-debated question. In data presented in this report, no direct association can be seen between measures of the recent use of this drug and changes made to either increase or decrease penalties for use, suggesting that more complex processes are at work. A general observation may be made that, over the last decade, European cannabis policies have tended to direct law enforcement efforts towards offences connected with trafficking and supply rather than the use of the drug. One reason for this is to avoid the possible negative consequences of bringing large numbers of young people into contact with the criminal justice system, especially if their cannabis use is experimental. However, figures show that the number of offences related to cannabis use in Europe continues to rise, against a background of stable or even declining prevalence. This highlights a possible disconnect between policy objectives and practice. Explaining this observation is difficult, but one possibility is that the data reflect a net-widening effect, in which the adoption of more administrative sanctions for use results in an increased likelihood that they will be applied in practice.

### **Domestic cannabis production: a growing problem**

Europe remains the biggest global market for cannabis resin. Historically, Morocco has been the main producer country of resin consumed in Europe. Recent reports, however, suggest that cannabis resin is increasingly imported from other countries, including Afghanistan and Lebanon. This is supported by recent UNODC field surveys, which reported large-scale cannabis resin production in Afghanistan. Herbal cannabis imported into the European Union comes mainly from neighbouring

countries in the Balkan region, and to a lesser extent from some African and Asian countries. Most EU Member States now report domestic cultivation of cannabis, a phenomenon that appears to be increasing. This is mirrored in the existence of ‘grow shops’, which specialise in equipment for cannabis cultivation. Domestic cultivation can be small scale, but it may also consist of major production sites run by organised crime gangs. A knock-on effect of this is that some countries are now reporting increases in violence and other crimes associated with large production sites. Developments in the European cannabis market are reviewed in detail in a forthcoming EMCDDA ‘Insight’.

### **Guidelines, standards and the sharing of effective practices**

Given the complex and fast-moving nature of contemporary drug problems, it is important to ensure that research findings and the knowledge gained from successful service development are shared as widely as possible. To this end, a number of European initiatives have been launched to identify and help promote the sharing of good practice. In 2011, in collaboration with the EMCDDA, the European Commission held a conference on identifying minimum quality standards and benchmarks for demand reduction programmes. The EMCDDA has also been expanding its web-based resources for disseminating evidence-based practices. It should be noted though, that the availability of evidence does not automatically ensure that it will be translated into practice. An example of this can be found in the area of drug prevention, where despite an increasingly robust evidence base for their effectiveness, selected and environmental strategies are often among the least commonly found interventions. However, a starting point for the adoption of good practices must be an understanding of what approaches have been shown to deliver benefit. And, as information to guide policy choices accumulates and becomes more readily available, investing in approaches not supported by good evidence will become harder to justify.

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# Chapter 1

## Policies and laws

### Introduction

With the current EU drug strategy coming to an end in 2012, this chapter takes a look at the development of the EU drug policy approach over the past 20 years. Strategies recently adopted by some non-EU countries are examined for signs of convergence with or differences to the European approach. Within Europe, the most recently adopted national drug strategies are also briefly reviewed.

An overview of studies on public expenditure by EU Member States, presented here, highlights the different ways in which the topic has been approached, and the need for improved and harmonised data collection in this area. Also reviewed in this chapter are the changes in penalties for drug possession that have taken place in European countries in the last 10 years, and the latest developments in drug-related research.

### EU and international policy developments

#### Road to the new EU drug policy initiatives

The new drug policy framework being developed by the European Commission will be one of the first drug policy documents adopted under the Lisbon Treaty (see EMCDDA, 2010a). Preparatory work includes a final external evaluation of the 2005–12 EU drug strategy. This evaluation will draw on interviews with stakeholders from the Member States, third countries and international organisations and on the analysis of policy documents and trend reports. The European Commission’s Civil Society

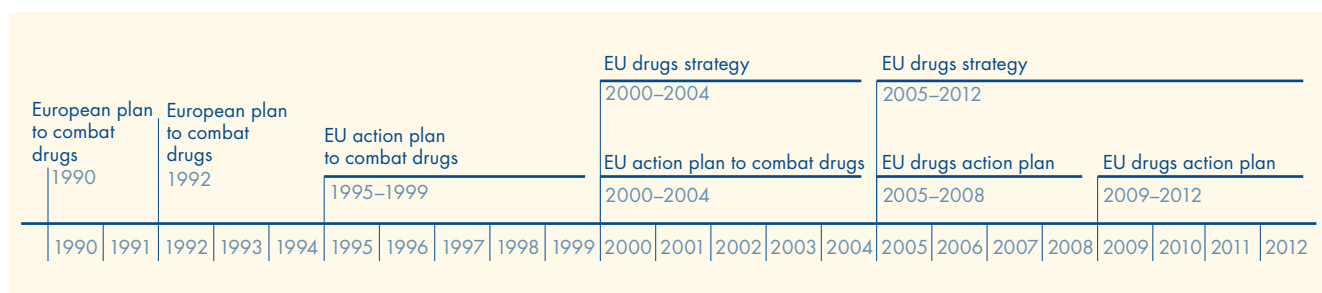
Forum on Drugs will contribute with a position paper. In addition, members from different political groups of the European Parliament have organised meetings and hearings to discuss current and future EU drug policy. These various discussions and contributions, together with the evaluation, will contribute to the development of a comprehensive EU drugs policy for the period after 2012.

#### Two decades of EU drug policy

Since the early 1990s, the European Union has adopted eight drug strategies or action plans (see Figure 1), and the shift in content of successive documents reflects the development of the European approach to drugs. Actions aimed at reducing both the supply of drugs and the demand for drugs were included in the first two European drug plans. The concept of an integrated approach, linking both of these elements, first appeared in the 1995–99 plan. The strategy adopted in 2000 defined the EU approach as both integrated and balanced, attributing similar policy weights to demand reduction and supply reduction interventions. This shift in approach is reflected in the titles of these EU policy documents, where ‘plans to combat drugs’ were succeeded by the more neutrally denoted ‘drugs strategies’ and ‘action plans’. In terms of content, one of the most obvious changes during the last two decades has been the introduction of harm-reduction objectives in the demand reduction area of EU drug policy documents.

Policy assessment and evaluation were not mentioned in the first two European plans, as the priority in the early

Figure 1: Timeline of European drug policy documents



1990s was to create a reliable European information system on drugs. Implementation assessment was introduced in the 1995 plan, but it was not until the 2000–04 drug strategy that evaluation was consolidated as an integral part of the EU approach to drugs. Since then, all EU drug strategies and action plans have been evaluated, and the results used to guide subsequent policy documents. The new EU drug policy framework will follow this principle and, for the first time, will be based on an external evaluation of the previous strategy.

### International perspective

Outside the European Union, a number of national or regional strategies were recently published, notably by Australia, Russia, the USA and the Organisation of American States (OAS) (1). Examining the content of these policy documents reveals the extent to which characteristics of the EU approach are shared with other countries.

The 2010 US drug control strategy is presented as a new direction in drug policy, where drug use is seen mainly as a public health issue, and where demand for drugs is recognised as the prime cause of the drugs problem in the country. The strategy emphasises prevention, treatment and recovery from addiction, and calls for the integration of addiction treatment into mainstream medicine, as with other chronic disorders. The US strategy is echoed in the OAS's Hemispheric Drug Strategy, where drug addiction is described as a chronic relapsing disease that should be treated as such. The first Russian drug strategy (2010–20) builds on a recognition of the scale of the drugs problem, characterised by the growth in illicit drug use and its contribution to the spread of infectious diseases. The

OAS, Russian and US strategies emphasise the importance of a balanced approach. The Australian drug strategy (2010–15) has the broadest scope of the four policy documents, covering all psychoactive substances capable of causing addiction and health problems: alcohol, tobacco and illicit and other drugs. Minimising harm is the overarching approach of this strategy.

An evidence-based approach to demand reduction, coupled with outcome evaluation, characterises the OAS, Australian and US strategies. Countries adopting the Hemispheric Drug Strategy are committed to subjecting their national policies and interventions to periodic, independent evaluation, the results of which will guide the allocation of resources. The 106 items of the US strategy are to be reviewed and updated annually, in order to fulfil the aims of the strategy, which include a 15 % reduction in the prevalence of drug use among 12- to 17-year-olds and a 10 % reduction among young adults by 2015. The Australian strategy's performance will be assessed according to three criteria: disruption of illegal drug supply, drug use and associated harm. The Russian strategy gives emphasis to better monitoring and data collection tools, but explicitly rejects opioid substitution treatment, an intervention that is seen as a key evidence-based approach in the EU strategy. It is also notable that mass media campaigns are components of both the Russian and US strategies, despite little evidence of their effectiveness.

Overall, there appears to be some convergence in drug strategies internationally. While the first Russian drug strategy, though recognising the problem and emphasising monitoring, adopts an ideological stance not shared by the other strategies, both the USA and OAS appear to be

**Table 1: Recently adopted national drug policy documents**

Country	Name of policy document	Time span	Main focus	Notes
Czech Republic	Strategy	2010–18	Illicit drugs	Complemented by a 2010–12 action plan
Denmark	Action plan	2010 on	Illicit drugs	
Italy	Action plan	2010–13	Illicit drugs	Complemented by a projects plan 2010
Latvia	Programme	2011–17	Illicit drugs	
Lithuania	Programme	2010–16	Illicit drugs	Complemented by annual action plans
Luxembourg	Strategy and action plan	2010–14	Illicit drugs	The strategy also considers alcohol, tobacco, medicines and addictive behaviours
Poland	Programme	2011–16	Illicit drugs	
Portugal	Action plan	2009–12	Illicit drugs	Second action plan under the 2005–12 strategic plan
Romania	Action plan	2010–12	Illicit drugs	Second action plan under the 2005–12 strategy
United Kingdom	Strategy	2010 on	Illicit drugs	Replaces the 2008–18 strategy adopted by the previous government
Turkey	Action plan	2010–12	Illicit drugs, alcohol, tobacco	Second action plan under the 2006–12 national strategy

Sources: Reitox national focal points.

(1) The OAS is a regional organisation bringing together all 35 independent states of the Americas, where it is the main forum for intergovernmental cooperation.

drawing closer to the EU model. The Australian approach, while encompassing many of the elements of EU policy, differs in the broad scope of substances it addresses.

## National drug strategies

A central element of Europe's drug policy model is the adoption of national drug strategies and action plans, and these now exist in almost all of the 30 countries monitored by the EMCDDA. In most of these countries, the latest drug policy document is less than three years old. These documents describe the drug situation and the government's goals and objectives in this area, specifying actions and the parties that are responsible for their implementation. Criteria to measure the success of each action are often presented and, increasingly, a final evaluation of the strategy or action plan will be carried out.

### New developments

Eleven countries have recently adopted new national drug strategies or action plans (Table 1), with time spans ranging from three to nine years. Of these, three (Portugal, Romania, Turkey) have their drug policy documents in synchrony with the current EU drug strategy (2005–12). Although alcohol and tobacco are sometimes mentioned, the main focus of most drug policy documents is on illicit drugs, and many countries have separate national alcohol and tobacco action plans. One of the few exceptions, a combined drugs and alcohol strategy to be adopted in Ireland, has been delayed due to parliamentary elections in early 2011.

A delay in the adoption of a new drug policy document, following a change of government, was also reported by the Netherlands <sup>(?)</sup>, while the newly elected Hungarian government mentioned its intention to replace the drugs strategy that was adopted the year before by its predecessor. Four other countries (Germany, Estonia, Slovenia, Sweden) reported that they were in the process of developing and adopting new drug policy documents in 2011, while Norway extended its action plan (2007–10) to 2012.

## Public expenditure

In Europe, public expenditure on all aspects of the drug phenomenon has been under scrutiny during the last decade (EMCDDA, 2008c). This section explores the available comprehensive estimates of national drug-related public expenditure in Europe. It looks for insights into two key questions on public expenditure. First, what proportion of gross domestic product (GDP) do countries spend on the drug problem and second, how are these

## Drug policy developments

Rebalancing drug policy objectives towards promoting recovery has been a recent development in the United Kingdom, with successive drug policy documents focusing on treatment outcomes and the social reintegration of drug users <sup>(1)</sup>, and on making the goal of recovery a key element of drug policy <sup>(?)</sup>. Earlier policies were primarily aimed at increasing the number of people accessing drug treatment, notably opioid substitution treatment, whereas some of the new ones have a stronger focus on service quality. How these new directions in policy will translate into changes in drug treatment and social reintegration services remains to be seen. And there is the question of whether it points to deeper changes in drug policy in the future. A review of the evidence base around recovery found that several decisive factors for achieving a drug-free life and becoming an active member of the community lie outside the scope of drug policy, and are related to individual characteristics and broader social policies (Best et al., 2010). Changing these, especially if it requires additional financial resources, may be difficult for governments at a time when they are cutting public expenditure.

Portugal's current drug policy is more than 10 years old, but it has gained increased attention in recent years, first from drug policy analysts and advocacy groups, but now also from governments in Europe and elsewhere. Central to the Portuguese policy is the decriminalisation of drug use and the role of 'commissions for dissuasion of drug abuse' (CDT), managed under the Ministry of Health (EMCDDA, 2011b). These bodies assess the situation of drug users and have the power to provide support or impose sanctions. While no other country has yet adopted this model, a committee set up by the Norwegian government has recently suggested the development of similar interdisciplinary tribunals in that country.

<sup>(1)</sup> 2008 UK strategy.

<sup>(?)</sup> 2008 Scottish and 2010 UK strategies.

funds divided among the different fields of activity, particularly the division between supply reduction and demand reduction interventions.

The amount and quality of information available on drug-related public expenditure varies greatly between countries. The available studies cover different years, use a range of methodologies and refer to countries with different public sector structures. Differences in methods of accounting drug-related expenditures greatly limit the scope for national comparisons. Some of the funds allocated by government for expenditure on tasks related to drugs are identified as such in national budgets ('labelled'). Frequently, however, the bulk of drug-related expenditure is not identified ('unlabelled'), and must be estimated by modelling approaches.

<sup>(?)</sup> A new strategy was presented to parliament in 2011 in the format of a 'drug letter'.

In the last decade, at least 12 countries have attempted to arrive at comprehensive estimates of drug-related expenditure (Table 2). These countries reported public expenditure on the drug problem ranging from 0.04 % of GDP to 0.48 % of GDP.

As seen in other areas of social policy, as countries become wealthier, the proportion of GDP spent by government on activities related to drugs increases (OECD, 2006; Prieto, 2010). In Belgium, the Czech Republic, Germany, Luxembourg, the Netherlands, Sweden and the United Kingdom, it is estimated that at least 0.1 % of GDP was devoted to drug-related problems; in France, Latvia (labelled expenditure only), Hungary and Slovakia, it accounted for between 0.1 % and 0.04 % of GDP. Taking into account that different methods were used and that the degree of completeness varies, these values do not differ greatly from estimations for the USA (0.42 %) (Reuter, 2006) and Australia (0.41 % of GDP) (Moore, 2008).

Public expenditure studies also attempt to estimate the allocation of funds for different types of drug-related issues. However, caution is required in making comparisons between countries, as they may not apply the same classification of expenditure. Among the 12 countries presenting complete estimations, supply reduction activities — ‘law enforcement’ or ‘public order and safety’ — accounted for between 48 % and 92 % of the total. Expenditure for justice, police, customs and prisons were the items most frequently reported.

The way countries categorise demand reduction expenditures varies markedly in Europe. Expenditure on

### Recession: the impact on interventions in the drugs area

The economic recession that hit Europe in 2008 has severely affected EU Member States. Its impact on public accounts may be long-lived, and requires policies aimed at reducing government deficits and debt in most countries. The European Commission (2011) predicts that, in 2011, for the first time in a decade, public expenditure (excluding interest payments) in the European Union will fall in real terms.

Data on budgetary allocations to interventions related to drugs were collected by the Reitox national focal points in order to have a first insight into the impact of austerity measures on drug policy. Of the 19 countries providing information, 15 reported reductions in funds available for some areas of drug policy since 2008. The size of the cuts varied considerably, however, with reported reductions ranging from 2 % to 44 %, depending on country and policy area.

Fiscal austerity appears to have affected different sectors of drug policy differently. For labelled expenditure, the areas most severely affected were research, prevention, social reintegration and organisational activities. Most countries appear to have avoided cutting their budgets for treatment, though some report reorganisation of services or cuts in provision. Reductions in funding for drug-related programmes in prisons or law enforcement activities were also reported. Information about unlabelled expenditure, which accounts for the lion's share of drug-related public expenditure, is unavailable for most of the countries. Consequently, austerity measures affecting sectors such as law enforcement, justice or some areas of treatment provision might be under-reported.

**Table 2: Estimates of drug-related public expenditure**

Country	Year	Allocation of drug-related public expenditure (%)		Proportion of GDP (%) <sup>(1)</sup>	Level of government
		Demand reduction	Supply reduction		
Belgium	2004	43.4	56.2	0.10	Federal, regional, provincial and municipal authorities
Czech Republic <sup>(2)</sup>	2006	8.2	91.8	0.20	Central, regional and local government and social security
France	2005	51.6	48.4	0.07	Central government
Germany	2006	35.0	65.0	0.22–0.26	Federal, state, local authorities and social insurance
Hungary	2007	25.0	75.0	0.04	Central government
Latvia <sup>(2)</sup>	2008	40.9	51.3	0.04	Central government and one local programme
Luxembourg	2009	43.0	57.0	0.10	Central government and social security
Netherlands	2003	25.0	75.0	0.46	Central and local government
Slovakia	2006	30.0	70.0	0.05	Central government and social security
Finland	2008	45.0	55.0	0.07	Central and local government
Sweden	2002	25.0	75.0	0.28	Unidentified public sectors (only the agencies involved)
United Kingdom	2005/06	41.3	58.7	0.48	Central and regional government

<sup>(1)</sup> Due to differences between countries in methodology, data quality and completeness, values for drug-related public expenditure as a proportion of gross domestic product (GDP) are indicative only, and should not be taken to represent the full extent of national public expenditure on the drug problem.

<sup>(2)</sup> Labelled expenditure only.

NB: See Table PPP-10 in the 2011 statistical bulletin for a full list of sources.

Sources: Reitox national reports, Eurostat.



treatment or health accounts for about 40 % or more of the total reported for Belgium, France and Luxembourg. Spending on harm reduction was identified by five countries, ranging from 0.1 % to 28.8 % of estimated drug-related expenditure. Seven countries provided data on expenditure related to prevention, with estimates ranging from 1 % to 12 % of the total expenditure on drugs issues.

A number of European countries are already using data on public expenditure as a tool for planning and evaluating the implementation of drug policies, while others, such as Portugal and Slovakia, report plans to do so. Developing a clear and complete picture of national drug-related public expenditure in Europe, however, remains a challenge. Currently, there is no consensus on how to estimate specific types of drug-related expenditures. In order to improve accuracy and comparability across countries, a comprehensive mapping of the public bodies funding drug policy will be necessary, as well as the harmonisation of concepts and definitions.

## National legislation

### Personal possession of drugs: 10 years of penalty changes in Europe

In the last 10 years, 15 European countries have made changes to their penalties for possession of small amounts of drugs. The 1988 UN Convention against illicit traffic of drugs, Article 3(2), requires each state to establish possession of drugs for personal use as a criminal offence, subject to its constitutional principles and the basic concepts of its legal system. In Europe, this has been implemented in different ways. Possession for personal use of any illicit drug may be a criminal offence, a non-criminal offence, or non-criminal sanctions may apply to cannabis, while possession of other drugs remains a criminal offence.

Three broad types of penalty changes can be identified in the last 10 years: those changing the legal status of the offence (criminal or non-criminal); those changing categories of drugs, when the category determines the penalty; and those changing the size of the maximum penalty available. Most of the countries that have altered their penalties for possession have used a combination of these types of change, complicating any concise analysis.

Changing the legal status of the offence is perhaps the most significant step for legislators, and this has happened in Portugal, Luxembourg and Belgium. In Portugal, the law from July 2001 decriminalised possession of all drugs for personal use. This reduced the maximum punishment for

possession of small amounts of drugs from three months' imprisonment to an administrative fine given by the new 'commissions for dissuasion of drug abuse', which prioritised health solutions over punitive sanctions<sup>(3)</sup>. In Luxembourg, in May 2001, personal possession of cannabis was newly established as a separate offence with a lesser punishment, incurring only a fine for the first offence, without aggravating circumstances. At the same time, maximum penalties for personal possession of all drugs other than cannabis were reduced from three years in prison to six months. A similar change took place in May 2003 in Belgium. The possession of a small amount of cannabis for personal use, without aggravating circumstances, was previously punishable by up to five years in prison, but it now attracts the lowest prosecution priority, leading to a police fine.

Moves towards 'decriminalisation' were also made in Estonia and Slovenia. In Estonia, before September 2002, a second administrative offence of drug possession within 12 months of the first was a criminal offence punishable by up to three years' imprisonment. The new Penal Code deleted this, so a second offence is, like the first, considered a misdemeanour punishable by fine or administrative detention for up to 30 days. In Slovenia, the Misdemeanours Act from January 2005 removed prison penalties for all misdemeanours, one of which is possession of drugs for personal use. In this way, the maximum penalty was reduced from 30 days in prison, or five days for a small quantity, to a fine.

Without changing the legal status of the offence, six countries made changes to the way different drugs are categorised, with the category determining the penalty. In Romania, the law of 2004 divided substances into high-risk and risk categories. The penalty for high-risk substances continued to be two to five years' imprisonment, while substances in the risk category are now subject to a lower penalty of six months' to two years' imprisonment. In Bulgaria, the 2006 Criminal Code introduced specific penalties for offences not related to distribution, namely one to six years' imprisonment for high-risk drugs (down from 10 to 15 years) and up to five years for risk drugs (down from three to six years); it also specified that minor offences could be punished with a fine. In the Czech Republic, from January 2010 the new Penal Code applied a lower maximum punishment for cannabis (one year in prison) than for other drugs (unchanged at two years) for personal possession of a quantity 'greater than small'. Conversely, at the end of 2006, Italy removed the sentencing distinctions between illicit drugs, while increasing the maximum duration of administrative sanctions, such as withdrawal of driving

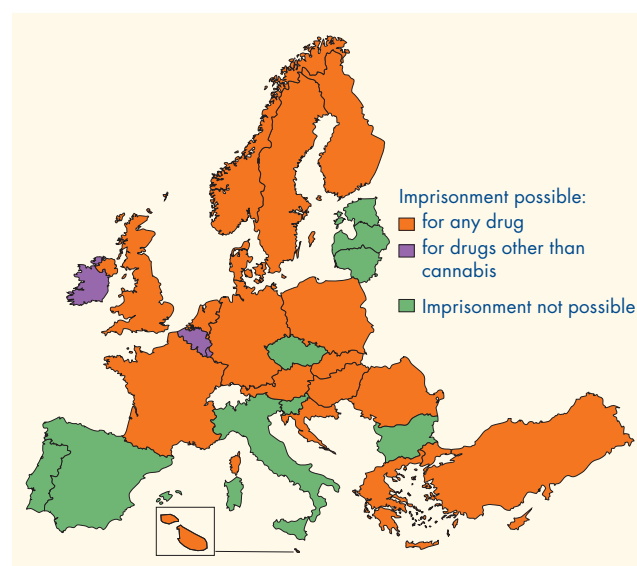
<sup>(3)</sup> A detailed analysis of the effects of decriminalisation in Portugal was published recently (Hughes and Stevens, 2010).

licence, to one year for any illicit drug. In the United Kingdom, cannabis was reclassified from Class B to Class C in 2004, lowering maximum penalties for personal possession from five to two years' imprisonment, and national police guidelines were issued not to arrest but to give an informal warning, if there were no aggravating circumstances. In January 2009, cannabis was reclassified from Class C to Class B, raising maximum penalties to five years' imprisonment once again. Revised national police guidelines continued to advise an informal warning for a first offence.

A third group of countries changed the penalties for personal possession without addressing legal status or relative harm. Penalties for personal possession for all drugs were simply changed in four countries, and effectively also in Slovakia by redefining the offence. In Finland, in 2001, an amendment to the Penal Code reduced the maximum penalty for a minor narcotics offence from two years in prison to six months, allowing the prosecutor to deal with the majority of cases with a fine. In Greece, in 2003, the maximum penalty for use or possession of small amounts for own use by a non-dependent user was reduced from five years to one year in prison. This offence will not be entered in the criminal record if there is no reoffending during a five-year period. In Denmark, a guideline for prosecutors in May 2004 set out that the normal response for minor drug possession offences should be a fine, not a warning. In 2007, this was established in the law. In France, a 2007 law widened the range of possible judicial options to include a 'drug awareness course' aimed at occasional drug users and juveniles. The cost of the course is to be paid by the offender. In 2005, a change of the Slovak Criminal Code widened the definition of 'possession for personal use' from one to three doses of any illicit substance, while leaving the maximum punishment unchanged. Two new penalties can also be given to those offenders: monitored home imprisonment for up to one year, or community service of 40 to 300 hours. The change also introduced a new offence of 'possession of a larger amount for personal use', defined as up to 10 doses, punishable by up to five years in prison. Previously, this would have been a trafficking offence punishable by two to eight years in prison.

Motives for change are complex and vary between countries. For example, laws have been changed to access addicts (Portugal), to simplify punishment (Belgium, Finland, United Kingdom in 2004), to harmonise misdemeanour penalties (Estonia, Slovenia) and to indicate levels of harm (Bulgaria, Czech Republic, France, Italy, Luxembourg, Romania, United Kingdom in 2009).

**Figure 2:** Penalties in laws: possibility of imprisonment for possession of drugs for personal use (minor offences)



NB: For more information, see the European legal database on drugs (ELDD). Sources: Reitox national focal points and ELDD.

In terms of an overall European trend in penalties for personal possession of drugs, it could be said that penalties were reduced in the first half of the decade, but increased in the second half. Yet it is more significant that, although the majority of countries have retained the possibility of prison as a sanction (Figure 2), no country has introduced criminal penalties or increased prison sentences over the 10-year period. In this respect, there are signs of convergence in Europe towards lower penalties for personal possession of drugs.

## Drug-related research

### Strengthening EU research capacity

Strengthening research capacity in the drugs field has been on the European agenda in recent years. In 2010, the first Council annual exchange on drug-related research took place, with the European Commission presenting an overview of Commission-funded research projects, and highlighting the added value of such initiatives. The EMCDDA presented an overview of mechanisms and topics of drug-related research in Member States and its Scientific Committee's recommendations on future research priorities (4).

Europe's main vehicle for funding research is FP7, the seventh framework programme for research and technological development, which will run until 2013. Under FP7's 'Cooperation' programme, there are calls

(4) See the box 'Priorities for future research: EMCDDA Scientific Committee recommendations'.

for proposals that are of particular relevance to drug research <sup>(5)</sup>. These include calls on ‘Addictive and/or compulsive behaviour in children and adolescents’, ‘Understanding of unintended consequences of global illicit-drug control measures’ and ALICE RAP <sup>(6)</sup>.

The European Commission is also funding other drug-related studies through the ‘Drugs prevention and information’ programme, the ‘Prevention of and fight against crime’ programme, the ‘Criminal justice’ programme and the ‘Public health’ programme. Projects such as the ‘Study on the development of an EU framework for minimum quality standards and benchmarks in drug demand reduction’, ‘New methodological tools for policy and programme evaluation’ and ‘Further analysis of the EU illicit drugs market and responses’ will bring important insights on the different challenges facing Member States in this field and contribute to the implementation of the current EU strategy and action plan on drugs.

As requested by the 2009 Council conclusions, the EMCDDA, in close cooperation with the European Commission, is disseminating information and the main findings of these projects on its research thematic web area.

### Research information from Member States

Europe currently has no inventory of drug-related research conducted at the national level. All EU Member States carry out research into the drug problem and a proportion of these studies are captured and used in the Reitox national reports. Although citations from these reports refer only to a selection of studies and may not include all the relevant publications in the country, it is possible to identify some trends in the number and types of research topics cited. Between 2008 and 2010, the annual number of studies cited in the Reitox national reports increased from 370 to 750. Studies on responses to drug use formed the largest category (34 % of all citations in the 2008–10 national reports), followed by studies on prevalence, incidence and patterns of drug use (29 %) and studies on consequences of drug use (23 %). Studies on methodologies and on mechanisms and effects of drugs were only rarely mentioned.

### Priorities for future research: EMCDDA Scientific Committee recommendations

As a contribution to the ongoing debate on European priorities on research in the drugs field, the Scientific Committee drew up a set of recommendations covering five key areas.

**Interventions:** the focus should be on the effectiveness of treatment interventions, the impact of early interventions and the impact on affected family members.

**Policy analysis:** more research is needed on how national and European policies are shaped, decided upon and implemented, but also on their evaluation, including comparisons of outcomes in different countries.

**Illicit drug supply:** more attention needs to be paid to the improvement of indicators to study the dynamics of the market.

**Epidemiological research:** a series of longitudinal cohort studies is recommended in order to help understand the long-term course of differing patterns of substance use, and improved methods for estimating the size of the drug-using population are still required.

**Basic research on aetiology and course of drug use:** research in this area has the potential to improve both diagnostics and therapeutic outcomes.

### ALICE RAP

The European Commission’s seventh research framework programme is funding a major research initiative on addiction under its ‘Cooperation’ programme. The challenges that contemporary European society faces from drugs and other addictions are being analysed under the ‘Addictions and lifestyles in contemporary Europe – reframing addictions project’ (ALICE RAP), which brings together researchers from 25 countries. The project’s budget of EUR 10 million will be used to fund research into all aspects of addiction, under the headings ownership of addiction, counting addiction, determinants of addiction, business of addiction, governance of addiction and addicting the young.

For more information, see the ALICE RAP website.

<sup>(5)</sup> Calls are published in the *Official Journal of the European Union* inviting researchers to submit project proposals for specific areas of the framework programme.

<sup>(6)</sup> See the box ‘ALICE RAP’.

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## Chapter 2

# Responding to drug problems in Europe – an overview

### Introduction

This chapter presents an overview of the responses to drug problems in Europe, highlighting trends, developments and quality issues. Prevention measures are reviewed followed by interventions in the areas of treatment, social reintegration and harm reduction. All these measures are part of a comprehensive drug demand reduction system and are increasingly coordinated and integrated.

The section on drug law enforcement reviews the most recent data on drug law offences and explores the part played by undercover operations in disrupting the supply of illicit drugs. The chapter ends with a review of the available data on drug users in prisons and the existing responses in this particular setting.

### Prevention

Drug prevention can be divided into different levels or strategies, which range from targeting society as a whole (environmental prevention) to focusing on at-risk individuals (indicated prevention). The main challenges for prevention policies are to match these different levels of prevention to the degree of vulnerability of the target groups (Derzon, 2007) and to ensure that interventions are evidence-based and sufficient in coverage. Most prevention activities focus on substance use in general; only a limited number of programmes focus on specific substances, for example alcohol, tobacco or cannabis.

### Environmental strategies

Environmental prevention strategies aim at altering the cultural, social, physical and economic environments in which people make their choices about drug use. These strategies typically include measures such as smoking bans, alcohol pricing and the development of health promoting schools. Evidence shows that environmental prevention measures operating at societal level and

targeting the social climate in schools and communities can be effective in altering normative beliefs and, consequently, substance use (Fletcher et al., 2008).

With the recent introduction of a total ban on smoking in enclosed public spaces in Spain, almost all European countries now have some form of tobacco ban in place. Environmental strategies targeting alcohol are less common in Europe, though most Nordic countries report an increase in the implementation of responsible serving strategies <sup>(7)</sup>, which have demonstrated effectiveness in local studies (Gripenberg et al., 2007).

In most European countries, there has been an increase in the implementation of school drug policies <sup>(8)</sup>, and over a third of countries report that drug prevention is integrated into school curricula, for example via 'health' or 'civic education' programmes. Four countries (Luxembourg, Netherlands, Austria, United Kingdom) report the implementation of 'whole school' prevention programmes <sup>(9)</sup>, an approach that has been positively evaluated in terms of reducing substance use (Fletcher et al., 2008), and has additional benefits such as improving school atmosphere and enhancing social inclusion.

### Universal prevention

Universal prevention addresses entire populations, predominantly at school and community levels. It aims to deter or delay the onset of drug use and drug-related problems by providing young people with the necessary competences to avoid initiation into substance use. When implementing universal prevention approaches, evidence shows that paying attention to cultural, normative and social context improves the chances that programmes will be accepted and successful (Allen et al., 2007).

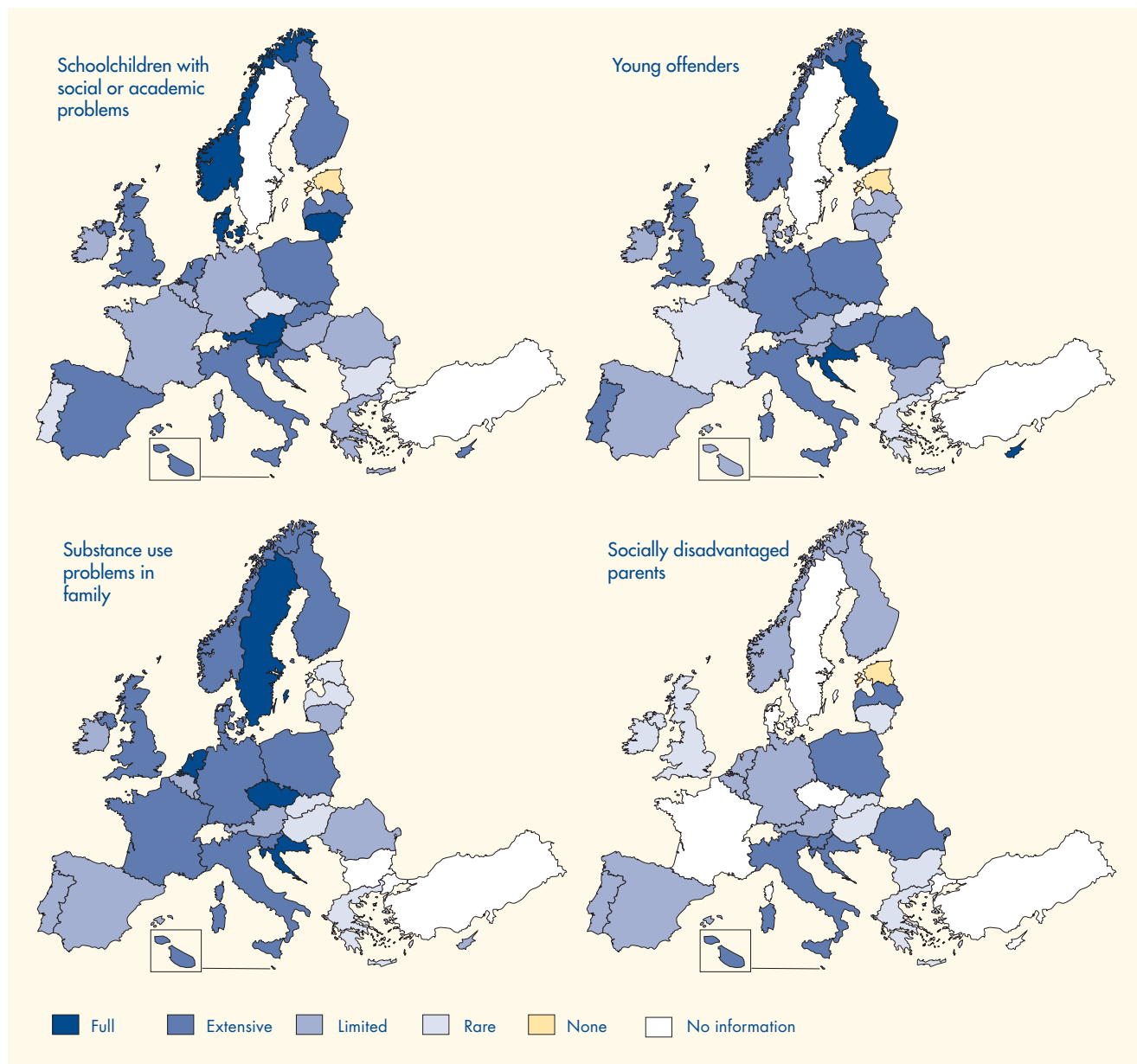
Europe-wide expert ratings indicate a small shift in school-based prevention, from approaches that have not been shown to be effective, such as information provision alone, information days and drug testing in schools, towards

<sup>(7)</sup> Responsible serving strategies aim to prevent alcohol sales to intoxicated and underage individuals, through a combination of server training and policy interventions.

<sup>(8)</sup> A school drug policy establishes the norms and regulations about substance use in the school setting and provides guidance on how to proceed when rules are broken.

<sup>(9)</sup> Whole school approaches aim at providing protective school environments and positive school climates.

**Figure 3:** Provision of selective prevention interventions as estimated by national experts



NB: Provision relates to the general and geographical distribution of interventions, and is rated as: full, provided in nearly all relevant locations (areas in which the target population is sufficient for implementation of the intervention); extensive, provided in a majority of, but not all relevant locations; limited, provided in more than a few, but not the majority of relevant locations; rare, provided in just a few relevant locations; none, intervention not available. Information was collected by means of a structured questionnaire.

Sources: Reitox national focal points.

more promising approaches, such as manual-based life-skills programmes and interventions specifically for boys. Countries also report that several of the more effective universal prevention interventions are being transferred from one country to another <sup>(10)</sup>. However, despite the availability of positively evaluated prevention methods, a number of interventions that are not supported by scientific evidence, such as expert and police visits to schools, are being increasingly reported by some countries.

Universal family-based prevention largely takes the form of simple and low-cost interventions, such as parents' evenings and dissemination of leaflets or brochures. More complex interventions such as parents' peer-to-peer groups (Germany, Ireland), personal and social competence training (Greece, Portugal) or manualised parenting programmes (Spain, United Kingdom) are rarely reported.

<sup>(10)</sup> See SFP, FRED, Preventure, EU-DAP and GBG on the 'Best practice' portal.

### Selective prevention

Selective prevention intervenes with specific groups, families or communities who, due to their reduced social ties and resources, may be more likely to develop drug use or progress into dependency. Several Member States report a shift in focus in their strategies towards targeting vulnerability, while expert ratings suggest an overall increase in the provision of interventions for vulnerable groups from 2007 to 2010, with the exception of interventions for youths in care institutions. The largest increases are reported for pupils with academic and social problems (full or extensive provision in 16 countries) and for young drug law offenders (full or extensive provision in 12 countries) (Figure 3). The former might be due to increasing attention from some Member States and the European Union to academic failure and early school leaving, which share the same risk factors as those for problem drug use (King et al., 2006). The increase in provision for young offenders might be partially explained by the implementation of FRED, a multi-session psychosocial programme (EMCDDA, 2010a), in more countries, as well as by new interventions for first-time offenders in Greece, Ireland and Luxembourg.

An increase in the provision of interventions targeting vulnerable families was also reported, most notably for those with substance use problems (full or extensive provision in 14 countries) and socially disadvantaged families (full or extensive provision in seven countries) (Figure 3). In this context, the increasing popularity of the 'Strengthening families' programme (Kumpfer et al., 2008) in Europe may be noted: this programme has recently been implemented in three more countries (Germany, Poland, Portugal) and in additional locations in the United Kingdom.

Selective prevention can be carried out through outreach work or by office-based services. Prevention work with ethnic groups and party/festival goers are the only areas where more outreach work is reported, while there are reports of a reduction in outreach work services for homeless youth. Overall, most service contact with socially excluded groups such as early school leavers, immigrants and homeless youth continues to be office based.

In addition, relatively little is known about the content of many selective prevention programmes<sup>(11)</sup>. Overall, the available data indicate that the most common interventions in Europe are those that place an emphasis on information, awareness-raising and counselling, despite growing evidence of the effectiveness of approaches such as norm setting, motivation, skills and decision-making.

### Indicated prevention

Indicated prevention aims to identify individuals with behavioural or psychological problems that may be predictive for developing substance use problems later in life, and to target them individually with special interventions. A number of indicated prevention programmes have been positively evaluated (EMCDDA, 2009c).

Only half of the EU Member States and Norway report the existence of indicated prevention activities, and very few report the use of structured and manual-based interventions. An increasing number of countries report that the school setting is being used to identify vulnerable pupils, in particular those with behavioural problems, often associated with later drug use. Belgium, the Czech Republic, Portugal and Norway report the use of new tools for screening and early detection in both school and community settings.

Early intervention and counselling for drug use are the most frequently reported indicated prevention strategies; there are few reports of interventions targeting early onset behavioural problems. This suggests that the potential for indicated prevention to help reduce the impact of neuro-behavioural problems during childhood, such as aggression and impulsiveness, on later substance use behaviour (EMCDDA, 2009c) is not being fully exploited in Europe. Indicated prevention can act as a bridge between prevention in community environments and the specialist treatment offered in clinical settings, particularly when providing early interventions for particular groups, such as vulnerable cannabis or alcohol users.

### Treatment

Psychosocial interventions, opioid substitution and detoxification are the main modalities used for the treatment of drug problems in Europe. The relative importance of the different treatment modalities in each country is influenced by several factors, including the organisation of the national healthcare system. Drug treatment services may be provided in a variety of settings: specialist treatment units, including outpatient and inpatient centres, mental health clinics and hospitals, units in prison, low-threshold agencies and office-based general practitioners.

There is no dataset allowing a description of the full population of drug users currently undergoing drug treatment in Europe. However, information on an important subgroup of this population is gathered by the EMCDDA's treatment demand indicator, which collects data on those entering specialist drug treatment services during the calendar year, enabling insights into their characteristics

<sup>(11)</sup> Some examples, though, are available on the 'Exchange on drug demand reduction action' website.

and drug-use profiles<sup>(12)</sup>. In 2009, the indicator registered about 460 000 treatment entrants, 38 % of whom (175 000) were reported to have entered drug treatment for the first time in their life.

Based on a range of different sources, including the treatment demand indicator, it can be estimated that at least 1.1 million people received treatment for illicit drug use in the European Union, Croatia, Turkey and Norway during 2009<sup>(13)</sup>. While more than half of these clients received opioid substitution treatment, a substantial number received other forms of treatment for problems related to opioids, stimulants, cannabis and other illicit drugs<sup>(14)</sup>. This estimate of drug treatment in the European Union, though still in need of refinement, does suggest a considerable level of provision, at least for opioid users. This is the consequence of a major expansion during the last two decades of specialised outpatient services, with a significant involvement of primary healthcare, self-help groups, general mental health services and outreach and low-threshold service providers.

Particularly in western Europe, there appears to be a gradual shift away from a view of drug treatment as the responsibility of a few specialist disciplines providing intensive, short-term interventions towards a multidisciplinary, integrated and longer-term approach. In part, this is a response to increasing recognition of drug addiction as a chronic condition, with the progress of many clients marked by cycles of remission, relapse, repeated treatments and disability (Dennis and Scott, 2007), a view supported by data collected by the EMCDDA that show that over half of treatment entrants have had a previous treatment episode. Another factor is that western European countries are witnessing a significant ageing of their populations of drug users in treatment, primarily long-term problem users with previous treatment episodes and reporting multiple health and social problems (EMCDDA, 2010f).

In response, some national and local drug strategies refer to a continuous care approach, emphasising coordination and integration of interventions between different drug treatment providers (e.g. discharge from residential to outpatient services) and between treatment and the broader spectrum of health and social services. Continuous care builds on regular monitoring of client status, early detection of potential problems, referral between health and social care services and ongoing client support with no set timeframe. General practitioners can play a key

### 'Selected issue' on financing and cost of drug treatment

During this period of fiscal austerity, increased attention is being paid to all aspects of state expenditure, including treatment costs. A 'Selected issue' published this year by the EMCDDA maps the main funding sources for drug treatment in a number of European countries. It summarises the available data on how much is being spent on drug treatment services, and how much treatment costs.

This publication is available in print and on the EMCDDA website in English only.

role in this area. A recent French survey among service providers recognised the role of general practitioners in facilitating access to specialist care for opioid users, both for referral to hospitals to initiate methadone treatment and for continuation of treatment upon discharge. In another example, the Dutch government and local authorities of the country's four largest cities have adopted an integrated treatment approach within a broader social support strategy, involving a wide range of agencies.

Continuous care and integrated treatment responses may be aided by the establishment of care protocols, guidelines and management strategies between providers (Haggerty et al., 2003). A 2010 survey among national focal points found that 16 countries have partnership agreements between drug treatment agencies and social services. In six countries (France, Netherlands, Portugal, Romania, United Kingdom, Croatia), structured protocols are the most commonly used mechanisms for interagency coordination, while in the other countries, partnerships rely mainly on informal networks.

### Outpatient treatment

In Europe, most drug treatment is provided in outpatient settings. Information is available on about 400 000 drug users entering specialist outpatient treatment during 2009. Half of the treatment entrants (51 %) report opioids, mainly heroin, as their primary drug, while 24 % report cannabis, 18 % cocaine and 4 % stimulants other than cocaine. The most common route to treatment is self-referral (37 %), followed by drug, social and health services (28 %) and referral by the criminal justice system (20 %). The remaining clients are referred through family, friends and informal networks<sup>(15)</sup>.

<sup>(12)</sup> The treatment demand indicator received data for specialist drug treatment centres from 29 countries. Most countries provided data for more than 60 % of their units, though for some countries the proportion of units covered is unknown (see Table TDI-7 in the 2011 statistical bulletin).

<sup>(13)</sup> See Table HSR-10 in the 2011 statistical bulletin.

<sup>(14)</sup> More detailed information on specific types of treatment for the different substances and their effectiveness, quality and evidence are available in the respective chapters.

<sup>(15)</sup> See Tables TDI-16 and TDI-19 in the 2011 statistical bulletin.



Those entering outpatient treatment are by far the largest group of drug users for which it is possible to describe personal and social characteristics and drug-use profiles. They are predominantly young men, with an average age of 32 years. Males outnumber females by almost four to one, which in part reflects the predominance of males among more problematic drug users. Among clients entering treatment, primary cannabis users are almost 10 years younger (25) than primary users of cocaine (33) and opioids (34). On average, the youngest drug clients (25–26) are reported by Poland, Hungary and Slovakia — countries joining the EU since 2004 — and the oldest by Spain, Italy and the Netherlands (34). Male to female ratios are high for all substances, although varying with drug and country. Gender ratios are generally higher in countries in the south of Europe and lower in countries in the north <sup>(16)</sup>.

The two main modalities of outpatient treatment in Europe are psychosocial interventions and opioid substitution treatment. Psychosocial interventions include counselling, motivational interviewing, cognitive-behavioural therapy, case management, group and family therapy and relapse prevention. They are mostly provided, depending on the country, by public institutions or by non-governmental organisations. Psychosocial interventions offer support to users as they attempt to manage and overcome their drug problems, and they are the main form of treatment for users of stimulant drugs, such as cocaine and amphetamines. They are also provided for opioid users, often in combination with substitution treatment. According to a 2008 survey of national experts, most European countries report the availability of outpatient psychosocial treatment to those who seek it. While there is considerable variation across Europe, most countries reported average waiting times of less than a month.

Substitution treatment is the predominant treatment option for opioid users in Europe. It is generally provided in specialist outpatient settings, though in some countries it is also available in inpatient settings, and is increasingly provided in prisons <sup>(17)</sup>. Also, office-based general practitioners, often in shared-care arrangements with specialist centres, increasingly play a role. Opioid substitution is available in all EU Member States, as well as Croatia and Norway. In Turkey, substitution treatment in the form of the combination buprenorphine/naloxone was introduced in 2010. Overall, it is estimated that there were

about 700 000 substitution treatments in Europe in 2009 (see Chapter 6) <sup>(18)</sup>.

### Inpatient treatment

Data are available for about 44 000 drug users who have entered drug treatment in inpatient settings in Europe during 2009 <sup>(19)</sup>. The primary drugs reported by half of these clients were opioids (53 %), followed by cannabis (16 %), cocaine (8 %) and non-cocaine stimulants (12 %). Inpatient clients are mainly young men, with a mean age of 31 years and about three males to every female <sup>(20)</sup>.

Inpatient or residential treatment requires clients to stay overnight for a duration of several weeks to several months. In many cases, these programmes aim to enable clients to abstain from drug use, and do not allow substitution treatment. Drug detoxification, a short-term, medically supervised intervention aimed at resolving the withdrawal symptoms associated with cessation of chronic drug use, is sometimes a prerequisite for starting long-term, abstinence-based inpatient treatment. Detoxification is usually provided as an inpatient intervention in hospitals, specialised treatment centres or residential facilities with medical or psychiatric wards.

In inpatient settings, clients receive accommodation and individually structured psychosocial treatments, and take part in activities geared towards rehabilitating and reintegrating them into society. A therapeutic community approach is often used in this context. Inpatient drug treatment is also provided by psychiatric hospitals, notably for clients with co-morbid psychiatric disorders.

According to a 2008 survey of national experts, most European countries report the availability of inpatient psychosocial treatment and detoxification services for those who seek it. Estimates of national waiting times for access to inpatient psychosocial treatment, provided by experts from 16 countries, vary across Europe. Average waiting times were reported to be less than one month in 14 countries, a few months in Hungary and 25 weeks in Norway.

### Social reintegration

The level of social exclusion among drug treatment clients is generally high, potentially preventing individuals from making a full recovery and undermining treatment gains. Data on clients who entered drug treatment in

<sup>(16)</sup> See Tables TDI-9 (part iv), TDI-21 and TDI-103 in the 2011 statistical bulletin. For information on treatment clients according to primary substance, see the respective chapters.

<sup>(17)</sup> See 'Assistance to drug users in prison', p. 38.

<sup>(18)</sup> See Tables HSR-1, HSR-2 and HSR-3 in the 2011 statistical bulletin.

<sup>(19)</sup> This figure should be interpreted with caution as it does not include all users who temporarily enter inpatient care as part of a more complex treatment process.

<sup>(20)</sup> See Tables TDI-7, TDI-10, TDI-19 and TDI-21 in the 2011 statistical bulletin.

2009 show that most of them were unemployed (59 %) and almost 1 in 10 lacked stable accommodation (9 %). Low educational attainment is common among treatment clients, with 37 % having completed only primary education, and 4 % not even achieving this level <sup>(21)</sup>. There is increasing recognition that development of services tackling marginalisation and stigmatisation will improve the chances of clients' successful social reintegration and increase their quality of life (Lloyd, 2010).

Social reintegration of drug users into their local communities is recognised as a key component of comprehensive drug strategies, setting a focus on improvement of social skills, promoting education and employability and meeting housing needs. Addressing the social needs of clients in drug treatment can play a role in reducing their drug use and sustaining long-term abstinence (Laudet et al., 2009).

Twenty-one European countries report having specific social reintegration sections in their national drug strategies <sup>(22)</sup>, mainly focusing on the housing, education and employment needs of drug users. Social reintegration services are either provided concurrently with drug treatment or after completion of treatment, relying on collaboration between specialised treatment services and health and social care institutions.

Overall, while most countries report the existence of interventions in housing, education and labour-market participation, the available data indicate that levels of provision fall short of the needs of the drug treatment population.

## Housing

Ensuring access to, and maintaining, stable accommodation are key to the reintegration process, helping to retain clients in treatment and support relapse prevention (Milby et al., 2005).

In Europe, overall, levels of service provision addressing the housing needs of drug treatment clients are low. Of the 29 countries responding to a recent survey, less than a third report that a majority of treatment clients could access emergency accommodation (nine), transitional housing (eight) and supported living services (five).

Despite the low level of provision reported by European countries, most report the availability of social housing facilities targeting vulnerable groups, which are to varying degrees accessible to people in drug treatment. Such accommodation is usually provided by local authorities or non-governmental organisations. The duration of stay

can vary and entry can be with conditions (e.g. being drug-free, supervision from treatment staff). In addition, a number of countries have tailored housing for people in drug treatment; for example, 18 countries report provision of emergency accommodation (e.g. night shelters, bed and breakfast) and 20 countries provide some level of transitional accommodation such as halfway houses. Independent living can be an important step towards reintegration into society, and in 12 countries, treatment clients have some access to supported living facilities, while 15 countries report programmes that facilitate access to independent living within the general housing market. In France, so-called 'sliding' tenancies are provided by specialist treatment centres. The centre pays the rent for the housing, and sub-rents it to the client, who contributes a small portion of the rental fee. The client receives tenancy support with administrative tasks (e.g. paying bills) and budget management, and after a 'probationary period' becomes the official tenant.

## Training and education

The education needs of drug users in treatment can be addressed in a number of ways. While the mainstream educational system may be a first option, individual and systemic barriers, such as low expectations, stigma and fear of failure, can prevent clients from participating (Lawless and Cox, 2000). Eleven countries report the availability of supportive programmes that aim to facilitate drug treatment clients' access to mainstream education. In addition, 15 countries report that drug treatment clients can access educational programmes targeting socially vulnerable groups.

Vocational or technical training helps people acquire the practical skills necessary for employment in a particular occupation or trade, and usually leads to a vocational qualification. In most countries (20), clients obtain vocational training through interventions targeted at socially vulnerable groups. In 16 countries, vocational training interventions also exist specifically for drug treatment populations.

## Employment

Employability is a key concept in social reintegration, and the employment needs of drug users are addressed by a number of European countries in their national employment strategies. Activities that increase employability may address the psychological domain (e.g. personal development, self-efficacy, self-esteem, coping skills) and can provide recovering drug users with an alternative peer group and new skills to assist successful reintegration into the wider community. In 15 countries, the

<sup>(21)</sup> See Tables TDI-12, TDI-13 and TDI-15 in the 2011 statistical bulletin.

<sup>(22)</sup> Lithuania and Austria did not have a national drug strategy at the time of the survey.

employability of people in drug treatment is reported to be a regular, standard objective of individual care plans.

Evidence shows that employment and enhancing employability improve drug treatment outcomes (Kaskutas et al., 2004), have a positive impact on health and quality of life and reduce offending (Gregoire and Snively, 2001). Support systems, such as the intermediate labour market, which provides paid work in specially created temporary jobs, can help in bridging the gap between long-term unemployment and employment in the open labour market. These systems are generally targeted at disadvantaged individuals (e.g. through businesses created to employ the disabled or socially excluded), and may include occupational and voluntary work.

Twenty countries report intermediate labour market interventions available to socially vulnerable groups that are also accessible to people in drug treatment; in 11 countries, such interventions are available specifically for treatment clients. In Ireland, for example, the Ready for Work initiative helps homeless people, including drug users, enter training or employment by providing them with pre-employment training, unpaid work experience and follow-up support. Drug treatment clients may be eligible for other initiatives, such as supported employment, which assist people with disabilities or other disadvantaged groups to secure and maintain paid employment. While 17 countries report that supported employment interventions are accessible to treatment clients, only four report sufficient levels of provision.

## Harm reduction

The prevention and reduction of drug-related harm is a public health objective in all EU Member States and in the EU drugs strategy <sup>(23)</sup>. Reviews of the scientific evidence of harm-reduction interventions, as well as studies showing the combined impact of these interventions, are now available for service planning (EMCDDA, 2010b) <sup>(24)</sup>.

Among the main interventions in this field are opioid substitution treatment and needle and syringe programmes, which target overdose deaths and the spread of infectious diseases. Substitution treatment is reported to be available in all countries, and needle and syringe programmes exist in all countries except Turkey. In the past two decades, Europe has seen the growth and consolidation of harm reduction, and its integration with a range of other healthcare and social services. From an initial focus in the late 1980s on the HIV/AIDS epidemic, harm reduction has

## Drug user involvement

The concept of service user involvement in health policy gained momentum when a new agenda for public health and healthcare provision was set by the Ottawa Declaration of the World Health Organisation in 1986 (WHO, 1986). Active involvement of drug users in shaping drug services can, however, be traced back to the Netherlands in the 1970s.

More recently, as a step towards facilitating the involvement of drug user organisations at national and European level, the European Harm Reduction Network has started to compile an inventory of drug user organisations in Europe.

User involvement varies in form and pursues a range of different aims (Bröring and Schatz, 2008). Activities may include service user surveys on accessibility and quality of services, seeking users' advice on staff recruitment, conducting focus groups to develop new service areas and the inclusion of user organisations in health advocacy and drug policymaking. Drug user organisations are often engaged in peer support and education on infectious disease prevention, and in the production of information materials that support networking and help to raise public awareness about the main problems for drug users (Hunt et al., 2010). Involving users can be a pragmatic and ethical way to ensure the quality and acceptability of services. However, in order to empower drug users to contribute and to ensure that user involvement succeeds, adequate support is necessary.

See also the European Harm Reduction Network website.

expanded into the broader perspective of catering for the health and social needs of problem drug users, especially those who are socially excluded.

In 2009, the number of clients accessing substitution treatment increased in the majority of countries <sup>(25)</sup>. In addition, increases in the use of low-threshold harm-reduction facilities were reported in Bulgaria, the Czech Republic, Greece, Hungary, Latvia, Lithuania, Luxembourg, Poland, Romania and Croatia, and there was a geographical expansion of needle and syringe programmes in Hungary.

Most European countries provide a range of further healthcare and social services, including individual risk assessment and advice, targeted information and safer-use education. The distribution of injecting equipment other than needles and syringes, promotion of condom use among injecting drug users, infectious disease testing and counselling, antiretroviral treatment and vaccination against viral hepatitis have increased in recent years. Model projections suggest that delivering interventions

<sup>(23)</sup> COM(2007) 199 final.

<sup>(24)</sup> See also the 'Best practice' portal.

<sup>(25)</sup> See Table HSR-3 in the 2011 statistical bulletin and Chapter 6.

with the greatest potential effect (needle and syringe programmes, substitution treatment and antiretroviral treatment) to a significant proportion of the target population and over an extended time reduces HIV transmission among injecting drug users; they also suggest that the greatest effects are achieved when levels of infection are still low (Degenhardt et al., 2010).

A multidisciplinary investigation of the evidence base for harm-reduction interventions to reduce the risk of infections among drug users was carried out in 2010 by the French National Institute for Health and Medical Research (Inserm). The study reviewed the scientific literature covering the medical, epidemiological, sociological, economic and public health aspects of harm reduction, and organised expert hearings and public debates. The 'Collective expert report' recommends that harm-reduction policies should be considered as an essential part of a broader strategy to reduce health inequalities. Furthermore, services need to be integrated with other drugs services as part of a continuum of care. While the priority remains that both drug use and the transition into injecting use should be prevented, those who inject drugs should be enabled to reduce injecting-related risks. The report recommends that, as with medical and social interventions, harm-reduction measures should be part of personalised assistance plans.

## Quality assurance

Most European countries undertake a range of activities geared towards ensuring the quality of drug-related interventions and services. These include the development of treatment guidelines, benchmarking of services, staff training and quality certification and accreditation processes.

### Quality standards for Europe

The EQUUS study, commissioned by the European Commission, aims to build consensus among European experts and stakeholders over existing quality standards in demand reduction interventions. This includes the development of a clearer definition of minimum standards, which has been used to cover both evidence-based recommendations and organisational procedures. The EQUUS study addresses this confusion and distinguishes between three types of standards. These are defined as structural standards (e.g. physical environment, accessibility, staff composition and qualification), process standards (e.g. individualised planning, cooperation with other agencies, patient records keeping) and outcome standards (patient and staff satisfaction, setting and measurement of treatment goals). The results of the study

should be available by the end of 2011, and will be used by the European Commission to develop an EU consensus to present to the Council by 2013 <sup>(26)</sup>.

### Staff training and education

Staff training and continuing education related to drug use are key activities in assuring the quality of services. Results from a recent ad hoc data collection reveal that specific training programmes in the drug addiction field exist in the 27 countries that reported, and are primarily geared towards the medical and nursing professions, psychologists and social workers. While some countries have developed specialised university courses, others provide post-graduate or continuing education courses. The most structured and developed training and education activities can be found in the medical field. Three countries report having developed a medical speciality in addiction. The Czech Republic introduced the specialism of addiction medicine in 1980 and the non-medical profession of 'addictologist' in 2008; a two-year specialist module in addiction medicine began in the Netherlands in 2007; Germany has post-graduate courses in substance use and addiction counselling as well as a module on heroin-assisted treatment. The evidence for the effectiveness of approaches such as 'continuing medical education' remains limited and inconclusive. A recent, more interactive approach, known as 'continuing professional development' (Horsley et al., 2010), has been proposed, which involves training physicians in a broad range of skills including communication, management and health advocacy, but it still has to be tested.

## Drug law enforcement and drug law offences

Drug law enforcement is an important component of national and EU drug policies. It includes a wide range of interventions that are mainly implemented by police and police-like institutions (e.g. customs). One group of such interventions, undercover operations, is briefly reviewed here. Data on drug law enforcement activities are often less developed and accessible than those in other areas of drug policy. A notable exception to this rule is data on drug law offences, which are reported at the end of this section.

### Undercover operations

The successful prosecution of high-level drug offenders and the dismantling of organised drug supply networks are key supply reduction priorities under the current EU drug action plan. This poses a challenge to law

<sup>(26)</sup> See the 'Best practice' portal for further information.

enforcement agencies, as most drug law offences will only be detected by means of proactive law enforcement operations (EMCDDA, 2009a). This is especially the case for serious offences involving intermediary and wholesale drug supply, which tend to be committed by highly secretive individuals and criminal organisations.

In their response to serious drug crime, European law enforcement institutions increasingly make use of undercover techniques, including both technology, such as wiretapping or electronic surveillance, and human undercover operations. These operations may involve police officers (undercover agents) and private individuals under police supervision (informants). Their deployment is legally admissible in all 27 EU Member States.

Undercover operations against drug trafficking networks are used to collect reliable information on the identity and roles of network members, detect smuggling routes, destinations and warehousing facilities and discover the time and place of drug deliveries. Agents or informants often have to infiltrate criminal networks, which tend to be secretive towards outsiders and to compartmentalise information. Intelligence gathering is mainly focused on the functioning of drug networks and the roles of their members.

Undercover operations pose legal challenges, in particular around the subject of incitement. The European Court of Human Rights established basic principles regarding the use of ‘agents provocateurs’ in a 1998 judgment (*Teixeira de Castro v Portugal*) (European Court of Human Rights, 1998). This states that the use of human undercover techniques should not infringe on the right to a fair trial, and therefore law enforcement agencies should not exert such an influence on a subject as to incite the commission of an offence that would otherwise not have been committed. Law enforcement agencies must, therefore, hold ‘objective suspicions’ on the targeted individuals before implementing undercover techniques. In most Member States, incitement of third parties to commit crime is prohibited.

National legal and administrative provisions govern undercover operations, and aim to ensure both compliance with the rule of law and the security of undercover agents. National laws and accompanying regulations differ but tend to provide a general framework which is specified in accompanying regulations that are rarely made public. Other information, such as the number of operations carried out each year, is also usually not available to the public. However, research has shown that 34 undercover operations were conducted in the Netherlands in 2004, and 12 of them contributed to investigations or trials (Kruisbergen et al., 2011).

In most EU Member States, approval from a judicial authority is required before launching an undercover operation and most operations require monitoring by a superior authority, typically the prosecutor or a court. Thirteen Member States specify the proportionality and subsidiarity rules, under which the intervention must be proportional to the investigated drug offence, which must be serious enough to warrant an undercover measure. In addition, before conducting an undercover operation, it must be clear that no other, less intrusive law enforcement measure would be as successful.

The use of operational cover, including false identity documents and ‘front organisations’ — created to provide plausible occupations and means of income for undercover agents — is legally admissible in most Member States.

A variety of techniques are used in undercover operations. For example, covert drug purchases are used primarily to arrest individuals in the act of selling illicit drugs. Controlled deliveries are a technique that allows the transport of illicit consignments, with the knowledge and under the supervision of the competent authorities, across and within national borders. The consignments may include drugs or precursors, weapons, cigarettes, money from illicit activities or even human beings. Most controlled deliveries in Europe involve drug consignments (Council of the European Union, 2009) and, depending on national law, they may be escorted by undercover agents or informants, or may be under technological surveillance<sup>(27)</sup>.

### Drug law offences

The only data on drug-related crime routinely available in Europe are initial reports on offences against national drug laws, mainly from the police<sup>(28)</sup>. These data usually refer to offences related to drug use (use and possession for use) or drug supply (production, trafficking and dealing), although other types of offences may be reported (e.g. related to drug precursors) in some countries.

Data on drug law offences are a direct indicator of law enforcement activity, since they refer to consensual crimes, which usually go unreported by potential victims. They are often viewed as indirect indicators of drug use and drug trafficking, although they include only those activities that have come to the attention of law enforcement. Additionally, they are also likely to reflect national differences in legislation, priorities and resources. Furthermore, national information systems differ across Europe, especially in relation to recording and reporting practices. For these reasons, it is difficult to make robust

<sup>(27)</sup> For an overview of the legal aspects of controlled deliveries in Europe, see the European legal database on drugs.

<sup>(28)</sup> For a discussion of the relationships between drugs and crime and a definition of ‘drug-related crime’, see EMCDDA (2007b).

### Training the European police

The European Police College (CEPOL) is an agency of the European Union operating as a network of national police academies and universities. One of its main tasks is to organise around 100 training activities a year, primarily for senior police officers, on key topics relevant to European police forces. The overall aim is to promote a common European approach to policing issues.

To support its own training activities and those of the EU Member States, CEPOL has developed common curricula for various target groups, including senior officers, investigators and case managers, but also representatives of national governments and police academies. The common curriculum on drug trafficking provides an overview of the international drug situation, drug legislation, basic information on illicit substances, international cooperation, existing policing strategies as well as crime-specific tactical options, such as covert operations and challenges including drug-related crime but also drug prevention and demand reduction.

comparisons between countries, and it is more appropriate to compare trends rather than absolute numbers.

Overall, the increase in the number of reported drug law offences observed in previous years slowed down in 2009. An EU index, based on data provided by 21 Member States, representing 95 % of the population aged 15–64 in the European Union, shows that reported offences increased by an estimated 21 % between 2004 and 2009. If all reporting countries are considered, the data reveal upward trends in 18 countries and a stabilisation or an overall decline in 11 countries over the period <sup>(29)</sup>.

### Use- and supply-related offences

There has been no major shift in the balance between drug law offences related to use and those related to supply compared with previous years. In most (22) European countries, offences related to drug use or possession for use continued to comprise the majority of drug law offences in 2009, with Estonia, Spain, France, Hungary, Austria and Sweden reporting the highest proportions (81–94 %) <sup>(30)</sup>.

The increase in the number of use offences reported in previous years slowed down in 2009. Between 2004 and 2009, the number of drug law offences related to use increased in 15 reporting countries, with only Bulgaria, Germany, Estonia, Malta, Austria and

Norway reporting a decline across the period. Overall, the number of drug law offences related to use in the European Union increased by an estimated 29 % between 2004 and 2009.

Offences related to the supply of drugs have remained stable since 2007, although they show an estimated increase during the period 2004–09 of about 7 % in the European Union. Over this period, 15 countries report an increase in supply-related offences, while three countries report an overall decline <sup>(31)</sup>.

### Trends by drug

Cannabis continues to be the illicit drug most often mentioned in reported drug law offences in Europe <sup>(32)</sup>. In the majority of European countries, offences involving cannabis accounted for between 50 % and 75 % of reported drug law offences in 2009. Offences related to other drugs exceeded those related to cannabis in only three countries: the Czech Republic and Latvia with methamphetamine (55 % and 27 %); and Malta with cocaine (36 %).

In the period 2004–09, the number of drug law offences involving cannabis increased in 11 reporting countries, resulting in an estimated increase of 20 % in the European Union (Figure 4). Downward trends are reported by France, Italy, Cyprus, Malta and the Netherlands <sup>(33)</sup>.

Cocaine-related offences increased over the period 2004–09 in 11 reporting countries, while Bulgaria, Germany, Italy, Austria and Croatia reported decreasing trends. In the European Union, overall, offences related to cocaine increased by about 39 % over the same period, but showed a levelling-off in the last two years <sup>(34)</sup>.

The number of heroin-related offences slightly declined in 2009. The EU figure for such offences increased by 22 % over 2004–09. The number of heroin-related offences has increased in 11 reporting countries, while a decline was reported in Bulgaria, Germany, Malta, the Netherlands and Austria over the same period <sup>(35)</sup>.

The number of offences related to amphetamines reported in the European Union slightly decreased in 2009, though the general trend since 2004 shows an overall estimated increase of 16 %. In contrast, the number of ecstasy-related offences halved over the same period (a 54 % decrease).

<sup>(29)</sup> See Figure DLO-1 and Table DLO-1 in the 2011 statistical bulletin.

<sup>(30)</sup> See Table DLO-2 in the 2011 statistical bulletin.

<sup>(31)</sup> See Figure DLO-1 and Table DLO-5 in the 2011 statistical bulletin.

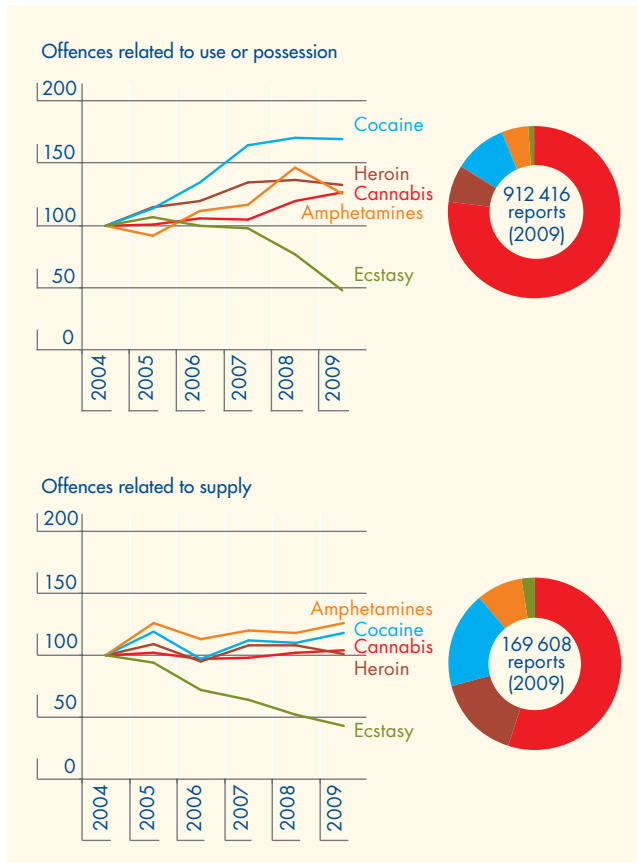
<sup>(32)</sup> See Table DLO-3 in the 2011 statistical bulletin.

<sup>(33)</sup> See Figure DLO-3 and Table DLO-6 in the 2011 statistical bulletin.

<sup>(34)</sup> See Figure DLO-3 and Table DLO-8 in the 2011 statistical bulletin.

<sup>(35)</sup> See Figure DLO-3 and Table DLO-7 in the 2011 statistical bulletin.

**Figure 4:** Reports for offences related to drug use or possession for use and to drug supply in the EU Member States: indexed trends 2004–09 and breakdown by drug of reports for 2009



NB: The trends are based on available information on the number of reports for drug law offences (criminal and non-criminal) reported in the EU Member States; all series are indexed to a base of 100 in 2004 and weighted by country population sizes to form an overall EU trend; the breakdown by drugs refers to the total number of reports for 2009. For further information, see Figures DLO-4 and DLO-5 in the 2011 statistical bulletin.

Sources: Reitox national focal points.

## Health and social responses for drug users in prison

In the European Union, the proportion of sentenced prisoners convicted of drug law offences ranges from 3 % to 53 %, with half of the countries reporting proportions between 9 % and 25 %<sup>(36)</sup>. These figures do not include those sentenced for acquisitive crimes committed to support their drug addiction, or other drug-related offences.

### Drug use in prison populations

There is still a lack of standardisation in the methodologies used in studies on drug use in the prison population

(Carpentier et al., 2011). Research, nevertheless, shows that drug use is more prevalent among prisoners than among the general population. Data from several studies carried out since 2006 show that there are considerable variations in the prevalence of drug use among prisoners: ever-use of an illicit drug before entering prison was reported by as few as 8 % of respondents in some countries and by up to 65 % in others. Studies also indicate that the most harmful forms of drug use may be more frequent among prisoners, with between 5 % and 31 % of those surveyed reporting to have ever injected drugs<sup>(37)</sup>.

On admission to prison, most users reduce or stop consuming drugs, mainly due to difficulties in acquiring the substances. However, the fact that illicit drugs find their way into most prisons, despite all the measures being taken to reduce their supply, is recognised. In studies carried out since 2006, estimates of levels of drug use within prison vary from 1 % to 51 % of inmates. The drug most frequently used by prisoners is cannabis, usually followed by cocaine and heroin<sup>(38)</sup>. Prison may be a setting for initiation into drug use or into more harmful forms of use. For example, a Belgian study carried out in 2008 found that more than a third of drug-using prisoners had initiated use of a new drug during detention, with heroin being the drug most frequently mentioned (Todts et al., 2009). Injecting drug users in custody appear to share their equipment more often than users in the community, which raises issues around the potential spread of infectious diseases among prison populations.

### HIV and viral hepatitis among injecting drug users in prison

Data on HIV infection among injecting drug users in prison are scarce in Europe. In particular, they are unavailable for those countries reporting the highest prevalence levels of infection related to injecting drug use. Generally, among the eight countries providing data since 2004 (Bulgaria, Czech Republic, Spain, Hungary, Malta, Finland, Sweden, Croatia)<sup>(39)</sup>, no large differences can be observed in HIV prevalence between injecting drug users in prison and those in other settings in the country, although this may be partly due to the limitations of the data. HIV prevalence among injecting drug users in prisons was mostly low (0 % to 7.7 %) in seven countries, while Spain reported a prevalence of 39.7 %. Data on hepatitis C virus (HCV) prevalence among injecting drug users in prison were reported by eight countries, where it ranged from 11.5 % (Hungary) to 90.7 % (Luxembourg). In the Czech Republic, Luxembourg and Malta, HCV appears to be more prevalent among injectors

<sup>(36)</sup> There were over 640 000 people in penal institutions in the European Union on 1 September 2009. Data on penal statistics in Europe are available from the Council of Europe.

<sup>(37)</sup> See Tables DUP-1, DUP-2 and DUP-105 in the 2011 statistical bulletin.

<sup>(38)</sup> See Tables DUP-3 and DUP-105 in the 2011 statistical bulletin.

<sup>(39)</sup> See Table INF-117 in the 2011 statistical bulletin, and the Reitox national reports of Malta (2005) and the Czech Republic (2010).

## Developing indicators on drug markets, crime and supply reduction in Europe

Scaling up the monitoring of illicit drug supply in Europe is a priority of the current EU drug strategy and action plan. Following the publication of a European Commission working paper on improving the collection of data on drug supply in October 2010 <sup>(1)</sup>, the first European conference on drug supply indicators, organised jointly by the European Commission and the EMCDDA, initiated a process to develop indicators for monitoring drug supply in Europe <sup>(2)</sup>.

The overall conceptual framework to monitor illicit drug supply in Europe will integrate three components: drug markets, drug-related crime and drug supply reduction. Three working groups, supported by the EMCDDA, will produce a roadmap for these areas in 2011, focusing on short-, medium- and long-term monitoring objectives. Attention will be paid to the potential for standardisation, extension and improvement of existing data collection systems in each of these areas, and targeted research will be carried out.

In the area of drug markets, future activities will focus on the improvement of drug price and purity datasets, and on the potential of forensic science data. The development of a European standard monitoring instrument on drug law offences and of indicators on intra-European drug production will be key in the drug-related crime area, together with defining priorities for research. Policing and criminal justice agencies will play a central role in monitoring drug supply reduction. Work in this under-researched area will start with a mapping exercise to provide an overview of drug supply reduction activities in Europe. The existence, role and practices of specialised drug law enforcement units will be a starting point, with a survey launched by the EMCDDA in 2011.

<sup>(1)</sup> SEC(2010) 1216 final (available online).

<sup>(2)</sup> The conclusions of the conference are available online.

tested in prison compared with those tested in other settings. Data on HBV infection (hepatitis B surface antigen) among injecting drug users in prison are available for four countries: Bulgaria (11.6 % in 2006), the Czech Republic (15.1 % in 2010), Hungary (0 % in 2009) and Croatia (0.5 % in 2007).

## Prison health in Europe

Prisoners with a history of drug injecting, in particular, often have multiple and complex health needs, requiring a multi-disciplinary approach and specialist medical care. Prisoners are entitled to have access to the health services available in the country without discrimination on the grounds of their legal situation <sup>(40)</sup>, and prison health services are expected to be able to provide treatment for

problems related to drug use in conditions comparable to those offered outside prison (CPT, 2006). Although this general principle of equivalence is recognised in the European Union through Council Recommendation 2003/488/EC of 18 June 2003 on the prevention and reduction of health-related harm associated with drug dependence <sup>(41)</sup>, and the current EU drugs action plan (2009–12) calls for its implementation, the provision of services in prisons often lags behind that in the community.

## Assistance to drug users in prison

A range of services related to drug use and its associated problems may be provided in European prisons. These include information on drugs and health, healthcare for infectious diseases, detoxification and treatment for drug dependence, combined with psychosocial assistance, harm-reduction measures and preparation for release <sup>(42)</sup>.

Most countries have established interagency partnerships between prison health services and providers in the community, including non-governmental organisations, to deliver health education and treatment in prison and ensure continuity of care upon release. Several European countries have gone one step further and have placed prison health under the responsibility of the Ministry of Health or organised delivery of healthcare through public health services, in order to reduce health inequalities. Pioneers in this respect were Norway and France, followed by Sweden, Italy, England and Wales and Slovenia. In Scotland and Spain, this reform is currently underway.

Opioid substitution treatment is increasingly accepted in the community, but its adoption within prison settings has been slow and coverage is highly variable <sup>(43)</sup>. In 2009, drug users receiving substitution treatment in six EU countries (Estonia, Greece, Cyprus, Latvia, Lithuania, Slovakia) were unable to continue this treatment after arrest. Continuity and coherence of drug treatment between community and prison and vice versa is particularly important, given the high rates of overdose deaths on release (Merrall et al., 2010).

Hepatitis C in prison populations is a growing public health concern in Europe, and specific screening programmes are reported from Belgium, Bulgaria, France, some German *Länder*, Lithuania, Luxembourg, Hungary and Finland. Despite the importance of detecting these infections on prison entry (Sutton et al., 2006) and the documented cost-effectiveness of providing HCV treatment in prison settings (Tan et al., 2008), many inmates go untested and untreated.

<sup>(40)</sup> UN General Assembly, Resolution A/RES/45/111, Basic principles for the treatment of prisoners (available online).

<sup>(41)</sup> OJ L 165, 3.7.2003, p. 31.

<sup>(42)</sup> See Table HSR-7 in the 2011 statistical bulletin.

<sup>(43)</sup> See Table HSR-9 in the 2011 statistical bulletin.





## Chapter 3 Cannabis

### Introduction

Cannabis is the illicit drug most widely available in Europe, where it is both imported and produced domestically. In most European countries, cannabis use increased during the 1990s and early 2000s. Europe may now be moving into a new phase, as data from general population and school surveys point to a stabilising or even decreasing trend in cannabis use in many countries. Levels of use, nevertheless, remain high by historical standards. The last few years have also seen a growing understanding of the public health implications of the long-term and widespread use of this drug, and rising levels of treatment demand for cannabis-related problems. Therefore, what constitutes an effective response to cannabis use remains a key question in the European debate on drugs.

### Supply and availability

#### Production and trafficking

Cannabis can be cultivated in a wide range of environments and grows wild in many parts of the world. It has been estimated that cannabis is cultivated in 172 countries and territories (UNODC, 2009). The difficulties in arriving at accurate figures for global cannabis production are acknowledged in the UNODC's most recent estimates, which place global production for 2008 at between 13 300 and 66 100 tonnes of herbal cannabis and between 2 200 and 9 900 tonnes of cannabis resin.

Cannabis cultivation in Europe is widespread and appears to be increasing. All 29 European countries reporting information to the EMCDDA mentioned domestic cannabis cultivation, though the scale and nature of the

**Table 3: Seizures, price and potency of herbal cannabis and resin**

	Cannabis resin	Herbal cannabis	Cannabis plants <sup>(1)</sup>
<b>Global quantity seized</b>	1 261 tonnes	6 022 tonnes	n.a.
<b>Quantity seized EU and Norway (Including Croatia and Turkey)</b>	584 tonnes (594 tonnes)	57 tonnes (99 tonnes)	1.4 million plants and 42 tonnes (1.4 million plants and 42 tonnes) <sup>(2)</sup>
<b>Number of seizures EU and Norway (Including Croatia and Turkey)</b>	400 000 (405 000)	324 000 (354 000)	25 000 (25 100)
<b>Mean retail price (EUR per gram) Range (Interquartile range) <sup>(3)</sup></b>	3–19 (6.8–10.2)	2–70 (6.3–10.9)	n.a. n.a.
<b>Mean potency (THC content, %) Range (Interquartile range) <sup>(3)</sup></b>	3–17 (4.3–11.5)	1–15 (4.4–8.9)	n.a. n.a.

<sup>(1)</sup> Countries report the quantity seized either as a number of plants seized or by weight; the totals for both quantities are given here.

<sup>(2)</sup> The total amount of cannabis plants seized in 2009 is likely to be underestimated, largely due to the lack of recent data for the Netherlands, a country reporting relatively large seizures up to 2007. In the absence of 2008 and 2009 data, values for the Netherlands cannot be included in European estimates for 2009.

<sup>(3)</sup> Range of the middle half of the reported data.

NB: All data are for 2009; n.a., not applicable.

Sources: UNODC (2011) for global values, Reitox national focal points for European data.

phenomenon seem to vary considerably. A significant proportion of cannabis used in Europe is, nevertheless, likely to be the result of intraregional trafficking. The International Narcotics Control Board (2011b) mentioned Albania, Bulgaria, the former Yugoslav Republic of Macedonia, Moldova, Montenegro, Serbia and Ukraine as sources of the cannabis used in central and eastern Europe.

Herbal cannabis in Europe is also imported, mostly from Africa (e.g. Ghana, South Africa, Egypt), and less often from the Americas (especially the Caribbean islands), the Middle East (Lebanon) and Asia (Thailand).

A recent survey suggests that Afghanistan has displaced Morocco as the largest producer of cannabis resin. Production of cannabis resin in Afghanistan is estimated at between 1 200 and 3 700 tonnes a year (UNODC, 2011). Although some of the cannabis resin produced in Afghanistan is sold in Europe, it is likely that Morocco remains Europe's main supplier of this drug. Cannabis resin from Morocco is typically smuggled into Europe primarily through the Iberian Peninsula, with the Netherlands and Belgium having a role as a secondary distribution and storage centre (Europol, 2011).

### Seizures

In 2009, an estimated 6 022 tonnes of herbal cannabis and 1 261 tonnes of cannabis resin were seized worldwide (Table 3), an overall decrease of about 11 % over the previous year. North America continued to account for the bulk of herbal cannabis seized (70 %), while quantities of resin seized remained concentrated in western and central Europe (48 %) (UNODC, 2011).

In Europe, an estimated 354 000 seizures of herbal cannabis were made in 2009, amounting to an estimated 99 tonnes, of which Turkey accounted for over one third (42 tonnes), a record amount; in addition, record seizures were reported by Greece (7 tonnes) and Portugal (5 tonnes) <sup>(44)</sup>. Between 2004 and 2009, the total number of seizures doubled and the amount of herbal cannabis seized also increased. Since 2005, the United Kingdom has accounted for about half of the total number of seizures, amounting to a minimum of about 20 tonnes per year.

Seizures of cannabis resin in Europe continued to exceed herbal cannabis seizures, both in number and amount seized, although the difference is decreasing <sup>(45)</sup>. In 2009, about 405 000 seizures of cannabis resin were made,

resulting in the interception of an estimated 594 tonnes of the drug, six times the quantity of herbal cannabis seized. Between 2004 and 2009, the number of cannabis resin seizures increased steadily, while the total amount seized has been declining from a peak of 1 080 tonnes in 2004. In 2009, similar to other years, Spain reported half of the total number of cannabis resin seizures and about three quarters of the quantity seized.

The number of seizures of cannabis plants has increased since 2004, reaching an estimated 25 100 cases in 2009. Countries report the quantity seized either as an estimate of the number of plants seized or by weight. Seizures reported by number of plants increased from 1.7 million in 2004 to about 2.5 million in 2005–07 in Europe <sup>(46)</sup>. Available data may point to a decrease in 2008 at European level, but current trends in reported numbers of cannabis plants seized cannot be plotted due to the lack of recent data from the Netherlands, a country historically reporting large quantities. Since 2004, seizures reported by weight of plants have more than trebled, reaching 42 tonnes in 2009, most of which continued to be accounted for by Spain (29 tonnes) and Bulgaria (10 tonnes).

### Potency and price

The potency of cannabis products is determined by their content of delta-9-tetrahydrocannabinol (THC), the primary active constituent. Cannabis potency varies widely between and within countries, between different cannabis products and between genetic varieties. Information on cannabis potency is mainly based on forensic analysis of selected samples of cannabis seized. The extent to which the samples analysed reflect the overall market is unclear, and for this reason, data on potency should be interpreted with caution.

In 2009, the reported mean THC content of cannabis resin ranged from 3 % to 17 %. The mean potency of herbal cannabis (including sinsemilla — the form of herbal cannabis with the highest potency) ranged from 1 % to 15 %. The mean potency of sinsemilla was reported by only three countries: 2 % in Romania, 11 % in Germany and 15 % in the Netherlands. Over the period 2004–09, the mean potency of cannabis resin has been diverging in the 15 countries reporting sufficient data. The potency of herbal cannabis remained relatively stable or decreased in 10 reporting countries, and increased in the Czech Republic, Estonia, the Netherlands and Slovakia. Trend data on the potency of locally produced herbal cannabis

<sup>(44)</sup> The data on European drug seizures mentioned in this chapter can be found in Tables SZR-1 to SZR-6 in the 2011 statistical bulletin.

<sup>(45)</sup> Due to differences in shipment size and distances travelled, as well as the need to cross international borders, cannabis resin may be more at risk of being seized than domestically produced herbal cannabis.

<sup>(46)</sup> The analysis does not include the seizures reported by Turkey of 20.4 million plants in 2004, since data on quantities seized are not available for subsequent years.

are available only for the Netherlands, where a decline in the mean potency of 'nederwiet' was observed: from a peak of 20 % in 2004 to 15 % in 2009 <sup>(47)</sup>.

The mean retail price of cannabis resin, in 2009, ranged from EUR 3 to EUR 19 per gram in the 18 countries providing information, with 12 countries reporting prices between EUR 7 and EUR 10. The mean retail price of herbal cannabis ranged between EUR 2 and EUR 70 per gram in the 20 countries supplying information, with 12 of them reporting prices of between EUR 5 and EUR 10. Over the period 2004–09, the mean retail price of both cannabis resin and herb remained stable or increased in most of the 18 countries providing data, with the exceptions being Latvia, Hungary and Poland, where the price of resin decreased.

## Prevalence and patterns of use

### Cannabis use among the general population

It is conservatively estimated that cannabis has been used at least once (lifetime prevalence) by about 78 million Europeans, that is over one in five of all 15- to 64-year-olds (see Table 4 for a summary of the data). Considerable differences exist between countries, with national prevalence figures varying from 1.5 % to 32.5 %. For most of the countries, the prevalence estimates are in the range of 10–30 % of all adults.

An estimated 22.5 million Europeans have used cannabis in the last year, or on average 6.7 % of all 15- to 64-year-olds. Estimates of last month prevalence will include those using the drug more regularly, though not necessarily in a daily or intensive way. It is estimated that about 12 million Europeans used the drug in the last month, on average about 3.6 % of all 15- to 64-year-olds.

### Cannabis use among young adults

Cannabis use is largely concentrated among young people (15–34 years), with the highest prevalence of last year use generally being reported among 15- to 24-year-olds. This is the case in all the reporting countries, with the exception of Cyprus and Portugal <sup>(48)</sup>.

Population survey data suggest that, on average, 32.0 % of young European adults (15–34 years) have ever used cannabis, while 12.1 % have used the drug in the last year and 6.6 % have used it in the last month. Still higher proportions of Europeans in the 15–24 age group are estimated to have used cannabis in the last year (15.2 %

or last month (8.0 %). National prevalence estimates of cannabis use vary widely between countries in all measures of prevalence. For example, estimates of last year prevalence of use among young adults in countries at the upper end of the scale are more than 20 times those of the lowest-prevalence countries.

Cannabis use is generally higher among males, with, for example, the ratio of males to females among young adults reporting use of cannabis in the last year ranging from just over six to one in Portugal to just under unity in Norway <sup>(49)</sup>.

### International comparisons

Figures from Australia, Canada and the United States on lifetime and last year use of cannabis among young adults are all above the European averages, which are 32.0 % and 12.1 % respectively. For instance, in Canada (2009) lifetime prevalence of cannabis use among young adults was 48.4 % and last year prevalence 21.6 %. In the United States, SAMHSA (2010) estimated a lifetime prevalence of cannabis use of 51.6 % (16–34 years, recalculated by the EMCDDA) and a last year prevalence of 24.1 %, while in Australia (2007) the figures are 46.7 % and 16.2 % for the 14- to 39-year-olds. Among 15- to 16-year-old school students, a small number of European countries (Czech Republic, Spain, France, Slovakia) report levels of lifetime prevalence of cannabis use that are comparable to those reported in Australia and the United States.

### Cannabis use among school students

The ESPAD survey, carried out every four years, provides comparable data on alcohol and drug use among 15- to 16-year-old school students in Europe (Hibell et al., 2009). In 2007, the survey was conducted in 25 EU Member States as well as Norway and Croatia. In addition, in 2009–10, national school surveys were carried out by Italy, Slovakia, Sweden and the United Kingdom.

The data from the 2007 ESPAD and 2009–10 national school surveys reveal that the highest lifetime prevalence of cannabis use among 15- to 16-year-old school students is in the Czech Republic (45 %), while Estonia, Spain, France, the Netherlands, Slovakia and the United Kingdom (England) report prevalence levels ranging from 26 % to 33 %. Lifetime prevalence levels of cannabis use of between 13 % and 25 % are reported by 15 countries. The lowest levels (less than 10 %) are reported in Greece, Cyprus, Romania, Finland, Sweden and Norway.

<sup>(47)</sup> See Tables PPP-1 and PPP-5 in the 2011 statistical bulletin for potency and price data. For definitions of cannabis products, see the online glossary.

<sup>(48)</sup> See Figure GPS-1 in the 2011 statistical bulletin.

<sup>(49)</sup> See Table GPS-5 (part iii) and (part iv) in the 2011 statistical bulletin.

**Table 4: Prevalence of cannabis use in the general population – summary of the data**

Age group	Time frame of use		
	Lifetime	Last year	Last month
<b>15–64 years</b>			
Estimated number of users in Europe	78 million	22.5 million	12 million
European average	23.2 %	6.7 %	3.6 %
Range	1.5–32.5 %	0.4–14.3 %	0.1–7.6 %
Lowest-prevalence countries	Romania (1.5 %) Malta (3.5 %) Bulgaria (7.3 %) Hungary (8.5 %)	Romania (0.4 %) Malta (0.8 %) Greece (1.7 %) Hungary (2.3 %)	Romania (0.1 %) Malta (0.5 %) Greece, Poland (0.9 %) Sweden (1.0 %)
Highest-prevalence countries	Denmark (32.5 %) Spain (32.1 %) Italy (32.0 %) France, United Kingdom (30.6 %)	Italy (14.3 %) Czech Republic (11.1 %) Spain (10.6 %) France (8.6 %)	Spain (7.6 %) Italy (6.9 %) France (4.8 %) Czech Republic (4.1 %)
<b>15–34 years</b>			
Estimated number of users in Europe	42 million	16 million	9 million
European average	32.0 %	12.1 %	6.6 %
Range	2.9–45.5 %	0.9–21.6 %	0.3–14.1 %
Lowest-prevalence countries	Romania (2.9 %) Malta (4.8 %) Greece (10.8 %) Bulgaria (14.3 %)	Romania (0.9 %) Malta (1.9 %) Greece (3.2 %) Poland (5.3 %)	Romania (0.3 %) Greece (1.5 %) Poland (1.9 %) Sweden, Norway (2.1 %)
Highest-prevalence countries	Czech Republic (45.5 %) Denmark (44.5 %) France (43.6 %) Spain (42.4 %)	Czech Republic (21.6 %) Italy (20.3 %) Spain (19.4 %) France (16.7 %)	Spain (14.1 %) Italy (9.9 %) France (9.8 %) Czech Republic (8.6 %)
<b>15–24 years</b>			
Estimated number of users in Europe	19 million	9.5 million	5 million
European average	30.0 %	15.2 %	8.0 %
Range	3.7–53.8 %	1.5–29.5 %	0.5–17.2 %
Lowest-prevalence countries	Romania (3.7 %) Malta (4.9 %) Greece (9.0 %) Cyprus (14.4 %)	Romania (1.5 %) Greece (3.6 %) Portugal (6.6 %) Slovenia, Sweden (7.3 %)	Romania (0.5 %) Greece (1.2 %) Sweden (2.2 %) Norway (2.3 %)
Highest-prevalence countries	Czech Republic (53.8 %) France (42.0 %) Spain (39.1 %) Denmark (38.0 %)	Czech Republic (29.5 %) Spain (23.9 %) Italy (22.3 %) France (21.7 %)	Spain (17.2 %) France (12.7 %) Czech Republic (11.6 %) Italy (11.0 %)
European estimates are computed from national prevalence estimates weighted by the population of the relevant age group in each country. To obtain estimates of the overall number of users in Europe, the EU average is applied for countries lacking prevalence data (representing not more than 3 % of the target population). Populations used as basis: 15–64, 336 million; 15–34, 132 million; 15–24, 63 million. As European estimates are based on surveys conducted between 2001 and 2009/10 (mainly 2004–08), they do not refer to a single year. The data summarised here are available under 'General population surveys' in the 2011 statistical bulletin.			

The gender gap in cannabis use is less marked among school students than among young adults. Male to female ratios for cannabis use among school students range from close to unity in Spain and the United Kingdom to two to one or higher in Cyprus, Greece, Poland and Romania <sup>(50)</sup>.

### Trends in cannabis use

During the late 1990s and early 2000s, many European countries reported increases in cannabis use, both in general population surveys and in school surveys. Since then, the European picture has become more complex.

Many countries report that cannabis use is stabilising or even decreasing, while a small number of countries (Bulgaria, Estonia, Finland, Sweden) may be witnessing an increase. While almost all European countries have carried out general population surveys in recent years, only 16 countries have provided sufficient data to analyse trends in cannabis use over a longer period of time.

Trends in these 16 countries can be grouped according to prevalence levels (Figure 5). First, a group of six countries (Bulgaria, Greece, Hungary, Finland, Sweden, Norway), located mainly in northern and south-eastern Europe, have

<sup>(50)</sup> See Table EYE-20 (part ii) and (part iii) in the 2011 statistical bulletin.

always reported low last year prevalence of cannabis use among 15- to 34-year-olds, at levels not exceeding 10 %. Secondly, a group of five countries (Denmark, Germany, Estonia, Netherlands, Slovakia), located in different parts of Europe, report higher prevalence levels, but not exceeding 15 % in their latest survey. All of the countries in this group, except the Netherlands, reported notable increases of cannabis use in the 1990s and early 2000s. With the exception of Estonia, this group of countries reported an increasingly stable trend in the following decade. Finally, there is a group of five countries that have all, at some point in the past 10 years, reached the highest levels of cannabis use in Europe, with last year use among young adults in the region of 20 % and higher. These are countries in the south and west of Europe (France, Spain, Italy, United Kingdom) and the Czech Republic. In this group, trends may be diverging. While the United Kingdom and, to a lesser extent, France have reported decreases in their most recent surveys, Spain has reported a relatively stable situation since 2003. All three had reported increases in cannabis use during the 1990s. Italy and the Czech Republic have both reported increases followed by decreases in recent years. Differences in survey methods and response rates, however, do not yet allow confirmation of the most recent trends in these two countries.

It is worth noting the particular case of the United Kingdom, where surveys are conducted annually. After a history of the highest levels of cannabis use in Europe at the beginning of the 2000s, in 2010 last year prevalence

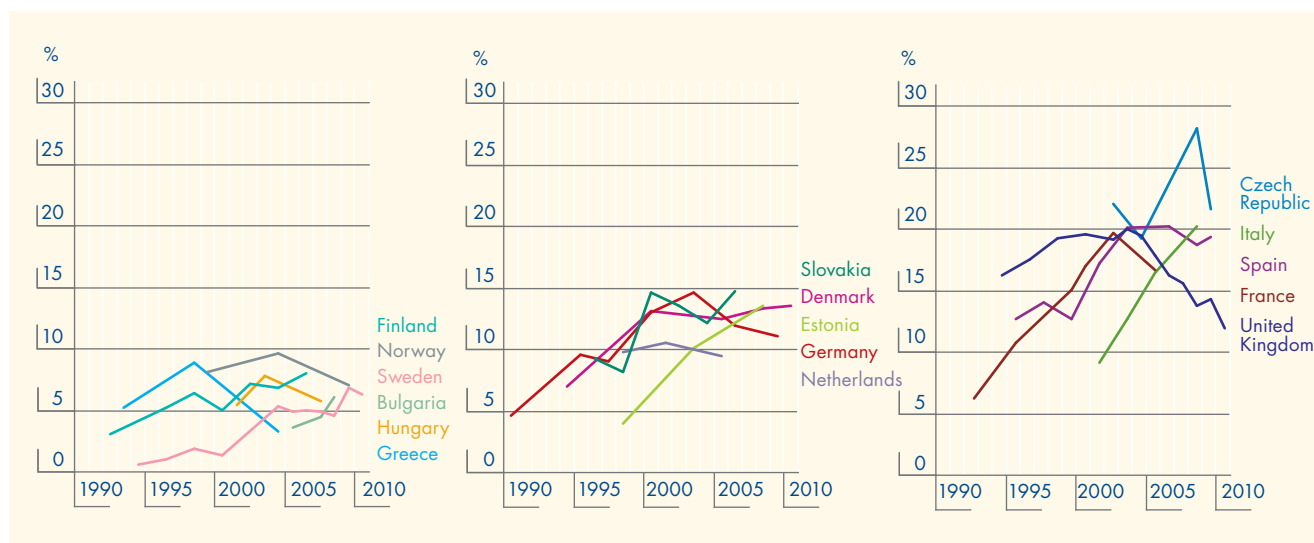
of cannabis use fell below the EU average for the first time since EU monitoring began.

The recorded stabilisation or decrease in cannabis use refers to last year use, which includes recreational patterns of use. However, it is not clear whether intensive and long-term use have also stabilised.

Similar patterns were found across Europe in the time trends in cannabis use among school students between 1995 and 2007 (EMCDDA, 2009a). Seven countries, located mainly in northern or southern Europe, reported overall stable and low lifetime prevalence of cannabis use during the whole period. Most western European countries, as well as Slovenia and Croatia (11 countries), which had high or strongly increasing lifetime cannabis use prevalence until 2003, saw a decrease or stabilisation in 2007. In most of central and eastern Europe, the increasing trend observed between 1995 and 2003 appears to have levelled out. In this region, six countries reported a stable situation and two an increase between 2003 and 2007.

New school survey data from the latest HBSC ('Health behaviour in school-aged children') surveys also point to an overall stable or decreasing trend in drug use among students (15–16 years) in most countries during the period 2006–10. Mirroring the trend among adults, in England, lifetime cannabis use among school students has almost halved from 40 % in 2002 to 22 % in 2010. In Germany, lifetime cannabis use among school students has also

**Figure 5:** Trends in last year prevalence of cannabis use among young adults (aged 15–34), countries with three surveys or more and grouped according to highest prevalence level (below 10 %, 10–15 %, above 15 %)

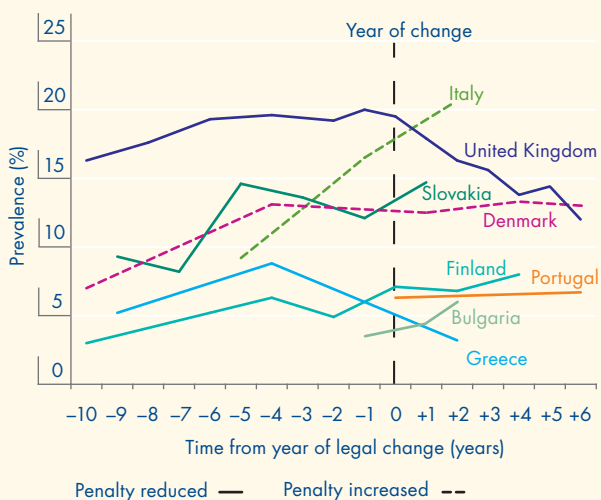


NB: The Czech Republic is exploring reasons for the wide variability in survey results, which in part seem related to changes in methods. The data are provided for information, but comparisons should be treated with caution. See Figure GPS-4 in the 2011 statistical bulletin for further information.  
Sources: Reitox national reports (2010), taken from population surveys, reports or scientific articles.

### Looking for a relationship between penalties and cannabis use

Over the past 10 years, a number of European countries have changed their drug laws regarding cannabis, and many of these have prevalence estimates for the use of the drug before and after the legal change. A simple before–after comparison using these data can explore whether an observable change in prevalence can be seen in the years after law change. As cannabis use is concentrated among the younger age groups, the analysis was performed using prevalence data for 15- to 34-year-olds. In the graph, last year cannabis prevalence is plotted against time, with zero on the horizontal axis representing the year of legal change. Because of differences between countries in the year in which they changed their laws and in the extent of their survey data, the trend lines cover varying times.

Countries increasing the penalty for cannabis possession are represented in the graph by dotted lines, and those reducing the penalty by solid lines. The legal impact hypothesis, in its simplest form, states that a change in the law will lead to a change in prevalence, with increased penalties leading to a fall in drug use and reduced penalties to a rise in drug use. On this basis, the dotted lines would fall and the solid lines would rise after the change. However, in this 10-year period, for the countries in question, no simple association can be observed between legal changes and cannabis use prevalence.



NB: Legal changes took place in 2001–06; see Chapter 1 and ELDD Topic overview on possession.

halved, from 24 % in 2002 to 11 % in 2010. However, increases have been recorded since 2006 in the Czech Republic, Greece, Latvia, Lithuania, Romania and Slovenia.

Long-term trend data from school surveys in Australia and the United States also indicate a decreasing trend

in cannabis use up to 2009 <sup>(51)</sup>. However, the most recent US school survey, carried out in 2010, indicates a possible resurgence in cannabis use, with school students reporting increased last year cannabis use and lower levels of disapproval of the drug (Johnston et al., 2010). In the 2010 survey, American school students aged 15- to 16-years-old reported levels of use of cannabis higher than those of cigarette smoking, on some measures: 16.7 % had used cannabis in the past month, while only 13.6 % had smoked cigarettes (Johnston et al., 2010).

The picture is different among school students in Europe, where levels of last month cigarette smoking remain considerably higher than those for cannabis use. Between 2003 and 2007, ESPAD school surveys in 23 EU countries reported an overall reduction in last month cigarette smoking (from 33 % to 28 %) and a reduction, or at least a stabilisation, in cannabis use (from 9 % to 7 %) (Figure 6). In Europe, where cannabis and tobacco are commonly mixed together for smoking, decreases in tobacco smoking may exert some influence on cannabis trends.

### Patterns of cannabis use

Available data point to a variety of patterns of cannabis use, ranging from experimental use to dependent use. Many individuals tend to discontinue their cannabis use after one or two experiments; others use it occasionally or during a limited period of time. Of those aged 15–64 who have ever used cannabis, 70 % have not done so during the last year <sup>(52)</sup>. Among those who have used the drug in the last year, on average, nearly half have done so in the last month, possibly indicating more regular use. These proportions, however, vary considerably across countries and between genders.

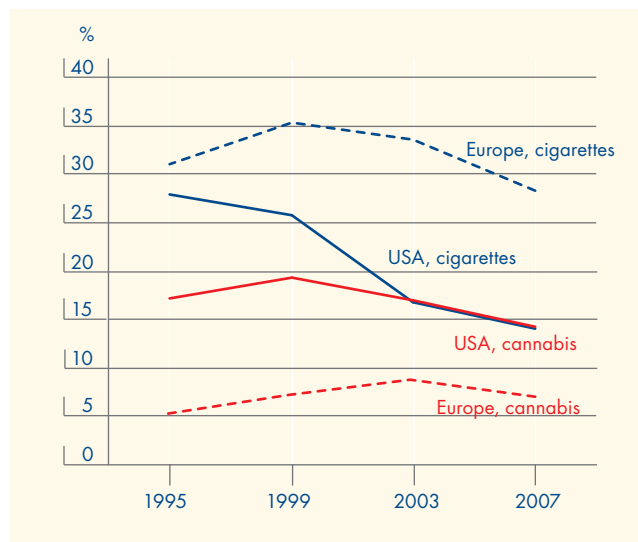
Cannabis use is particularly high among certain groups of young people, for instance, those frequently attending nightclubs, pubs and music events. Targeted surveys recently conducted in nightlife or dance music settings in Belgium, the Czech Republic, the Netherlands, Lithuania and the United Kingdom reported prevalence levels that are much higher than the European average among young adults. Cannabis use is also often associated with heavy alcohol use: among young adults (aged 15 to 34), frequent or heavy alcohol users were, in general, between two and six times more likely to report the use of cannabis compared with the general population.

The types of cannabis product and the ways they are used can have different associated risks. Patterns of cannabis use that result in high doses being consumed may put the user

<sup>(51)</sup> See Figure EYE-2 (part vi) in the 2011 statistical bulletin.

<sup>(52)</sup> See Figure GPS-2 in the 2011 statistical bulletin.

**Figure 6:** Trends in last month prevalence of cannabis use and cigarette smoking among 15- to 16-year-old school students in 17 European countries and the United States



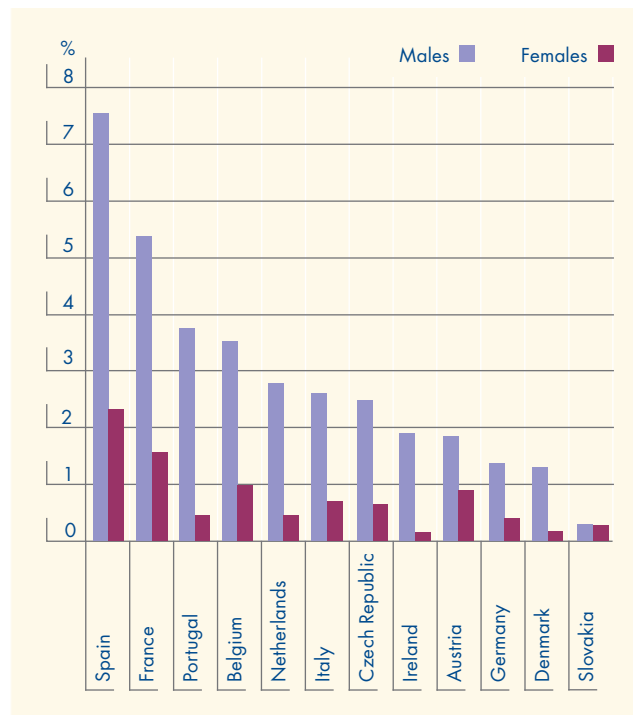
NB: The European average (unweighted) is based on 15- to 16-year-old school students in 15 EU countries together with Croatia and Norway. US school student average is based on a sample of about 16 000 10th grade students (aged 15–16).  
Sources: Hibell et al. (2009), Johnston et al. (2010).

at greater risk of developing dependence or other problems (Chabrol et al., 2003; Swift et al., 1998). Examples of these practices include using cannabis with very high THC content or in large amounts, and inhaling from a water pipe.

General population surveys seldom distinguish between use of different types of cannabis. However, in 2009 new questions were introduced in a UK general population survey to identify the prevalence of the use of herbal cannabis, including 'skunk' (the street name given to a generally high potency form of the drug). The 2009/10 British Crime Survey estimates that around 12.3 % of adults have ever taken what they believed to be 'skunk'. While similar proportions of cannabis users report lifetime use of herbal cannabis (50 %) and cannabis resin (49 %), those using the drug in the last year are more likely to have used herbal cannabis (71 %) than resin (38 %) (Hoare and Moon, 2010). While these estimates cannot be generalised to other populations in Europe, the findings illustrate some changes in cannabis consumption over time.

Data from a sample of 14 European countries accounting for 65 % of the adult population of the European Union and Norway show that almost half of those who used cannabis in the last month had consumed the drug on one to three days during that month, about one third on 4 to 19 days and one fifth on 20 days or more. In most of these

**Figure 7:** Prevalence of daily or almost daily cannabis use among young adults (aged 15–34), by gender



NB: Those that declared having used cannabis in 20 days or more in the 30 days previous to the interview are referred to as 'daily or almost daily users' in the texts. For more information, see Table GPS-10 (part iv) in the 2011 statistical bulletin.

Sources: Reitox national focal points.

14 countries, females are more likely to use cannabis on an occasional basis, while the majority of daily or almost daily cannabis users are male (Figure 7). Based on these figures, male users in many countries appear to be at particular risk of becoming frequent users, and this should be considered when developing prevention activities.

New data on drug use among adolescents show that daily cannabis use is also a growing problem in the United States. Prevalence of daily use of cannabis increased significantly, to 6 % among 17- to 18-year-old high school students in 2010 (Johnston et al., 2010).

Dependence is increasingly recognised as a possible consequence of regular cannabis use, even among younger users, and the number of individuals seeking help due to their cannabis use is growing in some European countries (see below). It has, however, been reported that half of dependent cannabis users who stopped using the drug were able to do so without treatment (Cunningham, 2000). Some cannabis users — particularly, heavy users — can experience problems without necessarily fulfilling the clinical criteria for dependence.



## Treatment demand

In 2009, cannabis was the primary drug of about 98 000 reported treatment entrants in 26 countries (23 % of the total), making it the second most reported drug after heroin. Cannabis was also the most reported secondary drug, mentioned by around 93 000 clients (28 %). Primary cannabis users account for more than 30 % of treatment entrants in Belgium, Denmark, Germany, France, Hungary, the Netherlands and Poland, but less than 10 % in Bulgaria, Estonia, Greece, Lithuania, Malta, Romania and Slovenia <sup>(53)</sup>.

Differences in the prevalence of cannabis use and its related problems are not the only factors explaining the differences in treatment levels between countries. Other factors, such as referral practices and the level and type of treatment provision are also important. Examples of this are evident in France and Hungary, two countries that report a high proportion of cannabis users entering treatment. France has a system of counselling centres, which target young clients <sup>(54)</sup>. In Hungary, cannabis offenders are offered drug treatment as an alternative to punishment, which can swell the numbers.

In terms of trends over the last 10 years, among the 21 countries for which data are available, all countries, except Bulgaria, report an increase in the proportion of clients entering treatment for the first time in their life because of cannabis use. For the period 2004–09, in the 18 countries for which data are available, the number of primary cannabis users among those reported entering treatment for the first time in their life increased by about 40 % from 27 000 to 38 000 <sup>(55)</sup>. The most recent figures (2008–09) show a continuing upward trend in the majority of reporting countries.

## Profile of treatment clients

Cannabis clients mainly enter treatment in outpatient settings and are reported to be one of the youngest client groups entering treatment, with a mean age of 25 years. Young people citing cannabis as their primary drug represent 74 % of reported treatment entrants aged 15–19 years and 86 % of those younger than 15 years. The male to female ratio is the highest among drug clients (about five males to every female). Overall, 49 % of primary cannabis clients are daily users, about 18 % use it two to six times a week, 12 % use cannabis weekly or less often and 22 % are occasional users, some of whom

## Adverse health effects of cannabis use

The individual health risk related to cannabis use is generally accepted to be lower than those associated with drugs such as heroin or cocaine. However, due to the high prevalence of cannabis use, the impact of the drug on public health may be significant.

A range of acute and chronic health problems associated with cannabis use have been identified. Acute adverse effects include anxiety, panic reaction and psychotic symptoms, which may be more commonly reported by first-time users. Cannabis use can also increase the risk of being involved in a traffic accident.

Chronic effects linked to cannabis use have been documented, including dependence and a number of respiratory diseases. The impact of cannabis use on cognitive performance remains unclear. Regular cannabis use in adolescence might adversely affect mental health in young adults, and there is evidence of increased risks of psychotic symptoms and disorders with increasing frequency of use (EMCDDA, 2008a, 2008b; Hall and Degenhardt, 2009; Moore et al., 2007).

have used it in the month before entering treatment. These proportions differ between countries <sup>(56)</sup>.

## Treatment

### Treatment provision

In Europe, cannabis treatment includes a broad range of measures including Internet-based treatment, counselling and structured psychosocial interventions and treatment in residential settings. There is also a frequent overlap between selective and indicated prevention and treatment interventions (see Chapter 2).

Cannabis treatment is mainly provided in specialist outpatient facilities, and services specifically targeting cannabis-related problems are now available in more than half of the Member States. For example, more than 300 youth counselling centres have been set up across France to cater primarily for the needs of young users with cannabis problems. In Germany, alongside several specific cannabis programmes, 161 counselling centres have adopted the programme 'Realize it', which requires clients to set goals for controlling consumption and addresses individual and environmental factors associated with their cannabis use. The intervention is delivered in five sessions

<sup>(53)</sup> See Figure TDI-2 (part ii) and Tables TDI-5 (part ii) and TDI-22 (part i) in the 2011 statistical bulletin.

<sup>(54)</sup> In addition, many opioid users in France are treated by general practitioners and are not reported to the treatment demand indicator, thereby inflating the proportions of users of other drugs.

<sup>(55)</sup> See Figure TDI-1 (part i) and (part ii) in the 2011 statistical bulletin.

<sup>(56)</sup> See Tables TDI-10 (part ii) and (part iii), TDI-11 (part i), TDI-18 (part ii), TDI-21 (part ii), TDI-24, TDI-103 (part vii) and TDI-111 (part viii) in the 2011 statistical bulletin.

over a period of 10 weeks to up to 1 400 cannabis users per year. In Hungary, the large majority (80 %) of cannabis clients attend preventive consulting services. These services are provided by accredited organisations.

Germany and the Netherlands have been particularly active in the development of cannabis programmes. Cannabis problems are commonly associated with other substance or psychosocial problems, and this is reflected in the types of programme available to cannabis users. For example, the Amsterdam Medical Centre has developed a family motivational intervention for young cannabis users with schizophrenia and their parents (Dutch Reitox national report, 2009). A randomised controlled trial has shown positive results for this intervention. After three months, the young people involved in the trial reported reduced cannabis use and craving, while the parents reported reduced stress and improved well-being. Cases involving the co-occurrence of cannabis use and psychiatric problems, such as psychosis or depression, require integrated approaches between specialised treatment providers and mental health centres. In practice, however, treatment of dual diagnoses is still often handled sequentially and cooperation between care providers remains difficult.

A recent German study predicts increasing numbers seeking treatment for problems related to cannabis use in future years, especially among male adolescents and young adults. Currently, estimates of the proportion of drug users reached by drug facilities in Germany show that, although specialised addiction services are able to reach between 45 % and 60 % of users with opioid dependence, only between 4 % and 8 % of cannabis users estimated to be in need of treatment are reached. In some cases, Internet-based interventions, which are now available in three Member States, may provide further treatment options to cannabis users who seek support but who are reluctant to approach traditional treatment services.

### Recent studies on treatment of cannabis users

Treatment evaluation studies are still scarce in comparison with those for other illicit drugs, in spite of the increasing demand for cannabis treatment. Research is nevertheless increasing in Europe, with studies currently being conducted in Germany, Denmark, Spain, France and the Netherlands.

A number of these studies confirm that psychosocial interventions can have positive results with cannabis users. This is the case, for example, for multidimensional family therapy, a comprehensive family-based outpatient intervention targeting adolescents with drug use and behaviour problems (Liddle et al., 2009), which

### Medical use of cannabis in the United States

Since 1996, 15 US states and the District of Columbia have passed laws permitting personal possession of a defined amount of cannabis for medical use. The patient must have a written recommendation from a doctor in all states except California and Maine, where the recommendation can be oral. All states except Washington have established confidential registries with patient identity cards, and in a number of states these are mandatory. While each state has its own list of conditions, most states allow cannabis use to treat pain, whether 'chronic', 'severe' or 'intractable'.

Almost all states have adopted the caregiver model, whereby a designated person is permitted to grow a limited quantity of cannabis for the use of the patient. Depending on the state, patients may designate one or two caregivers, and caregivers may supply up to five patients. The amounts permitted range from 1 ounce — about 28 grams — (Alaska, Montana, Nevada) to 24 ounces (Oregon, Washington) of usable herbal cannabis, and from six to 24 plants, some of which should be 'immature'. Provision of cannabis for medical use by not-for-profit dispensaries or state treatment centres is permitted in about half of the states. In all but two jurisdictions, New Jersey and Washington DC, patients are allowed to grow their own medicinal cannabis.

Federal law, in contrast, classifies cannabis as a dangerous substance with no medical use. This allows the federal government to prosecute any users and suppliers of cannabis. However, in October 2009, the Deputy Attorney General issued a memo to federal prosecutors not to prioritise the prosecution of cases relating to medical use of cannabis if authorised under state law.

reported success in reducing levels of drug consumption. Conclusions from a comparison with other available treatments in a cross-country multisite trial were, however, unclear. This has prompted the EMCDDA to commission a meta-analysis of European and American studies.

Other psychosocial interventions that are currently being evaluated include psycho-education (based on behavioural therapeutic and motivational interviewing elements) and relapse prevention, brief interventions, contingency management and various types of cognitive behavioural therapy.

Research is also being conducted on pharmacological products that may support psychosocial interventions (Vandrey and Haney, 2009). In this area, the three principal lines of research currently being followed investigate the possibilities of using pharmaceuticals to help reduce cannabis withdrawal symptoms, craving or use (Marshall, K., et al., 2011).



## Chapter 4

# Amphetamines, ecstasy, hallucinogens, GHB and ketamine

### Introduction

Amphetamines (a generic term that includes both amphetamine and methamphetamine) and ecstasy are among the most commonly used illicit drugs in Europe. In many countries, either ecstasy or amphetamines is the second most commonly used illicit substance after cannabis. In addition, in some countries, use of amphetamines constitutes an important part of the drug problem, accounting for a substantial proportion of those in need of treatment.

Amphetamine and methamphetamine are central nervous system stimulants. Of the two drugs, amphetamine is by far the more commonly available in Europe, whereas significant methamphetamine use has historically been restricted to the Czech Republic and Slovakia. More recently, there have been reports of the increased presence of this drug on the amphetamines market in some countries in the north of Europe.

Ecstasy refers to synthetic substances that are chemically related to amphetamines, but which differ to some extent in their effects. The best-known member of the ecstasy

group of drugs is 3,4-methylenedioxy-methamphetamine (MDMA), but other analogues are also sometimes found in ecstasy tablets (MDA, MDEA). The drug's popularity has historically been linked with the dance music scene. While still popular in these settings, recent years have seen a gradual decline in use and availability of ecstasy in many European countries.

The most widely known synthetic hallucinogenic drug in Europe is lysergic acid diethylamide (LSD), consumption of which has been low and somewhat stable for a considerable time. In recent years, there appears to have been a growing interest among young people in naturally occurring hallucinogens such as those found in hallucinogenic mushrooms. Since the mid-1990s, recreational use of ketamine and gamma-hydroxybutyrate (GHB) — both anaesthetics, and widely used in human and veterinary medicine for 30 years — has been reported in certain settings and among sub-groups of drug users in Europe. The illicit use of these substances has become a cause for concern for treatment services in a limited number of European countries.

**Table 5: Seizures, price and purity of amphetamine, methamphetamine, ecstasy and LSD**

	Amphetamine	Methamphetamine	Ecstasy	LSD
<b>Global quantity seized (tonnes)</b>	33	31	5.4	0.1
<b>Quantity seized EU and Norway (Including Croatia and Turkey) <sup>(1)</sup></b>	5.3 tonnes (6.5 tonnes)	500 kg (600 kg)	Tablets 1.9 million (2.4 million)	Units 59 700 (59 700)
<b>Number of seizures EU and Norway (Including Croatia and Turkey)</b>	34 000 (34 200)	7 400 (7 400)	10 300 (11 000)	960 (970)
<b>Mean retail price (EUR) Range (Interquartile range) <sup>(2)</sup></b>	Gram 8–42 (10–23)	Gram 9–71	Tablet 3–16 (4–9)	Dose 4–29 (7–11)
<b>Mean purity or MDMA content Range (Interquartile range) <sup>(2)</sup></b>	1–29 % (6–21 %)	10–76 % (25–64 %)	3–108 mg (26–63 mg)	n.a.

<sup>(1)</sup> The total amounts of amphetamine, ecstasy and LSD seized in 2009 are likely to be underestimated, largely due to the lack of recent data for the Netherlands, a country reporting relatively large seizures up to 2007. In the absence of 2008 and 2009 data, values for the Netherlands cannot be included in European estimates for 2009.

<sup>(2)</sup> Range of the middle half of the reported data.

NB: All data are for 2009; n.a., not available.

Source: UNODC (2011) for global values, Reitox national focal points for European data.

## Supply and availability

### Drug precursors

Amphetamine, methamphetamine and ecstasy are synthetic drugs requiring chemical precursors in the manufacturing process. Insights into the production of these substances can be gleaned from reports of seizures of controlled chemicals — diverted from licit trade — that are necessary for their manufacture.

The International Narcotics Control Board (INCB) reports that global seizures of 1-phenyl-2-propanone (P2P, BMK), which can be used for the illicit manufacture of both amphetamine and methamphetamine, decreased from 5 620 litres in 2008 to 4 900 litres in 2009, with China (2 275 litres in 2009) and Russia (1 731 litres in 2009) continuing to report the highest seizures. In the European Union, seizures of P2P increased from 62 litres in 2008 to 635 litres in 2009. World seizures of two key precursors of methamphetamine have also increased in 2009: ephedrine, to 42 tonnes, from 18 tonnes in 2008 and 22.6 tonnes in 2007; and pseudoephedrine, to 7.2 tonnes, from 5.1 tonnes in 2008, though still below the 25 tonnes seized in 2007. EU Member States accounted for about 0.5 tonnes of ephedrine, almost double the amount seized the year before, and for 67 kg of pseudoephedrine.

Two precursor chemicals are primarily associated with the manufacture of MDMA: 3,4-methylenedioxyphenyl-2-propanone (3,4-MDP2P, PMK) and safrole. The 40 litres of PMK seized in 2009, up from zero in 2008, could suggest that the availability of this substance remains low. This is in contrast to the higher levels recorded in earlier years (8 816 litres in 2006, 2 297 litres in 2007). World seizures of safrole, which may be increasingly replacing PMK in the synthesis of MDMA in Europe, fell to 1 048 litres in 2009 from a peak of 45 986 litres in 2007<sup>(57)</sup>. All of the PMK and most of the safrole confiscations in 2009 were made in the European Union.

International efforts to prevent the diversion of precursor chemicals used in the illicit manufacture of synthetic drugs are coordinated through 'Project Prism'. The project uses a system of pre-export notifications for licit trade, and the reporting of shipments stopped and seizures made when suspicious transactions occur. Information on activities in this area is reported to the International Narcotics Control Board (INCB, 2011b). Another recent initiative by the INCB is the publication of a set of guidelines to assist national governments in establishing voluntary control measures in cooperation with industrial manufacturers of chemicals, with the aim of preventing their diversion for the production of illicit drugs (INCB, 2009).

### Diversifying the supply of precursors for synthetic drug production in Europe

Synthetic drugs, including ecstasy (MDMA, MDEA, MDA) and amphetamine, are manufactured illegally in Europe from imported precursor chemicals. In response to the increased efficiency of international control efforts, some illicit manufacturers now synthesise, rather than purchase, precursors from so-called 'pre-precursors'. In addition, manufacturers are masking traditional precursors as other non-controlled chemicals before importation (Europol, 2007, INCB, 2011a).

Recent fluctuations in the European market for ecstasy illustrate such phenomena. Following successful measures to limit diversion to the illicit market of the MDMA precursor PMK<sup>(1)</sup>, it now appears that a range of pre-precursors including safrole are being used as starting materials in the synthesis of MDMA.

PMK is under international control, both under the UN Convention of 1988 and European legislation. Licit international trade in PMK is small and restricted to a few countries. Safrole is obtained from safrole-rich essential oils extracted from several plant species from South America and south-east Asia (TNI, 2009). While safrole is a scheduled chemical, trade in safrole-rich oils is not controlled. Safrole is also widely used internationally in the manufacture of perfumes and insecticides, which may diminish the impact of international control efforts.

Reports from the Netherlands, the country most closely associated with ecstasy production, suggest that many manufacturers of the drug have used safrole rather than PMK as the starting material. About 40 legitimate shipments of safrole totalling 101 840 litres were reported to the International Narcotic Control Board between November 2009 and October 2010. However, reports of suspicious shipments remain low compared to the estimated amount of ecstasy produced (INCB, 2011a). Some 1 050 litres of safrole and safrole-rich oils were seized in 2009/10, mostly in Lithuania, while neighbouring Latvia reported confiscating 1 841 litres in 2008 (INCB, 2011a).

(1) 3,4-Methylenedioxyphenyl-2-propanone.

### Amphetamine

Global amphetamine production remains concentrated in Europe, which accounted for more than 80 % of all amphetamine laboratories reported in 2009 (UNODC, 2011). In 2009, global seizures of amphetamine increased to about 33 tonnes (see Table 5). Western and central Europe continued to seize large amounts of amphetamine, although the UNODC reported a reduction of 20 % in the quantities seized there compared with 2008, when 7.9 tonnes was seized. The largest increase in amphetamine seizures was reported in Saudi Arabia, Jordan and Syria. Together, the UNODC's Near and

(57) See the box 'Diversifying the supply of precursors for synthetic drug production in Europe'.

Middle East and south-west Asia region seized about 25 tonnes in 2009, almost all in the form of 'captagon' tablets (UNODC, 2011).

Most amphetamine seized in Europe is produced, in order of importance, in the Netherlands, Poland, Belgium, Bulgaria and Turkey. Europol reports that 19 sites involved in the production, tableting or storage of amphetamine were discovered in the European Union in 2009.

An estimated 34 200 seizures amounting to 5.8 tonnes of amphetamine powder and 3 million amphetamine tablets<sup>(58)</sup> were made in Europe in 2009<sup>(59)</sup>. The number of amphetamine seizures has been fluctuating for the last five years, with a decrease reported in 2008 and 2009. While the number of amphetamine tablets confiscated in Europe has decreased sharply over the period 2004–09 due to falling seizures in Turkey, the quantities of amphetamine powder intercepted have remained stable or increased in most European countries<sup>(60)</sup>. However, this assessment is preliminary, as recent data are not available for the Netherlands, which in 2007, the last year for which data are available, reported seizing 2.8 tonnes of amphetamine powder.

The purity of amphetamine samples intercepted in Europe in 2009 continued to vary widely, ranging from less than 8 % in Bulgaria, Hungary, Austria, Portugal, Slovenia, Slovakia and Croatia, to greater than 20 % in countries where amphetamine production is reported or where consumption levels are relatively high (Estonia, Lithuania, the Netherlands, Poland, Finland, Norway)<sup>(61)</sup>. Over the past five years, the purity of amphetamine has fallen in 17 out of the 18 countries reporting sufficient data for trend analysis.

In 2009, the mean retail price of amphetamine ranged between EUR 10 and EUR 23 a gram for over half of the 14 countries providing data. Amphetamine retail prices either decreased or remained stable in all 17 countries reporting data over 2004–09, except in the Netherlands, where they increased over the period, and Slovenia, which reported a major increase in 2009<sup>(62)</sup>.

## Methamphetamine

The number of dismantled methamphetamine laboratories reported worldwide increased by 22 % in 2009. As in the previous year, the strongest increase was registered in

North America, especially the United States, but reports of clandestine laboratories continued to increase in east and south-east Asia. In addition, increased activity related to methamphetamine production was reported in Latin America and Africa. In 2009, 31 tonnes of methamphetamine was seized, a marked increase from the 22 tonnes seized in 2008. Most of the drug was seized in North America (44 %), where Mexico accounted for an exceptionally high 6.1 tonnes in 2009 (UNODC, 2011).

In Europe, illicit methamphetamine production is concentrated in the Czech Republic, where 342 production sites, mostly small-scale 'kitchen laboratories', were detected in 2009 (down from 434 in 2008). Production of the drug also occurs in Slovakia, where it increased in 2009, as well as in Germany, Lithuania and Poland.

In 2009, almost 7 400 seizures of methamphetamine, amounting to about 600 kg of the drug, were reported in Europe. Both the number of seizures and the quantities of methamphetamine seized increased over 2004–09, with a strong increase between 2008 and 2009. Quantities seized doubled between 2008 and 2009, mainly due to increases in the amounts recovered in Sweden and Norway, the main seizing countries in Europe for this drug, where it might partially replace amphetamine. Turkey reported methamphetamine seizures for the first time in 2009, ranking third in terms of quantities recovered: the relatively large consignments of methamphetamine intercepted in Turkey were reported to be in transit from Iran to east and south-east Asia.

Methamphetamine purity varied greatly in 2009 in the 17 countries reporting data, with mean purities of under 15 % in Bulgaria and Estonia, and over 65 % in the Czech Republic, the Netherlands, Slovakia and Croatia. No overall trend in methamphetamine purity can be discerned. The range of retail prices for methamphetamine also varied greatly in 2009, in the six countries reporting it, from about EUR 10 per gram in Bulgaria, Lithuania and Slovenia, to about EUR 70 per gram in Germany and Slovakia.

## Ecstasy

The reported number of dismantled laboratories producing ecstasy was virtually unchanged at 52 in 2009. Most of these laboratories were situated in Australia (19),

<sup>(58)</sup> Most (94 %) of the amphetamine tablets intercepted were labelled as captagon, and recovered in Turkey. Captagon is one of the registered trade names for fenetylline, a synthetic central nervous system stimulant. Tablets sold on the illicit drug market as captagon are commonly found to contain amphetamine mixed with caffeine.

<sup>(59)</sup> This analysis is preliminary, as data for the Netherlands are not yet available for 2008 and 2009.

<sup>(60)</sup> The data on European drug seizures mentioned in this chapter can be found in Tables SZR-11 to SZR-18 in the 2011 statistical bulletin.

<sup>(61)</sup> The data on European drug purities mentioned in this chapter can be found in Table PPP-8 in the 2011 statistical bulletin. EU trend indexes can be found in Figure PPP-2 in the 2011 statistical bulletin.

<sup>(62)</sup> The data on European drug prices mentioned in this chapter can be found in Table PPP-4 in the 2011 statistical bulletin.

Indonesia (18) and Canada (12). Production of the drug appears to have continued to spread geographically, with manufacture occurring closer to consumer markets in east and south-east Asia, North America and Oceania. Despite this, it is likely that western Europe remains an important location for ecstasy production.

Worldwide, seizures of ecstasy amounted to 5.4 tonnes in 2009 (UNODC, 2011), with the United States reporting 63 % of the total.

The number of ecstasy seizures reported in Europe remained stable between 2004 and 2006, and then declined, while quantities seized in most European countries show a downward trend since 2004. In 2009, about 11 000 ecstasy seizures were reported in Europe, resulting in the interception of over 2.4 million ecstasy tablets. However, this is an underestimate, as recent data are not available for the Netherlands, which reported seizures of 8.4 million tablets in 2007, the last year for which data are available.

The average MDMA content of ecstasy tablets tested in 2009 was between 3 and 108 mg in the 18 countries providing data. In addition, the availability of high-dose ecstasy tablets containing over 130 mg of MDMA was reported by several countries (Belgium, Bulgaria, Germany, Italy, Netherlands, Turkey). Over the period 2004–09, the MDMA content of ecstasy tablets declined in all 14 countries reporting sufficient data.

Over the last few years, there has been a change in the content of illicit drug tablets in Europe, from a situation where most tablets analysed contained MDMA or another ecstasy-like substance (MDEA, MDA) as the only psychoactive substance, to one where the contents are more diverse, and MDMA-like substances less present. This shift accelerated in 2009, to the extent that the only countries where MDMA-like substances continued to account for a large proportion of the tablets analysed were Italy (58 %), the Netherlands (63 %) and Malta (100 %).

Amphetamines, sometimes in combination with MDMA-like substances, are relatively common in tablets analysed in Greece, Spain, Hungary, Poland, Slovenia and Croatia. Most of the other reporting countries mention that piperazines, and in particular *m*CPP, were found, alone or in combination with other substances, in a substantial proportion of the tablets analysed.

Ecstasy is now considerably cheaper than it was in the 1990s, when it first became widely available. While there are some reports of tablets being sold for as little

as EUR 1, most countries are reporting mean retail prices in the range of EUR 4 to EUR 9 per tablet. The data available for 2004–09 suggest that the retail price of ecstasy has continued to fall or remained stable across Europe as a whole. In 2009, however, an increase was reported in the Netherlands, which is also the country reporting the lowest prices for the drug.

### Hallucinogens and other substances

Use and trafficking of LSD in Europe is considered marginal. The number of LSD seizures increased between 2004 and 2009, while quantities, after a peak in 2005 to 1.8 million units due to record seizures in the United Kingdom, have since been fluctuating at relatively low levels<sup>(63)</sup>. LSD retail prices have remained stable in most reporting countries since 2004, while increases were reported in Belgium and decreases in Latvia, Austria and Croatia. In 2009, the mean price was between EUR 7 and EUR 11 per unit for the majority of the 11 countries reporting data.

Seizures of hallucinogenic mushrooms, ketamine and GHB and GBL are only reported for 2009 by four or five countries, depending on the drug. The extent to which the reported seizures reflect the use of these substances or the fact that they are not routinely targeted by law enforcement services is not clear.

### Prevalence and patterns of use

In a few countries, the use of amphetamine or methamphetamine, often by injection, accounts for a substantial proportion of the overall number of problem drug users and those seeking help for drug problems. In contrast to these chronic user populations, a more general association exists between the use of synthetic drugs, often together with alcohol, and attendance at nightclubs and dance events. This results in significantly higher levels of use being reported among young people, and exceedingly high levels of use being found in some settings or specific sub-populations. The overall prevalence levels of hallucinogenic drugs such as lysergic acid diethylamide (LSD) and hallucinogenic mushrooms are generally low and have been largely stable in recent years.

### Amphetamines

Drug prevalence estimates suggest that about 12.5 million Europeans have tried amphetamines, and about 2 million have used the drug during the last year (see Table 6 for a summary of the data). Among young adults (15–34 years),

<sup>(63)</sup> This analysis is preliminary, as data for the Netherlands, which reported one third of the amount of LSD seized in Europe in 2007, are not available for subsequent years.

lifetime prevalence of amphetamines use varies considerably between countries, from 0.1 % to 14.3 %, with a weighted European average of 5.0 %. Last year use of amphetamines in this age group ranges from 0.1 % to 2.5 %, with most countries reporting prevalence levels of 0.5–2.0 %. It is estimated that about 1.5 million (1.1 %) young Europeans have used amphetamines during the last year.

Among 15- to 16-year-old school students, lifetime prevalence of amphetamines use ranged from 1 % to 8 % in the 26 EU Member States, Norway and Croatia, surveyed in 2007, although only Bulgaria and Latvia reported prevalence levels of more than 5 %. The four countries that conducted school surveys in 2009 and 2010 (Italy, Slovakia, Sweden, United Kingdom) reported lifetime prevalence of amphetamines of 3 % or less <sup>(64)</sup>.

Data on the prevalence of amphetamines use in nightlife settings in 2009, provided by four countries (Belgium, Czech Republic, Netherlands, United Kingdom), show

considerable variation, ranging from 6 % to 24 % for last year use of amphetamines.

Over the last decade, last year amphetamines use has remained relatively low and stable in most European countries, with prevalence levels of less than 3 % for almost all reporting countries, with the exception of the United Kingdom and Denmark. In the United Kingdom, last year use of amphetamines among young adults (15–34) declined from 6.2 % in 1998 to 1.8 % in 2009–10; in Denmark, after increasing to 3.1 % in 2000, it declined to 2 % in 2010 (see Figure 8). During the period 2004–09, only Norway and the Czech Republic reported a change of more than one percentage point in last year prevalence of amphetamines use among young adults. In the Czech Republic, differences in survey methods do not allow confirmation of recent trends. School surveys suggest, overall, little change in the levels of experimentation with amphetamines among school students aged 15–16 years. Between 2003 and 2007, most countries reported both low and stable trends in lifetime prevalence in this group.

**Table 6: Prevalence of amphetamines use in the general population – summary of the data**

Age group	Time frame of use	
	Lifetime	Last year
<b>15–64 years</b>		
Estimated number of users in Europe	12.5 million	1.5–2 million
European average	3.8 %	0.5 %
Range	0.0–11.7 %	0.0–1.1 %
Lowest-prevalence countries	Romania (0.0 %) Greece (0.1 %) Malta (0.4 %) Cyprus (0.7 %)	Romania, Malta, Greece (0.0 %) France (0.1 %) Czech Republic, Portugal (0.2 %)
Highest-prevalence countries	United Kingdom (11.7 %) Denmark (6.2 %) Sweden (5.0 %) Norway (3.8 %)	Estonia (1.1 %) United Kingdom (1.0 %) Bulgaria, Latvia (0.9 %) Sweden (0.8 %)
<b>15–34 years</b>		
Estimated number of users in Europe	6.5 million	1.5 million
European average	5.0 %	1.1 %
Range	0.1–14.3 %	0.1–2.5 %
Lowest-prevalence countries	Romania (0.1 %) Greece (0.2 %) Malta (0.7 %) Cyprus (1.2 %)	Romania, Greece (0.1 %) France (0.2 %) Czech Republic (0.3 %) Portugal (0.4 %)
Highest-prevalence countries	United Kingdom (14.3 %) Denmark (10.3 %) Latvia (6.1 %) Norway (6.0 %)	Estonia (2.5 %) Bulgaria (2.1 %) Denmark (2.0 %) Germany, Latvia (1.9 %)

European estimates are computed from national prevalence estimates weighted by the population of the relevant age group in each country. To obtain estimates of the overall number of users in Europe, the EU average is applied for countries lacking prevalence data (representing not more than 3 % of the target population). Populations used as basis: 15–64, 336 million; 15–34, 132 million. As European estimates are based on surveys conducted between 2001 and 2009/10 (mainly 2004–08), they do not refer to a single year. The data summarised here are available under 'General population surveys' in the 2011 statistical bulletin.

<sup>(64)</sup> See Table EYE-11 in the 2011 statistical bulletin.



### Problem amphetamines use

Only a small number of countries can provide estimates of the prevalence of problem amphetamines use<sup>(65)</sup>, but data on users entering treatment for problems related to these substances are available across Europe.

A small proportion of those entering treatment in Europe mention amphetamine as their primary drug: about 5 % of reported drug clients in 2009 (20 000 clients). However, amphetamine users account for a sizeable proportion of reported treatment entries in Sweden (28 %), Poland (25 %) and Finland (17 %). Amphetamine clients make up between 6 % and 10 % of reported treatment entrants in five other countries (Belgium, Denmark, Germany, Hungary, Netherlands); elsewhere the proportion is less than 5 %. In addition, non-cocaine stimulants are mentioned as a secondary drug by almost 20 000 clients entering treatment for problems related to other primary drugs<sup>(66)</sup>.

Amphetamine users entering treatment are on average 30 years old, with a lower male to female ratio (two to one) than for any other illicit drug. High levels of amphetamine injecting are reported by the countries where amphetamine users make up the highest proportions of treatment entrants (Latvia, Sweden, Finland), with between 59 % and 83 % of primary amphetamine clients injecting the drug<sup>(67)</sup>.

Trends in amphetamine users entering treatment between 2004 and 2009 have remained stable in most countries, with a slight decrease among the clients who entered treatment for the first time in their life, mainly attributable to a decrease in the number of new amphetamine clients in Finland and Sweden (EMCDDA, 2010d).

In contrast to other parts of the world, where the use of methamphetamine has increased in recent years, levels of use in Europe appear limited. Historically, use of this drug in Europe has been concentrated in the Czech Republic and, more recently, Slovakia. In 2009, the number of problem methamphetamine users in the Czech Republic was estimated to be approximately 24 600 to 25 900 (3.3 to 3.5 cases per 1 000 aged 15–64 years), roughly twice the estimated number of problem opioid users. This represents a statistically significant increase in comparison to the previous years. For Slovakia, there were estimated to be approximately 5 800 to 15 700 problem methamphetamine users in 2007 (1.5 to 4.0 cases per

1 000 aged 15–64 years), about 20 % fewer than the estimated number of problem opioid users.

Methamphetamine is cited as the primary drug by a large proportion of clients reported entering treatment in the Czech Republic (61 %) and Slovakia (30 %). Both countries report an increase in the number and overall proportion of new treatment entrants related to methamphetamine over the last decade. Among those seeking help for a methamphetamine problem, injecting is common in the Czech Republic (79 %) and to a lesser extent in Slovakia (37 %), with overall declining levels since 2004. Methamphetamine clients in these countries are on average around 25 years old when entering treatment<sup>(68)</sup>.

In recent years, methamphetamine has also appeared on the drug market in other countries, particularly in the north of Europe (Norway, Sweden, Latvia and, to a lesser extent, Finland), where it appears to have partially replaced amphetamine, the two substances being virtually indistinguishable to users.

### Ecstasy

Drug prevalence estimates suggest that about 11 million Europeans have tried ecstasy, and about 2.5 million have used the drug during the last year (see Table 7 for a summary of the data). Use of the drug in the last year is concentrated among young adults, with males reporting levels of use much higher than females in all countries except Greece, Romania, Finland and Sweden. Lifetime prevalence of ecstasy use among the 15–34 age group ranges from under 0.6 % to 12.7 %, with most countries reporting estimates in the 2.1 % to 5.8 % range<sup>(69)</sup>.

Among 15- to 16-year-old school students, lifetime prevalence of ecstasy use ranged from 1 % to 5 % in most of the European countries surveyed in 2007. Only four countries reported higher prevalence levels: Bulgaria, Estonia, Slovakia (all 6 %) and Latvia (7 %). The four countries that conducted school surveys in 2009 (Italy, Slovakia, Sweden, United Kingdom) reported lifetime prevalence of ecstasy use of 5 % or less<sup>(70)</sup>.

Qualitative studies provide a window into 'recreational' use of stimulant drugs by young adults attending a range of different nightlife venues across Europe. These studies highlight significant differences in the drug-use profiles of customers, with those attending electronic dance music

<sup>(65)</sup> Problem amphetamines use is defined as the injecting or long duration and/or regular use of the substances.

<sup>(66)</sup> See Tables TDI-5 (part ii) and TDI-22 in the 2011 statistical bulletin.

<sup>(67)</sup> See Tables TDI-5 (part iv) and TDI-37 in the 2011 statistical bulletin.

<sup>(68)</sup> See Tables TDI-2 (part i), TDI-3 (part iii) and TDI-5 (part ii) and (part iv) in the 2011 statistical bulletin and Table TDI-5 (part ii) in the 2006 statistical bulletin.

<sup>(69)</sup> See Table GPS-7 (part iv) in the 2011 statistical bulletin.

<sup>(70)</sup> See Table EYE-11 in the 2011 statistical bulletin.

**Table 7: Prevalence of ecstasy use in the general population – summary of the data**

Age group	Time frame of use	
	Lifetime	Last year
<b>15–64 years</b>		
Estimated number of users in Europe	11 million	2.5 million
European average	3.2 %	0.7 %
Range	0.3–8.3 %	0.1–1.6 %
Lowest-prevalence countries	Romania (0.3 %) Greece (0.4 %) Malta (0.7 %) Norway (1.0 %)	Romania, Sweden (0.1 %) Malta, Greece (0.2 %) Denmark, Poland, Norway (0.3 %)
Highest-prevalence countries	United Kingdom (8.3 %) Ireland (5.4 %) Spain (4.9 %) Latvia (4.7 %)	United Kingdom, Slovakia (1.6 %) Latvia (1.5 %) Czech Republic (1.4 %)
<b>15–34 years</b>		
Estimated number of users in Europe	7.5 million	2 million
European average	5.5 %	1.4 %
Range	0.6–12.7 %	0.2–3.2 %
Lowest-prevalence countries	Romania, Greece (0.6 %) Malta (1.4 %) Poland, Norway (2.1 %) Portugal (2.6 %)	Romania, Sweden (0.2 %) Greece (0.4 %) Norway (0.6 %) Poland (0.7 %)
Highest-prevalence countries	United Kingdom (12.7 %) Czech Republic (9.3 %) Ireland (9.0 %) Latvia (8.5 %)	United Kingdom (3.2 %) Czech Republic (2.8 %) Slovakia, Latvia, Netherlands (2.7 %)
<small>European estimates are computed from national prevalence estimates weighted by the population of the relevant age group in each country. To obtain estimates of the overall number of users in Europe, the EU average is applied for countries lacking prevalence data (representing not more than 3 % of the target population). Populations used as basis: 15–64, 336 million; 15–34, 132 million. As European estimates are based on surveys conducted between 2001 and 2009/10 (mainly 2004–08), they do not refer to a single year. The data summarised here are available under 'General population surveys' in the 2011 statistical bulletin.</small>		

venues much more likely to report drug use than those in other nightlife settings. Data on the prevalence of ecstasy use in nightlife settings in 2009 is only available for four countries (Belgium, Czech Republic, Netherlands, United Kingdom), but does show considerable variation in reported levels of recent (last year) use, ranging from 10 % to 75 %. Ecstasy use was more common than amphetamines use in the settings sampled.

Over the period 2003–09, no country reported an increase in ecstasy use, while Estonia, Spain, Germany, Hungary and the United Kingdom reported a decrease of about one percentage point in last year ecstasy use in the 15–34 age group. There is, however, some variation between countries. In the countries reporting higher than average levels of last year ecstasy use, consumption of the drug among 15- to 34-year-olds typically peaked at somewhere between 3 % and 5 % in the early 2000s (Estonia, Spain, Slovakia, United Kingdom; see Figure 8). An exception to this is the Czech Republic, where last year ecstasy use estimates peaked in 2008 at 7.7 %

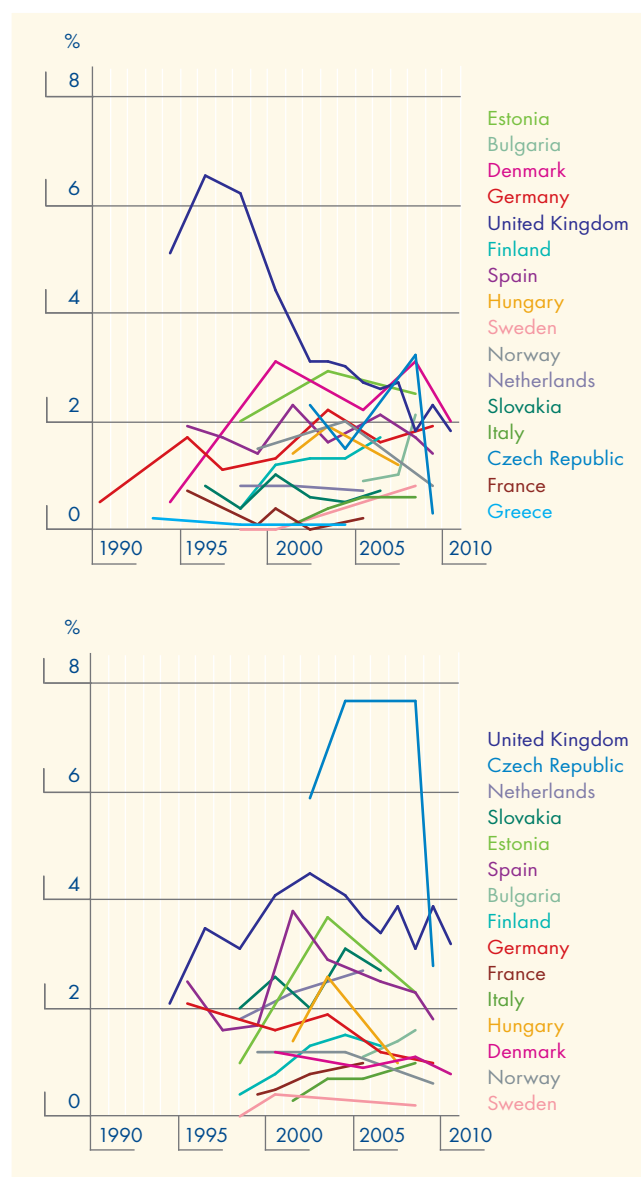
and decreased to 2.8 % in 2009. In the Czech Republic, differences in survey methods do not allow confirmation of recent trends.

School surveys suggest, overall, little change in the levels of experimentation with ecstasy among students aged 15–16 years. Between 2003 and 2007, most countries reported low and stable trends in lifetime prevalence of ecstasy among this group, while seven countries reported an increase and three a decrease — using a difference of two percentage points as the threshold. A decrease in the prevalence of ecstasy may be suggested by studies carried out in recreational settings in Europe. In Amsterdam, a study of visitors to 'coffee shops' reported a sharp drop in last month use of ecstasy, from 23 % in 2001 to 6 % in 2009; the study also reported a decline in lifetime amphetamine use, from 63 % to 41 % over the same period. A Belgian study conducted regularly in nightlife settings reported that ecstasy is no longer the second most used illicit drug. In previous surveys, last year

ecstasy use always ranged between 15 % and 20 %, but decreased to 10 % in 2009.

Few drug users seek treatment for problems relating to ecstasy. In 2009, ecstasy was mentioned as the primary drug by less than 1 % (1 300) of all reported treatment

**Figure 8:** Trends in last year prevalence of use of amphetamines (top) and ecstasy (bottom) among young adults (aged 15–34)



**NB:** Only data for countries with at least three surveys in the period 1998 to 2009/10 are presented. The Czech Republic is exploring reasons for the wide variability in survey results, which in part seem related to changes in methods. The data is provided for information, but comparisons should be treated with caution. See Figures GPS-8 and GPS-21 in the 2011 statistical bulletin for further information.

**Sources:** Reitox national reports, taken from population surveys, reports or scientific articles.

entrants. With an average age of 26 years, ecstasy clients are among the youngest entering drug treatment, and there are three to four males for every female. Ecstasy clients often report the concomitant use of other substances, including alcohol, cocaine and, to a lesser extent, cannabis and amphetamines <sup>(71)</sup>.

The combined use of ecstasy or amphetamines with alcohol has been reported in European studies. In nine European countries, general population surveys show that frequent or heavy alcohol users report levels of prevalence of amphetamines or ecstasy use that are much higher than the population average (EMCDDA, 2009b). Similarly, ESPAD school survey data for 22 countries show that 86 % of the 15- to 16-year-old students who reported using ecstasy during the last month also reported drinking five or more alcoholic drinks on one occasion (EMCDDA, 2009b).

### Hallucinogens, GHB and ketamine

Among young adults (15–34 years), lifetime prevalence estimates of LSD use in Europe range from zero to 5.5 %. Much lower prevalence levels are reported for last year use <sup>(72)</sup>. In the few countries providing comparable data, most report higher levels of use for hallucinogenic mushrooms than for LSD, among both the general population and school students. Lifetime prevalence estimates for hallucinogenic mushrooms among young adults range from 0.3 % to 14.1 %, and last year prevalence estimates are in the range of 0.2 % to 5.9 %. Among 15- to 16-year-old school students, most countries report lifetime prevalence estimates for the use of hallucinogenic mushrooms of between 1 % and 4 %, with Slovakia (5 %) and the Czech Republic (7 %) reporting higher levels <sup>(73)</sup>.

Estimates of the prevalence of GHB and ketamine use in the adult and school populations are much lower than those for the use of cocaine and ecstasy. However, use of these substances can be higher in specific groups, settings and geographical areas. Targeted surveys that report prevalence estimates for the use of these substances have recently been conducted in Belgium, the Czech Republic, the Netherlands and the United Kingdom. These studies report lifetime prevalence of GHB use ranging from 3.9 % to 14.3 %, and last month prevalence of up to 4.6 %. Estimates of ketamine use in the same surveys range from 2.9 % to 62 % for lifetime use and 0.3 % to 28 % for last month use. There are marked differences between surveys and countries, and the high prevalence of ketamine use reported is unique to a 2010 UK music magazine survey

<sup>(71)</sup> See Tables TDI-5, TDI-8 and TDI-37 (part i), (part ii) and (part iii) in the 2011 statistical bulletin.

<sup>(72)</sup> See Table GPS-1 in the 2011 statistical bulletin.

<sup>(73)</sup> Data are from ESPAD for all countries but Spain. See Figure EYE-3 (part v) in the 2011 statistical bulletin.

(Winstock, 2011). In this survey, levels of ketamine use are very much higher than those for GHB. Such high ketamine prevalence may be due to the self-selection of respondents to the survey and their particular drug-use profiles and attitudes. The Netherlands reported that ketamine has gained some popularity among trendsetters in the western region, but last month prevalence levels among visitors to large-scale parties in 2009 remain lower (at 1.2 %) than those for GHB (4.6 %). Among visitors to Amsterdam 'coffee shops' in 2009, last month GHB use equalled last month amphetamine use at 1.5 %. A high perceived risk of overdose leading to unconsciousness or coma, associated with the use of GHB, is highlighted by qualitative studies in Germany, Estonia, France and the Netherlands.

No overall trends can be identified for GHB and ketamine use from repeat surveys among party-goers or in recreational settings, and the changes reported are in most cases small. Studies of recreational settings in Belgium report that last month use of GHB and ketamine increased from 2 % to 3 % between 2008 and 2009. In the Czech Republic, studies in nightlife settings report that last year prevalence of GHB use increased from 1.4 % in 2007 to 3.9 % in 2009, and ketamine use increased from 2.2 % to 2.9 % over the same period. Decreases in last month use of GHB were reported among visitors to Amsterdam 'coffee shops', from 2.8 % in 2001 to 1.5 % in 2009. However, trends in Amsterdam are not representative for the rest of the Netherlands. Also, among respondents to the UK music magazine survey, last month use of GHB decreased from 1.7 % in 2009 to less than 1 % in 2010, and ketamine use decreased from 32.4 % to 28 % over the same period.

## Interventions in recreational settings

In spite of high levels of drug use in recreational settings, only 13 countries report on the implementation of prevention or harm-reduction interventions in these arenas. The reported interventions continue to focus on information provision and counselling. This focus is also evident in the interventions included in the Healthy Nightlife Toolbox, an EU-funded, Internet-based initiative aimed at helping reduce harm from alcohol and drug use in nightlife settings. The 'Safer Nightlife' project, another EU-funded initiative under the 'Democracy, Cities & Drugs II (2008–11)' programme, aims to go beyond information provision and improve nightlife prevention programmes and training for professionals.

A recent systematic review of harm-reduction strategies implemented in recreational settings found that they are rarely evaluated and their effectiveness is not always clear

(Akbar et al., 2011). The review found that interventions with a focus on training service staff in recreational settings were the most common type of programme available. These programmes typically include topics such as how to recognise signs of intoxication, and when and how to refuse service to customers. In the Austrian 'taktisch klug' (clever tactics) project, organisers of party events are assisted at the preparation stage and party-goers are offered counselling to help them develop a more critical approach to psychoactive substances and risk behaviour. Multi-component environmental models, which are among the programmes with more promising evaluation results, are mainly reported by countries in the north of Europe.

Studies in international nightlife resorts show that these settings may be associated with recruitment, escalation and relapse in relation to drug use, and may have a role in the international spread of drug cultures. Research points to high levels of drug use and initiation into drug use in some resorts. For example, a study of young people (16–35 years) from Spain, Germany and the United Kingdom visiting Ibiza and Majorca, found significant differences in drug use between nationalities and between the two resorts. Levels of drug use were particularly high among Spanish and British visitors to Ibiza, and one in five of the British visitors tried at least one new drug on their holiday there (Bellis et al., 2009).

## Treatment

### Problem amphetamines use

The treatment options available for amphetamines users in European countries often follow the national history and patterns of problem amphetamines use, which differ considerably between countries. In western and southern European countries, treatment systems have mainly specialised in responding to the needs of opioid users. Despite the low levels of problem amphetamines use in these countries, the lack of dedicated services may hinder access to treatment for such users, especially for more socially integrated amphetamine users (EMCDDA, 2010d). In those northern and central European countries with a long history of treating amphetamines use, some programmes are tailored towards the needs of amphetamines users. In the central and eastern European countries where significant problem amphetamines use is more recent, treatment systems are primarily geared towards problem opioid users and have been slow to address the needs of amphetamines users. A 2008 survey of national experts found that less than half of European countries report the availability of specialist treatment

programmes for users of amphetamines who actively seek treatment.

Psychosocial treatment provided in outpatient drug services is the most common form of treatment for amphetamines users. The more problematic users, for example those whose amphetamines dependence is complicated by co-occurring psychiatric disorders, may receive treatment in inpatient drug services, psychiatric clinics or hospitals. In Europe, pharmaceuticals such as antidepressants, sedatives and antipsychotics are administered for the treatment of abstinence symptoms at the beginning of detoxification, which is usually provided at specialist inpatient psychiatric departments. Longer-term treatment with antipsychotics is sometimes

prescribed in cases of lasting psychopathologies due to chronic use of amphetamines. European professionals report that the psychiatric problems often presented by problem amphetamines users are difficult to handle within the therapeutic context. In Hungary, the first professional protocol dealing with the treatment of amphetamines users was published by the Ministry of Health at the beginning of 2008. The protocol covers diagnosis, the indicated structure of medically assisted and drug-free treatment and other therapies and rehabilitation.

### Health consequences of amphetamines

Medical use of amphetamines has been associated with a number of side-effects including anorexia, insomnia and headaches. Illicit amphetamines use is associated with a broader set of negative consequences (EMCDDA, 2010d), such as short-term negative effects (restlessness, tremor, anxiety, dizziness), a 'crash' or coming down after-effect (depression, sleeping difficulties, suicidal behaviour), psychological and psychiatric effects of long-term use (psychosis, suicidal behaviour, anxiety and violent behaviour) and dependence with a wide range of withdrawal symptoms.

Many studies on the health consequences of amphetamines use have been conducted in Australia and the United States, countries where methamphetamine use, notably crystal methamphetamine smoking, is a significant part of the drug problem. Although methamphetamine use is comparatively rare in Europe, these health effects have also been reported in Europe. Cerebrovascular problems have also been identified (risk of ischemic and haemorrhagic stroke), as well as acute and chronic cardiovascular pathology (acute increase in heart rate and blood pressure). In the context of chronic use or pre-existing cardiovascular pathology these may trigger serious and potentially fatal events (myocardial ischemia and infarction). Other health effects include neurotoxicity, foetal growth restriction associated with amphetamine use during pregnancy and dental disease.

Injecting, although rare among European amphetamines users, increases the risk of infectious diseases (HIV and hepatitis). High rates of sexual risk behaviour have been reported in Czech Republic for methamphetamine users, making them more vulnerable to sexually transmitted infections. Studies in the Czech Republic, Latvia and the Netherlands showed elevated mortality rates among dependent or chronic amphetamines users. However, estimating the mortality associated with amphetamines is complicated by polydrug use (mainly concurrent use of heroin and cocaine).

### Studies on treatment of amphetamines dependence

Although some limited substitution prescribing is reported in the Czech Republic and the United Kingdom, there is currently no evidence available to support the efficacy of this approach. Clinicians are, however, actively exploring pharmacological therapies that may be helpful in treating amphetamines dependence. The central nervous system stimulant dextroamphetamine, when tested among methamphetamine patients, gave positive results for reduction of craving and withdrawal symptoms, and for retaining clients in treatment, but did not reduce use of methamphetamine compared to a placebo (Galloway et al., 2011; Longo et al., 2010). Studies testing the effect of Modafinil, a drug used to regulate sleepiness, on methamphetamine-dependent individuals found possible improvements in working memory (Kalechstein et al., 2010), but no difference compared to a placebo for levels of drug use, retention in treatment, depression or craving (Heinzerling et al., 2010).

Bupropion, an antidepressant that has been used to assist smoking cessation, was piloted with a small group of methamphetamine-dependent men who have sex with men (Elkashef et al., 2008); a more powerful study is needed to confirm the positive results found. Another pilot study, aiming to control the symptoms of attention deficit hyperactivity disorder in problem amphetamine users, combined sustained release methylphenidate with weekly sessions of skills training, but no difference with the placebo group was found (Konstenius et al., 2010).

A number of ongoing trials have been registered in this area, including studies on extended-release naltrexone for amphetamine dependence, and for methamphetamine dependence, studies on monoamine antagonist, an angiotensin converting enzyme inhibitor, *N*-acetylcysteine, rivastigmine and varenicline.

Psychological and behavioural interventions for methamphetamine problems are the focus of a small number of studies. An Australian study attempted to compare two psychological approaches for methamphetamine use, but

participant dropout was too high to obtain significant results (Smout et al., 2010). Ongoing trials registered in this area are studying the impact of motivational interviewing and cognitive behavioural skills training on methamphetamine dependence.

### **Gamma-hydroxybutyrate dependence and treatment**

Dependence on gamma-hydroxybutyrate (GHB) is a recognised clinical condition, with a potentially severe withdrawal syndrome when the drug is abruptly discontinued following regular or chronic use. There is evidence that physical dependence may occur in recreational users, and cases of withdrawal symptoms on cessation of use of GHB and its precursors have been documented. GHB dependence has also been reported among former alcoholics (Richter et al., 2009).

Available studies mainly focus on the description of GHB withdrawal syndrome and related complications, which

can be difficult to recognise in emergency cases (van Noorden et al., 2009). These symptoms may include unrest, anxiety attacks, insomnia, sweating, tachycardia and hypertension. Patients in withdrawal may also develop psychosis and delirium. Mild withdrawal can be managed in outpatient settings, otherwise inpatient supervision is recommended. As yet, no standard protocols have been devised for the treatment of GHB withdrawal syndrome.

Benzodiazepines and barbiturates are the pharmaceuticals most commonly used to treat acute problems related to GHB use. In the United States, a small study is in progress to compare the benzodiazepine lorazepam with the barbiturate pentobarbital for the reduction of subjective withdrawal symptoms in GHB-dependent individuals. In the Netherlands, research is now being conducted to establish evidence-based guidelines for the treatment of GHB dependence.



## Chapter 5

### Cocaine and crack cocaine

#### Introduction

Cocaine remains the second most commonly used illicit drug in Europe, although prevalence levels and trends differ considerably between countries. High levels of cocaine use are observed only in a small number of, mostly, western European countries, while elsewhere the use of this drug remains limited. There is also considerable diversity among cocaine users, including occasional users and more socially integrated regular users, who commonly snort cocaine powder, and more marginalised and often dependent users, who inject cocaine or use crack cocaine.

#### Supply and availability

##### Production and trafficking

Cultivation of coca bush, the source of cocaine, continues to be concentrated in three Andean countries, Colombia,

Peru and Bolivia. The UNODC (2011) estimated that the area under coca bush cultivation in 2010 amounted to 149 000 hectares, a 6 % decrease from the estimate of 158 000 hectares in 2009. This decrease was largely attributed to a reduction in the area under coca cultivation in Colombia, which has been partially offset by increases in Peru and Bolivia. The 149 000 hectares of coca bush translated into a potential production of between 786 and 1 054 tonnes of pure cocaine, compared to an estimated 842 to 1 111 tonnes in 2009 (UNODC, 2011).

The conversion of coca leaves into cocaine hydrochloride is mainly carried out in Colombia, Peru and Bolivia, although it may also occur in other countries. Colombia's importance in the production of cocaine is corroborated by information on laboratories dismantled and seizures of potassium permanganate, a chemical reagent used in the manufacture of cocaine hydrochloride. In 2009, 2 900 cocaine laboratories were dismantled (UNODC, 2011) and

**Table 8: Production, seizures, price and purity of cocaine and crack cocaine**

	Cocaine powder (hydrochloride)	Crack (cocaine base) <sup>(1)</sup>
<b>Global production estimate (tonnes)</b>	786–1 054	n.a.
<b>Global quantity seized (tonnes)</b>	732 <sup>(2)</sup>	n.a.
<b>Quantity seized (tonnes)</b>		
<b>EU and Norway</b>	49	0.09
<b>(Including Croatia and Turkey) <sup>(3)</sup></b>	(49)	(0.09)
<b>Number of seizures</b>		
<b>EU and Norway</b>	98 500	7 500
<b>(Including Croatia and Turkey)</b>	(99 000)	(7 500)
<b>Mean retail price (EUR per gram)</b>		
<b>Range</b>	45–104	55–70
<b>(Interquartile range) <sup>(4)</sup></b>	(50.2–78.2)	
<b>Mean purity (%)</b>		
<b>Range</b>	18–51	6–75
<b>(Interquartile range) <sup>(4)</sup></b>	(25.0–38.7)	

<sup>(1)</sup> Due to the small set of countries reporting information, data should be interpreted with caution.

<sup>(2)</sup> UNODC estimates this figure to be equivalent to 431 to 562 tonnes of pure cocaine.

<sup>(3)</sup> The total amount of cocaine seized in 2009 is likely to be underestimated, largely due to the lack of recent data for the Netherlands, a country reporting relatively large seizures up to 2007. In the absence of 2008 and 2009 data, values for the Netherlands cannot be included in European estimates for 2009.

<sup>(4)</sup> Range of the middle half of the reported data.

NB: All data are for 2009; n.a., data not available.

Source: UNODC (2011) for global values, Reitox national focal points for European data.



a total of 23 tonnes of potassium permanganate (90 % of global seizures) was seized in Colombia (INCB, 2011a).

Cocaine consignments to Europe appear to be transited through most countries in South and Central America, though mainly through Argentina, Brazil, Ecuador, Venezuela and Mexico. Caribbean islands are also frequently used in the transshipment of the drug to Europe. In recent years, alternative routes through West Africa have been detected (EMCDDA and Europol, 2010). Although a 'substantive decline' in seizures of cocaine transiting West Africa since 2007 has been reported (UNODC, 2011), it is likely that significant amounts of the drug still go through the region (EMCDDA and Europol, 2010).

Spain, the Netherlands and Portugal, and to some extent Belgium, appear to be the main points of entry to Europe for cocaine. Within Europe, reports frequently mention Germany, France and the United Kingdom as important transit or destination countries. The United Kingdom estimates that 25 to 30 tonnes of cocaine are imported into the country each year. Recent reports also indicate that cocaine trafficking may be expanding eastward (EMCDDA and Europol, 2010; INCB, 2011b). The aggregate figure for 12 central and eastern European countries shows an increase in the number of cocaine seizures, from 666 cases in 2004 to 1 232 in 2009, but these still represent only about 1 % of the European total. Quantities of cocaine intercepted in this region more than doubled between 2008 and 2009, mainly due to record seizures in Bulgaria (0.23 tonnes) and Romania (1.3 tonnes), two countries that lie along the so-called Balkan route, usually associated with heroin trafficking.

### Seizures

Cocaine is the most trafficked drug in the world after herbal cannabis and cannabis resin. In 2009, global seizures of cocaine remained largely stable at about 732 tonnes (Table 8) (UNODC, 2011). South America continued to report the largest amount seized, accounting for 60 % of the global figure, followed by North America with 18 %, and Europe with 8 % (UNODC, 2011).

The number of cocaine seizures in Europe has been rising for the last 20 years, and more notably since 2004, reaching an estimated 99 000 cases in 2009. The total quantity intercepted peaked in 2006, and has halved since then to an estimated 49 tonnes in 2009. This fall is largely accounted for by decreases in the amounts recovered in Spain and Portugal<sup>(74)</sup>, though it is unclear to what extent this is due to changes in trafficking routes or

practices, or in law enforcement priorities. In 2009, Spain continued to be the country reporting both the highest number of seizures of cocaine and the largest quantity of the drug seized in Europe, about half the total in both cases. However, this assessment is preliminary, as recent data are not available for the Netherlands. In 2007, the last year for which data are available, the Netherlands reported seizing around 10 tonnes of cocaine.

### Purity and price

The mean purity of cocaine samples tested ranged between 25 % and 43 % in half of the countries providing data for 2009. The lowest values were reported in Denmark (retail only, 18 %) and the United Kingdom (England and Wales, 20 %), and the highest ones in Belgium (51 %) and Spain and the Netherlands (49 %) <sup>(75)</sup>. Twenty-two countries provided sufficient data for analysis of trends in cocaine purity over the period 2004–09, with 19 of the countries reporting a decline, two a stable situation (Germany, Slovakia) and Portugal observing an increase. Overall, cocaine purity declined by an estimated

#### Wholesale and retail drug prices: cocaine

Wholesale drug prices are the prices paid for large quantities that will be distributed within a country, whereas retail prices are those paid by the drug user. By comparing the two, estimates can be made of the maximum profit margins that drug traffickers may obtain in the retail market.

Recent data collected by the EMCDDA from 14 European countries show that, in 2008, the wholesale price for consignments of 1 kg of cocaine can be estimated at between EUR 31 000 and EUR 58 000, with most countries reporting figures of around EUR 35 000. When reported, the average purity level of such consignments was close to 70 %.

In 2008, retail cocaine prices varied from EUR 50 000 to EUR 80 000 for the equivalent of 1 kg of cocaine in these countries, and were thereby 25 % to 83 % higher than wholesale prices. Purity levels decreased when moving from the wholesale to the retail market, where they were reported to be on average between 13 % and 60 %, depending on the country. Additional data are, however, required to precisely estimate purity-adjusted price differences between the wholesale and the retail level.

An overview of methods and data availability in Europe is available in an EMCDDA report on a pilot study on wholesale drug prices published in 2011.

<sup>(74)</sup> See Tables SZR-9 and SZR-10 in the 2011 statistical bulletin.

<sup>(75)</sup> For purity and price data, see Tables PPP-3 and PPP-7 in the 2011 statistical bulletin.

average of 20 % in the European Union in the period 2004–09 <sup>(76)</sup>.

The mean retail price of cocaine ranged between EUR 50 and EUR 80 per gram in most of the countries reporting data for 2009. The United Kingdom reported the lowest mean price (EUR 45), while Luxembourg reported the highest (EUR 104). Almost all countries with sufficient data to make a comparison reported a stabilisation or decrease in cocaine retail prices between 2004 and 2009. In the period 2004–09, the retail price of cocaine in the European Union declined by an estimated average of 21 % <sup>(77)</sup>.

## Prevalence and patterns of use

### Cocaine use among the general population

Cocaine is, after cannabis, the second most tried drug in Europe, although its use is concentrated in a small number of high-prevalence countries, some of which have

large populations. It is estimated that about 14.5 million Europeans have used cocaine at least once in their life, on average 4.3 % of adults aged 15–64 years (see Table 9 for a summary of the data). National figures vary from 0.1 % to 10.2 %, with half of the 24 reporting countries, including most central and eastern European countries, reporting low levels of lifetime prevalence (0.5 % to 2.5 %).

About 4 million Europeans are estimated to have used the drug in the last year (1.2 % on average). Recent national surveys report last year prevalence estimates of between zero and 2.7 %. The prevalence estimate for last month cocaine use in Europe represents about 0.5 % of the adult population or about 1.5 million individuals.

Levels of last year cocaine use above the European average are reported by Ireland, Spain, Italy, Cyprus and the United Kingdom. In all of these countries, last year prevalence data show that cocaine is the most commonly used illicit stimulant drug.

**Table 9: Prevalence of cocaine use in the general population – summary of the data**

Age group	Time frame of use		
	Lifetime	Last year	Last month
<b>15–64 years</b>			
Estimated number of users in Europe	14.5 million	4 million	1.5 million
European average	4.3 %	1.2 %	0.5 %
Range	0.1–10.2 %	0.0–2.7 %	0.0–1.3 %
Lowest-prevalence countries	Romania (0.1 %) Malta (0.4 %) Lithuania (0.5 %) Greece (0.7 %)	Romania (0.0 %) Greece (0.1 %) Hungary, Poland, Lithuania (0.2 %) Malta (0.3 %)	Romania, Greece (0.0 %) Czech Republic, Malta, Sweden, Poland, Lithuania, Estonia, Finland (0.1 %)
Highest-prevalence countries	Spain (10.2 %) United Kingdom (8.8 %) Italy (7.0 %) Ireland (5.3 %)	Spain (2.7 %) United Kingdom (2.5 %) Italy (2.1 %) Ireland (1.7 %)	Spain (1.3 %) United Kingdom (1.1 %) Cyprus, Italy (0.7 %) Austria (0.6 %)
<b>15–34 years</b>			
Estimated number of users in Europe	8 million	3 million	1 million
European average	5.9 %	2.1 %	0.8 %
Range	0.1–13.6 %	0.1–4.8 %	0.0–2.1 %
Lowest-prevalence countries	Romania (0.1 %) Lithuania (0.7 %) Malta (0.9 %) Greece (1.0 %)	Romania (0.1 %) Greece (0.2 %) Poland, Lithuania (0.3 %) Hungary (0.4 %)	Romania (0.0 %) Greece, Poland, Lithuania, Norway (0.1 %) Czech Republic, Hungary, Estonia (0.2 %)
Highest-prevalence countries	Spain (13.6 %) United Kingdom (13.4 %) Denmark (8.9 %) Ireland (8.2 %)	United Kingdom (4.8 %) Spain (4.4 %) Ireland (3.1 %) Italy (2.9 %)	United Kingdom (2.1 %) Spain (2.0 %) Cyprus (1.3 %) Italy (1.1 %)

European estimates are computed from national prevalence estimates weighted by the population of the relevant age group in each country. To obtain estimates of the overall number of users in Europe, the EU average is applied for countries lacking prevalence data (representing not more than 3 % of the target population). Populations used as basis: 15–64, 336 million; 15–34, 132 million. As European estimates are based on surveys conducted between 2001 and 2009/10 (mainly 2004–08), they do not refer to a single year. The data summarised here are available under 'General population surveys' in the 2011 statistical bulletin.

<sup>(76)</sup> See Figure PPP-2 in the 2011 statistical bulletin.

<sup>(77)</sup> See Figure PPP-1 in the 2011 statistical bulletin.

### Cocaine use among young adults

In Europe, it is estimated that about 8 million young adults (15–34 years), or an average of 5.9 %, have used cocaine at least once in their life. National figures vary from 0.1 % to 13.6 %. The European average for last year use of cocaine among this age group is estimated at 2.1 % (about 3 million) and for last month use at 0.8 % (1 million).

Use is particularly high among young males (15–34 years), with last year prevalence of cocaine use reported at between 4 % and 6.7 % in Denmark, Spain, Ireland, Italy and the United Kingdom <sup>(78)</sup>. In 13 of the reporting countries, the male to female ratio for last year prevalence of cocaine use among young adults is at least two to one <sup>(79)</sup>.

### International comparisons

Overall, the estimated last year prevalence of cocaine use is lower among young adults in Europe (2.1 %) than among their counterparts in Australia (3.4 % among 14-

to 39-year-olds), Canada (3.3 %) and the United States (4.1 % among 16- to 34-year-olds). Spain (4.4 %) and the United Kingdom (4.8 %) report, however, higher figures (Figure 9). It is important to note that small differences between countries should be interpreted with caution.

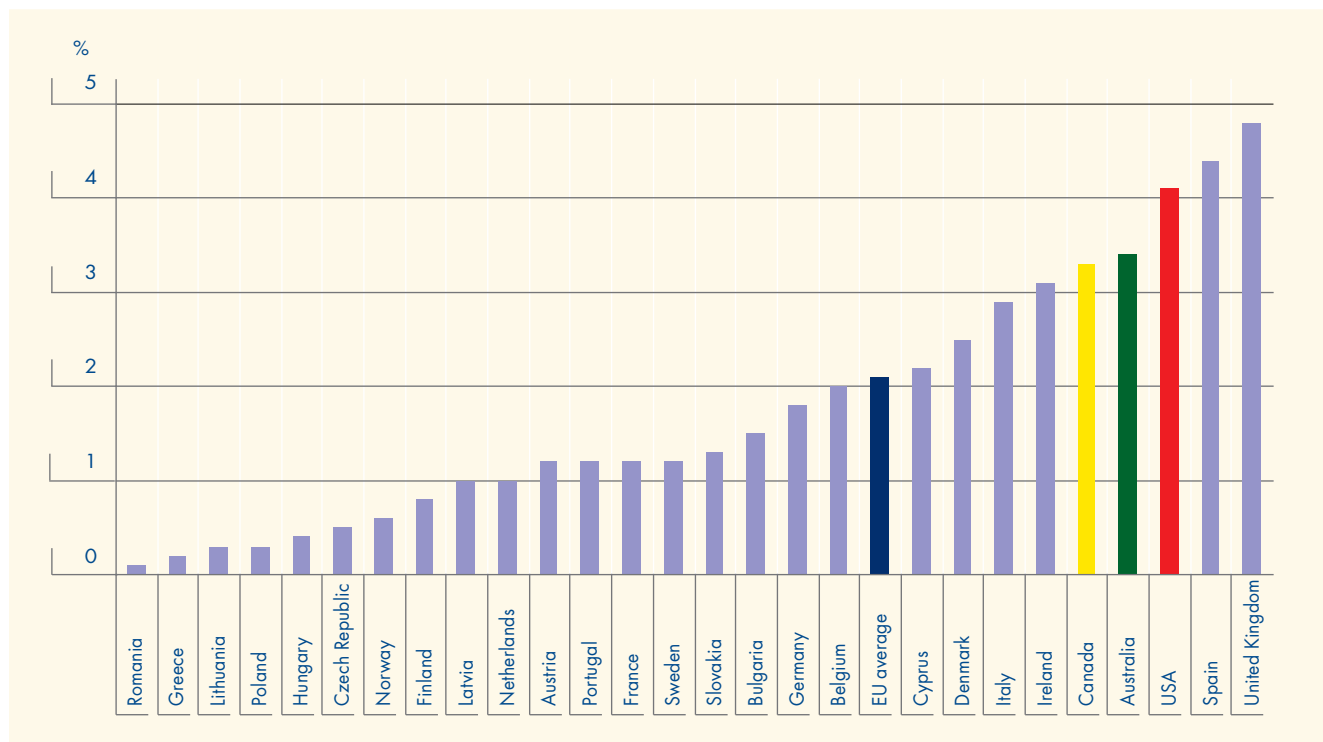
### Cocaine use among school students

Lifetime prevalence of cocaine use among 15- to 16-year-old school students in the most recent surveys available is 1 % to 2 % in over half of the 29 reporting countries. Most of the remaining countries report prevalence levels of 3 % to 4 %, while France and the United Kingdom report 5 %. Where data are available for older school students (17–18 years old), lifetime prevalence of cocaine use is generally higher, rising to 8 % in Spain <sup>(80)</sup>.

### Trends in cocaine use

Trends in cocaine use in Europe have followed different patterns. In Spain and the United Kingdom, the countries with the highest prevalence levels, use of cocaine increased greatly in the late 1990s, before moving to a more stable,

**Figure 9:** Last year prevalence of cocaine use among young adults (15–34) in Europe, Australia, Canada and the USA



NB: Data are from the last survey available for each country. The European average prevalence rate was calculated as the average of the national prevalence rates weighted by national population of 15- to 34-year-olds (2007, taken from Eurostat). US and Australian data have been recalculated from original survey results to the age bands 16–34 and 14–39 years, respectively. Data for Australia refer to 2007, data for Canada and the USA to 2009. See Figure GPS-20 in the 2011 statistical bulletin for further information.

Sources: Reitox national focal points, AIHW (2008), CADUMS (2010), SAMHSA (2010).

<sup>(78)</sup> See Figure GPS-13 in the 2011 statistical bulletin.

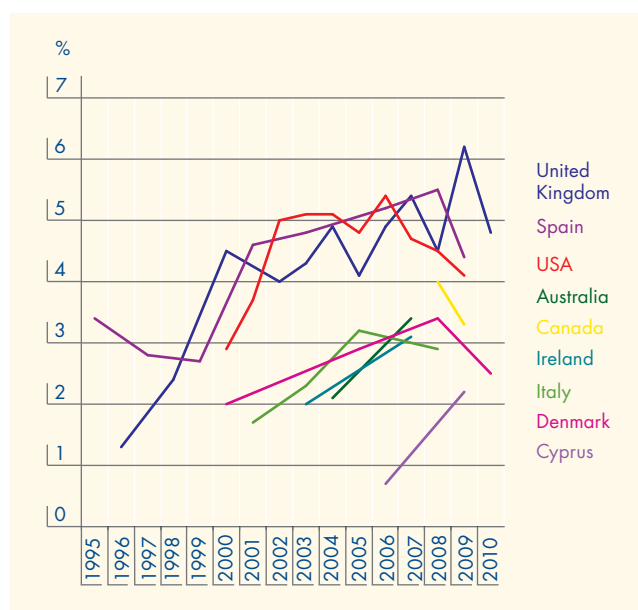
<sup>(79)</sup> See Table GPS-5 (part iii) and (part iv) in the 2011 statistical bulletin.

<sup>(80)</sup> See Tables EYE-10 to EYE-30 in the 2011 statistical bulletin.

though generally upward, trend. In four other countries (Denmark, Ireland, Italy, Cyprus), the increase in prevalence has been less pronounced and occurred later. All of these countries reported last year cocaine prevalence among young adults (15–34 years) above the EU average of 2.1 % (Figure 9). Four of these six countries reported an overall increase over the past 10 years, though observing a decrease in their most recent survey (Denmark, Spain, Italy, United Kingdom), echoing the trend observed in Canada and the United States (Figure 10). The other two countries report increases in their most recent surveys: Ireland from 2.0 % in 2003 to 3.1 % in 2007; and Cyprus from 0.7 % in 2006 to 2.2 % in 2009.

In 17 other countries with repeated surveys, cocaine use is relatively low and, in most cases, stable. Possible exceptions to this include Bulgaria and Sweden, which have reported signs of an increase, and Norway, where the trend appears to be downward. It should be borne in mind, however, that small changes at low prevalence must be interpreted with caution. In Bulgaria, last year use of cocaine among young adults rose from 0.7 % in 2005 to 1.5 % in 2008, and in Sweden from zero in 2000 to 1.2 % in 2008 <sup>(81)</sup>. Norway reported a decrease from 1.8 % in 2004 to 0.8 % in 2009.

**Figure 10:** Trends in last year prevalence of cocaine use among young adults in the six EU Member States with the highest figures, Australia, Canada and the USA



NB: See Figure GPS-14 (part ii) in the 2011 statistical bulletin for further information.

Sources: Reitox national focal points, AIHW (2008), CADUMS (2010), SAMHSA (2010).

Among the four countries that conducted national school surveys in 2009–10 (Italy, Slovakia, Sweden, United Kingdom), only Slovakia reported a change (decrease) of more than one percentage point in lifetime cocaine use among 15- to 16-year-old school students. A recent study among older students in Germany found that the proportion of 15- to 18-year-old students in Frankfurt reporting lifetime experience of cocaine increased slightly to 6 % in 2008 and fell to 3 % in 2009.

Targeted surveys can provide a valuable window on the drug-using behaviour of young people in dance music and other recreational settings. While these surveys generally report relatively high prevalence of cocaine, recent studies in some European countries report a decrease. For example, a study of visitors to ‘coffee shops’ in Amsterdam reported a drop in lifetime cocaine use from 52 % in 2001 to 34 % in 2009, and a drop in last month use from 19 % to 5 % over the same period <sup>(82)</sup>. Also in the Netherlands, a qualitative trend monitor noted that, compared to earlier generations of 20- to 24-year-olds, people now of this age are less interested in cocaine use. A Belgian study conducted regularly in nightlife settings since 2003 reported an increase in last year cocaine use during the period 2003–07 from 11 % to 17 %, followed by a decrease to 13 % in the 2009 study. Similar studies in the Czech Republic report an increase in lifetime cocaine use from 19 % in 2007 to 23 % in 2009. Such findings, however, need to be confirmed by other datasets.

### Patterns of cocaine use

Surveys show that, in recreational settings, cocaine use is strongly linked with the consumption of alcohol. Data from general population surveys in nine countries reveals that the prevalence of cocaine use is between two and nine times higher among heavy episodic drinkers <sup>(83)</sup> than in the general population (EMCDDA, 2009b). Surveys have also shown that cocaine use is associated with the use of other illicit drugs. For example, an analysis of data from the 2009/10 British Crime Survey found that 89 % of adults (16–59 years old) who had used cocaine powder during the past year had also used other drugs, compared with only 42 % of cannabis users (Hoare and Moon, 2010).

In some European countries, a substantial number of people use cocaine experimentally only once or twice (Van der Poel et al., 2009). Among more regular cocaine users, two broad groups can be distinguished. The first group is made up of more socially integrated users, who tend to use cocaine at weekends, parties or other special

<sup>(81)</sup> See Figure GPS-14 (part i) in the 2011 statistical bulletin.

<sup>(82)</sup> It should be noted that trends in Amsterdam are not representative of those in the Netherlands as a whole.

<sup>(83)</sup> Heavy episodic drinking, also known as binge drinking, is here defined as drinking six glasses or more of an alcoholic beverage on the same occasion at least once a week during the past year.

occasions, sometimes in large amounts. Many of these users report controlling their cocaine use by setting rules, for example, about the amount, frequency or context of use (Reynaud-Maurupt and Hoareau, 2010). Some of these may suffer health problems related to their use of cocaine or go on to develop compulsive patterns of use that require treatment. Studies suggest, however, that a substantial proportion of those with cocaine-related problems may recover without formal treatment (Cunningham, 2000; Toneatto et al., 1999).

The second group is composed of intensive cocaine and crack users belonging to more socially marginalised or disadvantaged groups, and may also include former or current opioid users who use crack or inject cocaine (Prinzleve et al., 2004).

### Health consequences of cocaine use

The health consequences of cocaine use are likely to be underestimated. This may be due to the often unspecific or chronic nature of the pathologies typically arising from long-term use of cocaine (see Chapter 7). Regular use, including by snorting, can be associated with cardiovascular, neurological and psychiatric problems, and with the risk of accidents and of transmission of infectious diseases through unprotected sex (Brugal et al., 2009) and possibly through the sharing of straws (Aaron et al., 2008), for which evidence appears to be growing (Caiaffa et al., 2011). Studies in countries with high levels of use indicate that a considerable proportion of cardiac problems in young people could be related to cocaine use (Qureshi et al., 2001). In Spain, for example, cocaine use appears to be involved in a significant proportion of drug-related hospital emergencies, and a recent Spanish study indicated that 3 % of sudden deaths are cocaine related (Lucena et al., 2010). Increases in use in Denmark have coincided with increasing numbers of cocaine-related emergency cases, which rose from 50 cases in 1999 to almost 150 in 2009.

Cocaine injection and crack use are associated with the highest health risks among cocaine users, including cardiovascular and mental health problems. These are generally aggravated by social marginalisation and the risks associated with injection, including the transmission of infectious diseases and overdoses (EMCDDA, 2007a).

### Problem cocaine use and treatment demand

Regular cocaine users, those who use it over long periods and those who inject the substance are defined by the EMCDDA as problem cocaine users. Estimates of the size of this population provide an approximation of the number

### Cocaine and alcohol

Cocaine users commonly also use alcohol. Population surveys show that cocaine use and alcohol use — in particular heavy episodic drinking — are often associated. And two studies found that more than half of cocaine-dependent users in treatment were also alcohol dependent.

The popularity of this combination may be explained by context; both substances are strongly associated with nightlife and party scenes, but also by pharmacological factors. The 'high' achieved by combining these substances is perceived to be beyond that with either drug alone. In addition, cocaine can make the effects of alcohol inebriation less intense and may also counteract some of the behavioural and psychomotor deficits induced by alcohol. Alcohol is also used to temper the discomfort felt when coming down from a cocaine 'high'. In this respect, the combination can lead to increased use of both substances.

There are documented risks and toxic effects associated with simultaneous use of alcohol and cocaine including increasing the heart rate, raising systolic blood pressure, which may result in cardiovascular complications, and impairment of cognitive and motor functions. However, retrospective studies show combined use does not appear to cause more cardiovascular problems than expected from the additive use of each drug (Pennings et al., 2002). In addition, combined use results in the formation of a new substance, cocaethylene, a metabolite formed in the liver. There is ongoing debate as to whether cocaethylene is responsible for increased heart rate and cardiotoxicity.

For more information see EMCDDA (2007a).

of people potentially in need of treatment. More socially integrated problem cocaine users are generally under-represented in the estimates.

National estimates of problem cocaine users are available only for Italy, where the number was estimated to be about 178 000 (between 4.3 and 4.7 per 1 000 aged 15–64) in 2009<sup>(84)</sup>. Trend data on problem cocaine use and other data sources (e.g. treatment entries) point to a gradual increase in problem cocaine use in Italy.

Crack use is unusual among socially integrated cocaine users, occurs mainly among marginalised and disadvantaged groups such as sex workers and problem opioid users and is largely an urban phenomenon (Prinzleve et al., 2004; Connolly et al., 2008). In London, crack use is considered to be a major component of the city's drugs problem. Regional crack cocaine estimates are only available for England (United Kingdom), where there were an estimated 189 000 problem crack cocaine users in 2008/09, which corresponds to 5.5 (5.4 to 5.8) cases per 1 000 inhabitants aged 15–64. A majority of these crack users were also reported to be opioid users.

<sup>(84)</sup> See Table PDU-102 (part i) in the 2011 statistical bulletin.

## Treatment demand

Further insights into problem cocaine use may be gained from data on the number and characteristics of people entering treatment due to cocaine use. Nearly all reported cocaine clients are treated in outpatient centres, although some might be treated in private clinics for which data are not available. Many problem cocaine users, however, do not seek treatment (Escot and Suderie, 2009; Reynaud-Maurupt and Hoareau, 2010).

Cocaine, mainly powder cocaine, was cited as the principal reason for entering treatment by 17 % of all reported drug users entering treatment in 2009. Among those entering treatment for the first time in their life, the proportion of primary cocaine users was higher (23 %).

Wide differences exist between countries in the proportion and number of primary cocaine clients, with the highest proportions reported by Spain (46 %), the Netherlands (31 %) and Italy (28 %). In Belgium, Ireland, Cyprus and the United Kingdom, cocaine clients represent between 11 % and 15 % of all drug clients. Elsewhere in Europe, cocaine users account for 10 % or less of drug treatment clients, with six countries reporting less than 1 %<sup>(85)</sup>. Overall, Spain, Italy and the United Kingdom report together almost 58 000 of the 72 000 cocaine clients reported by 26 European countries.

The number of clients entering drug treatment for primary cocaine use has been increasing in Europe for several years. Based on 17 countries that have provided data across the period 2004–09, the number of cocaine clients increased from about 38 000 in 2004 to around 55 000 in 2009. Over the same period, the number of cocaine clients entering treatment for the first time in their life increased by almost a third, from about 21 000 to 27 000 (based on 18 reporting countries).

### Profile of outpatient treatment clients

Clients entering outpatient treatment for primary use of cocaine, including powder and crack cocaine, present a high male to female ratio (about five men for every woman), and one of the highest mean ages (about 32 years) among drug treatment clients. The average age is highest in France, Italy and the Netherlands (35 years). Primary users of cocaine report first use of the drug at a mean age of 22.5 years, with 86 % of them starting before the age of 30. The average time lag between first cocaine use and first treatment entry is about nine years. Almost a third of all cocaine clients are reported

by the United Kingdom, and their profile differs from that of clients in other countries with a high number of cocaine users in treatment: they are younger on average (31 years), have a lower gender ratio (about three males for every female) and a shorter time lag between first use and treatment entry (around seven years).

Most cocaine clients report snorting (66 %) or smoking (29 %) the drug as their main route of administration. Injecting is reported as the main route of administration by only 3 % of cocaine clients, and a decrease in cocaine injecting has been observed between 2005 and 2009. Almost half of cocaine clients have used the drug one to six times a week in the month before entering treatment, about a quarter have used it daily while the remaining quarter have not used it or have used it only occasionally during that period<sup>(86)</sup>. Cocaine is often used in combination with other drugs, especially alcohol, cannabis, other stimulants and heroin. An analysis of treatment data from 14 countries in 2006 revealed that about 63 % of primary cocaine clients were polydrug users, reporting problems with at least one other drug. The most frequently cited additional problem drug was alcohol, used by 42 % of cocaine clients, followed by cannabis (28 %) and heroin (16 %) (EMCDDA, 2009b). Cocaine is also mentioned as a secondary substance<sup>(87)</sup>, and has been increasingly reported by primary heroin users in Italy and the Netherlands.

Analysis of treatment entry data shows that the crack problem remains geographically limited in Europe. In 2009, 10 540 clients were reported entering outpatient treatment for primary use of crack cocaine, representing 16 % of all cocaine clients and 3 % of all drug clients entering outpatient treatment. Most crack clients are reported by the United Kingdom, where they number about 7 500, accounting for 40 % of the country's cocaine clients and 6 % of its drug clients in outpatient centres. The Netherlands reported 1 231 crack clients, accounting for 38 % of the country's cocaine clients and 12 % of all drug clients<sup>(88)</sup>. Heroin use is common among users of crack cocaine entering treatment. In the United Kingdom, for example, around 31 % of primary crack clients reported heroin as a secondary drug, and this proportion is increasing.

## Treatment and harm reduction

Historically, treatment for drug use problems in Europe has focused on opioid dependence. However, with growing public health concern related to cocaine and crack

<sup>(85)</sup> See Figure TDI-2 and Tables TDI-5 (part i) and (part ii) and TDI-24 in the 2011 statistical bulletin; data for Spain refer to 2008.

<sup>(86)</sup> See Table TDI-18 (part ii) in the 2011 statistical bulletin.

<sup>(87)</sup> See Table TDI-22 in the 2011 statistical bulletin.

<sup>(88)</sup> See Table TDI-115 in the 2011 statistical bulletin.

cocaine use, in many countries more attention has been given to responding to problems related to these drugs. Although treatment for cocaine dependence is mainly provided in specialised outpatient facilities, specific services for cocaine users are delivered in Denmark, Ireland, Italy, Austria and the United Kingdom. There is also limited provision of cocaine treatment in primary healthcare settings. Currently, only Germany and the United Kingdom provide guidance for the treatment of cocaine problems.

The primary treatment options for cocaine dependence are psychosocial interventions, including motivational interviewing, cognitive behavioural therapies, behavioural self-control training, relapse prevention interventions and counselling. Self-help groups such as Cocaine Anonymous can also play a role in the recovery process for individuals with cocaine use problems. The support they provide may be combined with formal treatment.

### Studies on treatment of cocaine dependence

In Germany, Koerkel and Verthein (2010) evaluated the effects of behavioural self-control training for reducing heroin and cocaine use among dependent individuals. The training was reported to have helped participants to reduce the use of both substances and to maintain drug use at self-defined levels. Two recent studies investigated the effectiveness of drug treatment programmes in England. The Drug Treatment Outcomes Research Study (Jones, A., et al., 2009) found that more than half the cocaine clients stopped using the drug within three to five months of starting treatment. After a full year in treatment, 60 % were abstinent. Similar results were reported for crack cocaine users undergoing treatment in 12 community services in London (Marsden and Stillwell, 2010).

There are numerous randomised trials underway to test new drugs for the treatment of cocaine dependence. At present, two substances show some promise. Disulfiram, a substance that interferes with the metabolism of alcohol, has proved promising in treating cocaine dependence (Pani et al., 2010a), and is now being tested in conjunction with cognitive behavioural therapy in the treatment of crack cocaine addiction in a Brazilian study. Vigabatrin, an anti-epileptic drug, was tested in 103 Mexican parolees with positive results at short-term follow-up. It is now being tested in 200 patients in the USA. In the Netherlands, a new approach using rimonabant (a selective cannabinoid antagonist formerly used as an anti-obesity drug), is currently being tested. In addition, multiple pharmacotherapeutic options (topiramate, dexamphetamine and modafinil) are

being compared in a randomised controlled study for crack cocaine dependence, recently registered in the Netherlands (Hicks et al., 2011).

A number of other trials have produced weak or non-significant results for cocaine dependence. Modafinil, a central nervous system stimulant, was no better than the placebo in addressing cocaine use (Anderson et al., 2009). Both naltrexone (an opioid antagonist) and varenicline (used to treat smoking addiction) were tested on patients with multiple addiction to cocaine and alcohol or tobacco, but made no difference to use compared with the placebo. Memantine (an Alzheimer's medication) was tested in combination with voucher incentives, but was no more successful than the placebo in reducing cocaine use.

Contingency management has been found to be effective regardless of ethnicity (Barry et al., 2009), and has proved to be a successful strategy when combined with relapse prevention (McKay et al., 2010). In a Spanish study, the use of vouchers as an incentive alongside community reinforcement was found to support abstinence among cocaine-dependent users (Garcia-Rodriguez et al., 2009). However, in another study, voucher incentives showed weak results in reinforcing abstinence for longer periods (Carpenedo et al., 2010).

Other interventions with promising results include employment-based abstinence reinforcement, in which clients receive job skills training for six months, followed by a year's employment, subject to random testing for cocaine use. Other methods being tested to help users reach abstinence include mindfulness training and integrative meditation. Tests being carried out in the Netherlands aim to reduce craving with transcranial magnetic stimulation, a technique which has been used to treat neurologic and psychiatric conditions.

Attempts to develop a cocaine vaccine are continuing. A randomised controlled trial conducted in the United States (Martell et al., 2009) linked a derivative of cocaine to a cholera B protein, but the results appear too weak to proceed with planned field studies in Spain and Italy. The American research group is now recruiting 300 patients to test a modified version of the vaccine and the results are expected in 2014 (Whitten, 2010). Another study is developing a vaccine using a common cold virus as a carrier to boost antibody reaction, but the model is yet to be tested with humans.

### Harm reduction

The use of cocaine and crack cocaine represents a relatively new focus for harm-reduction interventions, and requires a rethinking of traditional strategies. Member

States usually provide cocaine injectors with the same services and facilities as opioid users. However, cocaine injecting is associated with specific risks. In particular, it involves a potentially higher frequency of injecting, chaotic injecting behaviour and increased sexual risk behaviours. Safer-use recommendations need to be tailored to the needs of this group. Due to the potential high frequency of injecting, the supply of sterile equipment to injectors should not be restricted, but rather based on local assessment of cocaine use patterns and the social situation of injectors (Des Jarlais et al., 2009).

Provision of specific harm-reduction programmes for crack cocaine smokers in Europe is limited. Although controversial, such interventions may have the potential to

reduce self-reported injecting behaviour and sharing of drug pipes (Leonard et al., 2008), although their overall effectiveness in reducing transmission of blood-borne viruses requires further study. Some drug consumption facilities in three countries (Germany, Spain, Netherlands) provide facilities for inhalation of drugs, including cocaine. Hygienic inhalation devices including clean crack pipes or 'crack kits' (glass stem with mouth piece, metal screen, lip balm and hand wipes) are reported to be sporadically provided to drug users who smoke crack cocaine by some low-threshold facilities in Belgium, Germany, Spain, France, Luxembourg and the Netherlands. Foil is also made available to heroin or cocaine smokers at some low-threshold facilities in seven EU Member States.





## Chapter 6

# Opioid use and drug injection

### Introduction

Heroin use, particularly injecting the drug, has been closely associated with public health and social problems in Europe since the 1970s. Today, this drug still accounts for the greatest share of morbidity and mortality related to drug use in the European Union. After two decades of mostly growing heroin problems, Europe saw a decline in heroin use and associated harm during the late 1990s and the early years of the present century. Since 2003–04, however, the trend has become less clearly defined, with indicators suggesting a more stable or mixed picture. In addition to heroin, reports of the use of synthetic opioids, such as fentanyl, and the injection of stimulant drugs, such as cocaine or amphetamines, reflect the increasingly multi-faceted nature of problem drug use in Europe.

### Supply and availability

Two forms of imported heroin have historically been offered on the illicit drugs market in Europe: the commonly available brown heroin (its chemical base form), which comes mainly from Afghanistan; and white heroin (a salt form), which typically originates from south-east Asia, though this form is considerably less common. In some northern European countries (e.g. Estonia, Finland, Norway), fentanyl, a synthetic opioid, and its analogues are in use. In addition, some opioid drugs are produced within Europe, principally home-made poppy products (e.g. poppy straw, concentrate from crushed poppy stalks or heads) in some east European countries (Latvia, Lithuania, Poland).

### Production and trafficking

Heroin consumed in Europe originates predominantly in Afghanistan, which accounts for most of the global illicit opium output. The other producing countries are Burma/Myanmar, which mainly supplies markets in east and south-east Asia, Pakistan and Laos, followed by Mexico and Colombia, which are considered the largest suppliers of heroin to the United States (UNODC, 2011). Global opium production is estimated to have decreased from a peak in

2007, mainly due to a decline in Afghan production, which has fallen from 6 900 tonnes in 2009 to 3 600 tonnes in 2010. The most recent estimate of global potential heroin production is 396 tonnes (see Table 10), down from an estimated 667 tonnes in 2009 (UNODC, 2011).

Heroin arrives in Europe mainly by two trafficking routes. The historically important Balkan route brings heroin produced in Afghanistan through Pakistan, Iran and Turkey, and then towards other transit or destination countries, mainly in western and southern Europe. Heroin is also trafficked via the 'silk route' through central Asia and towards Russia. To a limited extent, this heroin is then smuggled through Belarus, Poland and Ukraine to other destinations such as Scandinavian countries via Lithuania (INCB, 2010, 2011a). Within the European Union, the

**Table 10: Production, seizures, price and purity of heroin**

Production and seizures	Heroin
Global production estimate (tonnes)	396
Global quantity seized (tonnes)	76
Quantity seized (tonnes) EU and Norway (Including Croatia and Turkey)	8 (24)
Number of seizures EU and Norway (Including Croatia and Turkey)	56 000 (59 000)
<b>Price and purity in Europe <sup>(1)</sup></b>	
<b>Heroin base ('brown')</b>	
Mean retail price (EUR per gram)	
Range (Interquartile range) <sup>(2)</sup>	23–135 (37.5–67.9)
Mean purity (%)	
Range (Interquartile range) <sup>(2)</sup>	13–37 (16.8–33.2)

<sup>(1)</sup> Since few countries report the retail price and the purity of heroin hydrochloride ('white'), the data are not presented here. They can be consulted in Tables PPP-2 and PPP-6 in the 2011 statistical bulletin.  
<sup>(2)</sup> Range of the middle half of the reported data.  
 NB: Data are for 2009, except the global production estimate (2010).  
 Source: UNODC (2011) for global values, Reitox national focal points for European data.

Netherlands and, to a lesser extent, Belgium play an important role as secondary distribution hubs.

### Seizures

Worldwide reported seizures of opium remained stable between 2008 and 2009, at 657 and 653 tonnes, respectively. Iran accounted for nearly 90 % of the total and Afghanistan for about 5 %. Global reported seizures of heroin remained stable in 2009 (76 tonnes), while global seizures of morphine decreased to 14 tonnes (UNODC, 2011).

In Europe, an estimated 59 000 seizures resulted in the interception of 24 tonnes of heroin in 2009, two thirds of which (16.1 tonnes) was reported by Turkey. The United Kingdom (followed by Spain) continued to report the highest number of seizures <sup>(89)</sup>. Data for the years 2004–09 from 28 reporting countries show an overall increase in the number of seizures. The overall trend in the quantity of heroin intercepted in Turkey differs from that observed in the European Union, which may be due in part to greater collaboration between Turkish and EU law enforcement agencies. While Turkey reported a doubling in the quantity of heroin seized between 2004 and 2009, the amount seized in the European Union has shown a limited decline during this period, mainly due to decreases reported in Italy and the United Kingdom, the two countries seizing the largest quantities in the European Union.

Global seizures of acetic anhydride used in the manufacture of heroin decreased from a peak of about 200 000 litres in 2008 to 21 000 litres in 2009. Figures for the European Union show an even stronger downward trend: from a peak of almost 150 800 litres seized in 2008 to 866 litres in 2009. For 2010, however, Slovenia has reported seizing a record quantity of acetic anhydride — 110 tonnes. The INCB (2011a) placed the success of EU efforts to prevent diversion of the precursor in the context of several EU Member States and Turkey combining their investigations.

### Purity and price

The mean purity of brown heroin tested in 2009 ranged between 16 % and 32 % for most reporting countries; lower mean values were reported in France (14 %) and Austria (retail only, 13 %) and higher ones in Malta (36 %), Romania (36 %) and Turkey (37 %). Between 2004 and 2009, the purity of brown heroin increased in four countries, remained stable in four others and decreased in three. The mean purity of white heroin was generally

### Major fall in opium production in Afghanistan

At 3 600 tonnes, opium production in Afghanistan in 2010 is estimated to have fallen to about half the level reached in the previous year. Among the causes suggested for this major reduction in the yield of the opium poppy crop are unfavourable weather conditions and the spread of poppy blight, a fungal infection, which affected opium fields in the major poppy-growing provinces, particularly Helmand and Kandahar (UNODC and MCN, 2010). The blight did not significantly change the area under opium cultivation, but had an impact on the quantity of opium produced.

The decline in crop yield also led to a dramatic rise in reported opium prices at harvest time. The average farm gate price of 1 kg of dry opium increased by a factor of 2.6, from USD 64 in 2009 to USD 169 in 2010 (UNODC and MCN, 2010). At the same time, the average price of heroin in Afghanistan increased by a factor of 1.4.

The high opium price may not last long. A price rise that occurred in 2004, when opium production fell due to disease, lasted less than a year (UNODC and MCN, 2010). The effects of the recent drop in opium production on the consumer markets, particularly in Europe, need to be followed closely.

higher (25 % to 50 %) in the three European countries reporting data <sup>(90)</sup>.

The retail price of brown heroin continued to be considerably higher in the Nordic countries than in the rest of Europe, with Sweden reporting a mean price of EUR 135 per gram and Denmark EUR 95 in 2009. Overall, it ranged between EUR 40 and EUR 62 per gram in half of the reporting countries. Over the period 2004–09, the retail price of brown heroin decreased in half of the 14 European countries reporting time trends.

### Problem drug use

Problem drug use is defined by the EMCDDA as injecting drug use or long duration/regular use of opioids, cocaine and/or amphetamine. Injecting drug use and the use of opioids form the greater part of problem drug use in Europe, although in a few countries users of amphetamines or cocaine are important components. It is also worth noting that problem drug users are mostly polydrug users, and that prevalence figures are much higher in urban areas and among socially excluded groups.

Given the relatively low prevalence and the hidden nature of problem drug use, statistical extrapolations are required to obtain prevalence estimates from the available data

<sup>(89)</sup> See Tables SZR-7 and SZR-8 in the 2011 statistical bulletin. Note that where data for 2009 are absent, data for 2008 are used to estimate European totals.

<sup>(90)</sup> See Tables PPP-2 and PPP-6 in the 2011 statistical bulletin for purity and price data.

sources (mainly drug treatment data and law enforcement data). Overall prevalence of problem drug use is reported to range from 2 to 10 cases per 1 000 population aged 15–64. Such estimates may have large uncertainty ranges and specific limitations. For example, while users in treatment are generally included, drug users currently in prison, especially those with longer sentences, may be under-represented in the estimates.

### Problem opioid use

Most European countries are now able to provide prevalence estimates of ‘problem opioid use’. Recent national estimates vary between one and eight cases per 1 000 population aged 15–64 (Figure 11). The countries reporting the highest well-documented estimates of problem opioid use are Ireland, Italy, Luxembourg and Malta, while the lowest are reported by the Czech Republic, the Netherlands, Poland, Slovakia and Finland. Only Turkey and Hungary report less than one case per 1 000 population aged 15–64.

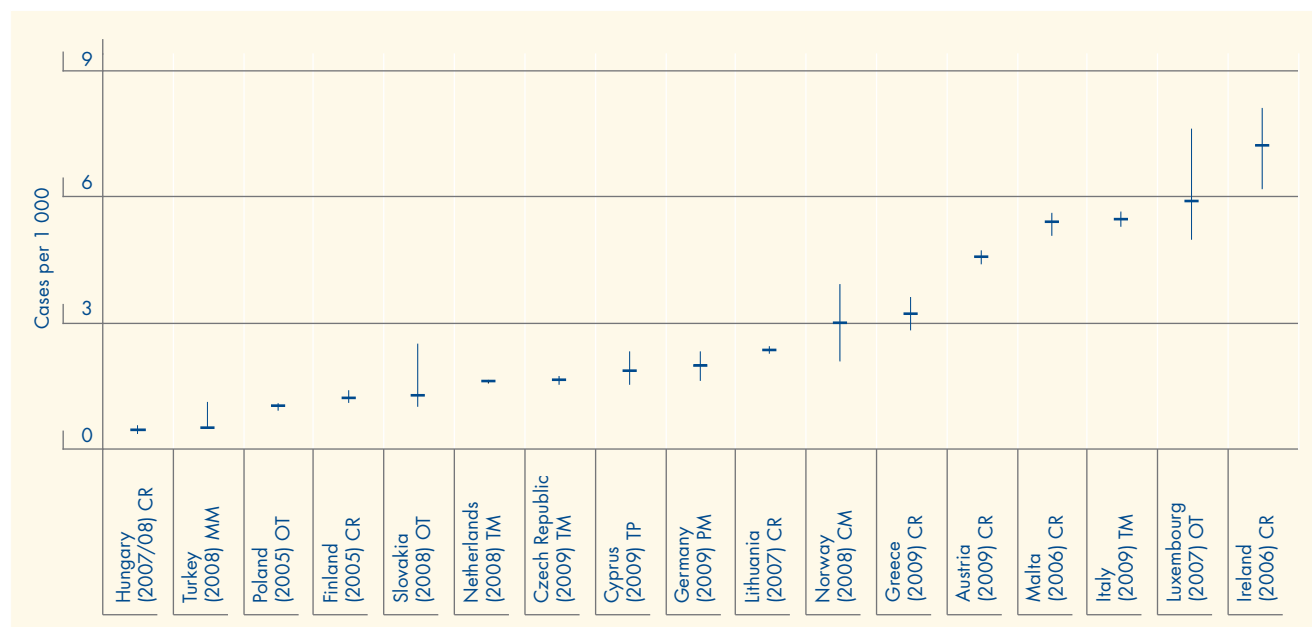
The average prevalence of problem opioid use in the European Union and Norway, computed from national studies, is estimated to be between 3.6 and 4.4 cases per 1 000 population aged 15–64. This corresponds to

some 1.3 million (1.3 million to 1.4 million) problem opioid users in the European Union and Norway in 2009. By comparison, estimates for Europe’s neighbouring countries are high, with Russia at 16 per 1 000 population aged 15–64 (UNODC, 2009), and Ukraine at 10–13 cases per 1 000 population aged 15–64 (UNODC, 2010). Estimates of problem opioid prevalence that are higher than the European average are reported elsewhere in the developed world, where the number of cases per 1 000 population aged 15–64 is 6.3 in Australia (Chalmers et al., 2009), 5.0 in Canada and 5.8 in the USA (UNODC, 2010). Comparisons between countries should be made with caution, as definitions of the target population may vary.

### Opioid users entering treatment

Opioids, mainly heroin, were cited as the primary drug for entering treatment by around 216 000 or 51 % of all those reported entering specialist drug treatment in 29 European countries in 2009. However, considerable differences exist across Europe, with opioid clients accounting for more than 80 % of those entering treatment in six countries, between 60 % and 80 % in seven, and with only two of the remaining 16 countries reporting opioid clients accounting for less than 20 % of treatment

Figure 11: Estimates of the annual prevalence of problem opioid use (among the population aged 15–64)



NB: A symbol indicates a point estimate; a vertical mark indicates an uncertainty interval: a 95 % confidence interval, or one based on sensitivity analysis. Target groups may vary slightly, owing to different estimation methods and data sources; therefore, comparisons should be made with caution. Non-standard age ranges were used in the studies from Finland (15–54), Malta (12–64) and Poland (all ages). All three rates were adjusted to the population aged 15–64. For Germany, the interval represents the highest and lowest bounds of all existing estimates, and the point estimate a simple average of the midpoints. Methods of estimation are abbreviated: CR, capture-recapture; TM, treatment multiplier; MM, mortality multiplier; CM, combined methods; TP, truncated Poisson; PM, police multiplier; OT, other methods. See Figure PDU-1 (part ii) and Table PDU-102 in the 2011 statistical bulletin for further details.

Sources: Reitox national focal points.

entrants (Figure 12). In addition, a further 30 000 users (9 % of drug clients) of other drugs cited opioids as a secondary drug <sup>(91)</sup>.

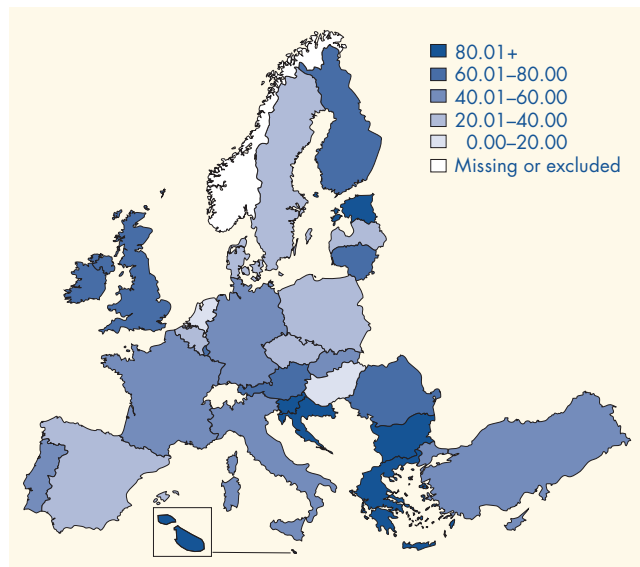
Opioid users entering specialist treatment are on average 34 years old, with female clients and those entering treatment for the first time being younger in most countries. Across Europe, male opioid clients outnumber their female counterparts by a ratio of about three to one, with generally lower male to female ratios in northern countries. In general, opioid users entering treatment have higher rates of unemployment, lower levels of educational attainment and higher levels of psychiatric disorders than clients reporting other primary drugs <sup>(92)</sup>.

Almost half of opioid clients reported first using the drug before the age of 20 (47 %) and the great majority have done so by the age of 30 (88 %). Opioid clients report an average interval of nine years between first use of opioids and entering treatment for the first time, with female clients reporting a shorter average time lag (seven years) <sup>(93)</sup>. Injecting the drug is reported as the usual mode of administration by about 40 % of opioid clients entering treatment in Europe; the remaining 60 % report that they snort, inhale or smoke the drug. Almost two thirds of opioid clients (64 %) report daily use of the drug in the month prior to entering treatment <sup>(94)</sup>, and most use a secondary drug, often alcohol, cannabis, cocaine or other stimulants. The combination of heroin and cocaine (including crack) is quite common among clients, either injected together or used separately.

### Trends in problem opioid use

During the period 2004–09, data from eight countries with repeated prevalence estimates in problem opioid use suggest a relatively stable situation. Based on a sample of 17 European countries where data were available for the period 2004–09, there has been an overall increase in the reported number of clients entering specialist drug treatment in Europe, including those entering treatment for primary heroin use (from 123 000 to 143 000). This increase may, however, be largely due to heroin users re-entering treatment rather than to first-time treatment entrants <sup>(95)</sup>. For clients entering treatment for the first time, the number of heroin users has remained almost stable (around 32 000 in a sample of 18 countries) <sup>(96)</sup>.

**Figure 12:** Primary opioid users as a percentage of all reported drug treatment entrants in 2009



**NB:** Data are expressed as a percentage of those for whom the primary drug is known (92 % of the reported clients). Data are for 2009 or for the most recent year available. Data for Latvia, Lithuania and Portugal refer to clients entering treatment for the first time in their lives. Primary opioid users may be under-reported in some countries including Belgium, the Czech Republic, Germany and France, as many are treated by general practitioners and may not be reported to the treatment demand indicator.

**Sources:** Reitox national focal points.

Data on drug-induced deaths over the period 2004–09, which are mostly associated with opioid use, were stable or increasing in the majority of reporting countries until 2008. Provisional data for 2009 now point to a stable or decreasing number of deaths <sup>(97)</sup>.

Despite indications of an overall stable situation, the characteristics of Europe's opioid problem are changing. Opioid treatment clients have become older on average, while the proportion of injectors among them has decreased and the proportion of users of opioids other than heroin and of polydrug users has increased <sup>(98)</sup>.

### Injecting drug use

Injecting drug users are among those at highest risk of experiencing health problems from their drug use, such as blood-borne infections (e.g. HIV/AIDS, hepatitis) or drug overdoses. In most European countries, injection is

<sup>(91)</sup> See Figure TDI-2 (part ii) and Tables TDI-5 and TDI-22 in the 2011 statistical bulletin. Data are from outpatient and inpatient treatment centres.

<sup>(92)</sup> See Tables TDI-10, TDI-12, TDI-13, TDI-21, TDI-32 and TDI-103 in the 2011 statistical bulletin.

<sup>(93)</sup> See Tables TDI-11, TDI-33, TDI-106 (part i) and TDI-107 (part i) in the 2011 statistical bulletin.

<sup>(94)</sup> See Tables TDI-18 and TDI-111 in the 2011 statistical bulletin.

<sup>(95)</sup> See Figures TDI-1 and TDI-3 in the 2011 statistical bulletin.

<sup>(96)</sup> See Tables TDI-3 and TDI-5 in the 2009 and 2011 statistical bulletin.

<sup>(97)</sup> See Table DRD-2 (part i) in the 2011 statistical bulletin.

<sup>(98)</sup> See Table TDI-113 in the 2008, 2009, 2010 and 2011 statistical bulletins and Table TDI-114 in the 2009 statistical bulletin. Data are available with a breakdown by type of opioid for the years 2005 and 2009. See also EMCDDA (2010f).

## Opioids other than heroin

Increasing illicit use of opioids other than heroin has been reported in Australia, Canada, Europe and the United States (SAMHSA, 2009). Most of these substances are used in medical practice, as pain relievers (morphine, fentanyl, codeine, oxycodone, hydrocodone) or as substitution drugs in the treatment of heroin dependence (methadone, buprenorphine). As with heroin, the non-medical use of these substances can lead to a range of adverse health effects, including dependence, overdose and harm associated with injection.

In Europe, about 5 % (around 20 000 patients) of all treatment entrants declare opioids other than heroin as their primary drug. This is particularly the case in Estonia, where 75 % report fentanyl as their primary drug, and in Finland, where buprenorphine is reported as the primary drug of 58 % of treatment entrants. Other countries with significant proportions of clients reporting methadone, morphine and other opioids as primary drug include Denmark, France, Austria, Slovakia and Sweden, where non-heroin opioid users account for between 7 % and 17 % of all drug clients (!). The Czech Republic also reports that buprenorphine users accounted for more than 40 % of all problem opioid users between 2006 and 2009.

Levels of illicit use of opioids may be linked with a mixture of factors including the drug market and prescription practices. For example, a decrease in heroin availability and an increase in its price may lead to the use of other opioids, as was observed in Estonia with fentanyl (Talu et al., 2010) and in Finland with buprenorphine (Aalto et al., 2007). Inappropriate prescription practices can also lead to illicit use of opioid drugs. The expansion of substitution treatment accompanied by a lack of supervision can create an illicit market, while limited availability of this treatment and the prescription of substitution doses that are too low can lead users to take other substances as a self-medication (Bell, 2010; Roche et al., 2011; Romelsjö et al., 2010).

(!) See Table TDI-113 in the 2011 statistical bulletin.

commonly associated with opioid use, although in a few countries, it is associated with use of amphetamines.

Only 14 countries were able to provide recent estimates of the prevalence of injecting drug use (<sup>99</sup>). The available data suggest large differences between countries, with estimates ranging from less than one to five cases per 1 000 population aged 15–64 for most of the countries, with an exceptionally high level of 15 cases per 1 000 reported in Estonia. Taking these 14 countries together as a whole, it can be calculated that there are about 2.6 injecting drug users per 1 000 population aged 15–64.

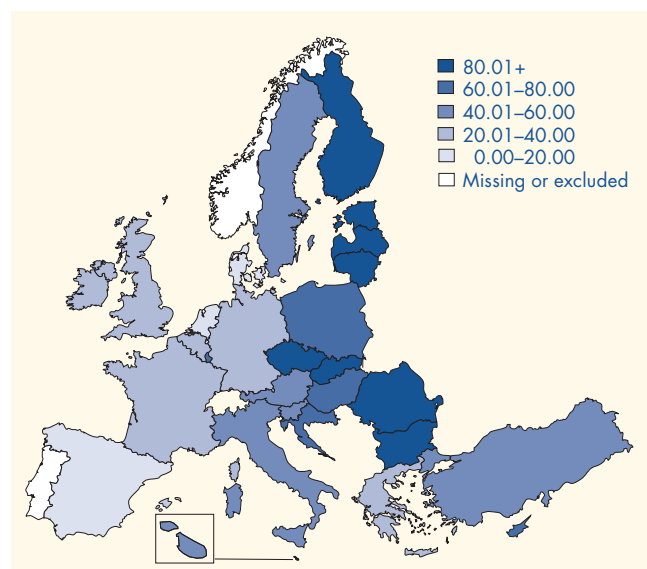
In addition to active injectors, there are a large number of former injecting drug users in Europe (Sweeting et al., 2008), but figures are not available for most EU countries.

About 41 % of primary opioid clients entering specialist drug treatment, mainly heroin users, report injecting as the usual mode of administration. Levels of injecting among opioid users vary between countries, from 8 % in the Netherlands to 99 % in Latvia and Lithuania (Figure 13), which may be explained by factors such as the history of heroin use in the country, the type of heroin available (white or brown), price and user culture.

Drawing conclusions on time trends in the prevalence of injecting drug use based on repeated prevalence estimations is difficult because of the lack of data and, in some cases, the wide uncertainty ranges of the estimates. Available data indicate an overall decrease in opioid injection, particularly heroin injection, in Europe. In some countries, however, injecting levels appear to have remained relatively stable (Greece, Cyprus, Hungary, Croatia, Norway), while the Czech Republic reported an increase of injectors, mostly methamphetamine users, between 2004 and 2009 (<sup>100</sup>).

Most European countries have reported a decrease of the proportion of injectors among primary heroin clients between 2004 and 2009. The few countries where this is

**Figure 13:** Injecting as usual mode of administration among primary opioid users entering treatment in 2009



NB: Data are expressed as a percentage of reported clients for whom the route of administration is known. Data are for 2009 or most recent year available. See Table TDI-5 (part iii) and (part iv) in the 2011 statistical bulletin.

Sources: Reitox national focal points.

<sup>(99)</sup> See Figure PDU-2 in the 2011 statistical bulletin.

<sup>(100)</sup> See Table PDU-6 (part iii) in the 2011 statistical bulletin.

not the case report the highest proportions of heroin users among clients entering treatment.

## Treatment of problem opioid use

### Provision and coverage

Both drug-free and substitution treatment for opioid users are available in all EU Member States, Croatia, Turkey and Norway. In most countries, treatment is conducted in outpatient settings, which can include specialised centres, general practitioners' surgeries and low-threshold facilities. In a few countries, specialist inpatient centres play an important role in the treatment of opioid dependence <sup>(101)</sup>. A small number of countries offer heroin-assisted treatment for a selected group of chronic heroin users.

For opioid users, drug-free treatment is generally preceded by a detoxification programme, which provides them with pharmaceutical assistance to manage the physical withdrawal symptoms. This therapeutic approach generally requires individuals to abstain from all substances, including substitution medication. Patients participate in daily activities and receive intensive psychological support. While treatment can take place in both outpatient and inpatient settings, the types most commonly reported are residential (or rehabilitation) programmes, many of which apply therapeutic community principles or the Minnesota model.

Substitution treatment, generally integrated with psychosocial care, is typically provided at specialist outpatient centres. Fourteen countries report that it is also provided by general practitioners, usually under shared-care arrangements with specialist treatment centres. The total number of opioid users receiving substitution treatment in the European Union, Croatia and Norway is estimated at 700 000 (690 000 for EU Member States) in 2009, up from 650 000 in 2007, and about half a million in 2003 <sup>(102)</sup>. The vast majority of substitution treatments continue to be provided in the 15 pre-2004 EU Member States (about 95 % of the total), and numbers in these countries continued to increase between 2003 and 2009 (Figure 14). Among these countries, the highest increases were observed in Finland, with a three-fold increase, and Austria and Greece, where treatment numbers doubled.

In the 12 countries that joined the EU more recently, the number of substitution clients nearly tripled between 2003 and 2009, from 6 400 to 18 000. Relative to the index year 2003, a steep increase can be noted during 2005–07, but from this date onwards there has been little further increase. Proportionally, the expansion of

### Heroin drought in Europe?

The availability of heroin is reported to have dropped sharply in the United Kingdom and Ireland in late 2010 to early 2011. This is supported by figures showing a considerable drop in the purity of heroin seized in the United Kingdom between the third quarter of 2009 and the third quarter of 2010 (UNODC, 2011).

The extent of the shortage in other European countries is less clear, although reports suggest that Italy and Slovenia have experienced heroin shortages. Other EU Member States, including Germany, France and Scandinavian countries, report little or no reduction in heroin availability.

A number of reasons have been put forward to explain the apparent heroin drought. First, it has been suggested that reduced production of opium in Afghanistan, due to poppy blight in the spring of 2010, may be responsible. However, this is debatable, as police reports suggest that heroin made from Afghan opium may not appear on the European drug markets until about 18 months after harvest. A second argument is that heroin destined for western Europe has been diverted to the Russian market, but Russia also appears to be undergoing a heroin shortage. It has also been suggested that law enforcement efforts have disrupted trafficking, in particular through the dismantling of wholesale heroin networks between Turkey and the United Kingdom. Also, recent years (2007, 2008) have seen record seizures of the heroin precursor acetic anhydride in Europe, and these confiscations may have affected the drug market over a longer period. Finally, other developments in Afghanistan, such as heavy fighting in the south of the country, and law enforcement actions against heroin laboratories and opium stockpiles, may also be influencing heroin supply to Europe.

It is likely that a combination of some of these factors has played a role in disrupting the supply of heroin to Europe, causing severe shortages in some markets.

substitution treatment in these countries over the six-year period was highest in Estonia (16-fold from 60 to over 1 000 clients, though still reaching only 5 % of opioid injectors) and Bulgaria (eight-fold), while there was a three-fold increase in Latvia. The smallest increases were reported from Slovakia and Hungary, and client numbers in Romania remained practically unchanged. Increased provision of substitution treatment might be linked to several factors, including: responding to high levels of injecting drug use and related HIV-transmission; alignment with the EU drugs strategy; and the funding of pilot projects by international organisations, such as the Global Fund and UNODC.

A comparison of the number of clients in substitution treatment with the estimated number of problem opioid

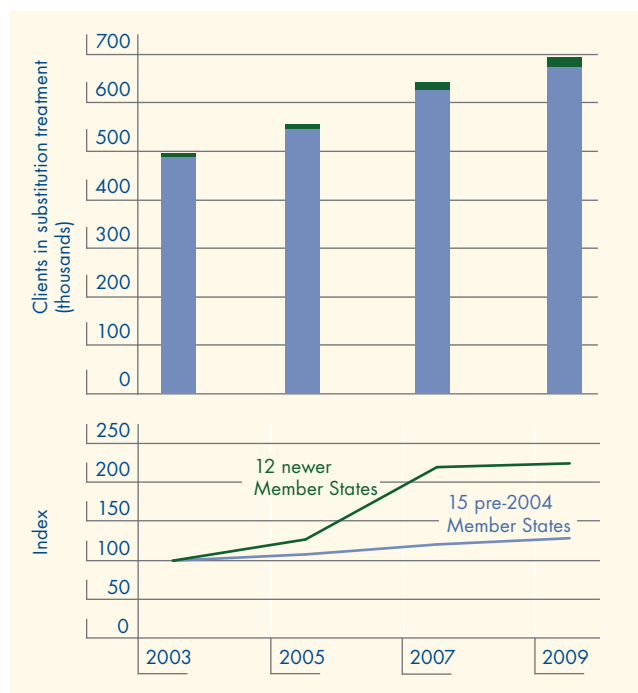
<sup>(101)</sup> See Table TDI-24 in the 2011 statistical bulletin.

<sup>(102)</sup> See Table HSR-3 in the 2011 statistical bulletin.

users suggests varying coverage levels in Europe. Of the 16 countries for which reliable estimates of the number of problem opioid users are available, eight report a number of substitution treatments corresponding to 40 % or more of the target population. Seven of those countries are pre-2004 EU Member States, and the remaining high-coverage country is Malta. Coverage reaches 37 % in the Netherlands and 32 % in the Czech Republic and Hungary. Of the five countries with coverage levels below 30 %, four are newer Member States. The exception in this group is Greece, with an estimated coverage of 23 % <sup>(103)</sup>.

Countries in central and eastern Europe report efforts to improve access, quality and provision of substitution treatment. In 2010, clinical guidelines for the treatment of opioid dependence with methadone and buprenorphine were issued in Lithuania. Geographical availability of substitution treatment in Latvia is expanding, with new treatment providers outside of the capital Riga. Regulations for the financing of opioid substitution treatment under national health insurance have been adopted in the Czech Republic. Lack of funding for substitution treatment is, however, reported as limiting the geographical coverage

**Figure 14:** Clients in opioid substitution treatment in the 15 pre-2004 and the 12 newer EU Member States – estimated numbers and indexed trends



NB: For more information, see Figure HSR-2 in the 2011 statistical bulletin.

Sources: Reitox national focal points.

in Poland and reducing significantly the number of treatment slots available among the main providers of substitution treatment in Bulgaria, which are non-publicly funded organisations.

Overall, it is estimated that about half of the European Union’s problem opioid users have access to substitution treatment, a level that is comparable to those reported for Australia and the United States, though higher than that reported for Canada. China reports much lower levels, while Russia, despite having the highest estimated number of problem opioid users, has not introduced this type of treatment (see Table 11).

In Europe, methadone is the most commonly prescribed substitution medication, received by up to three quarters of clients. Buprenorphine is prescribed to up to a quarter of European substitution clients, and is the principal substitution drug in the Czech Republic, France, Cyprus, Finland, Sweden and Croatia <sup>(104)</sup>. The combination buprenorphine/naloxone is available in 15 countries. Treatments with slow-release oral morphine (see below), codeine (Germany, Cyprus) and diacetylmorphine <sup>(105)</sup> (Belgium, Denmark, Germany, Spain, Netherlands, United Kingdom) represent a small proportion of all treatments.

In addition to the more commonly used substitution medications, slow-release oral morphine, which was originally licensed to treat pain in cancer patients, is currently provided as an alternative drug for substitution treatment for opioid dependence in Bulgaria, Austria, Slovenia and Slovakia. A recent review (Jegu et al., 2011) of 13 studies concluded that levels of retention in treatment appeared sufficiently high with this substance

**Table 11: International comparison of estimates of problem opioid users and numbers of clients in opioid substitution treatment**

	Problem opioid users	Clients in opioid substitution treatment
<b>European Union and Norway</b>	1 300 000	695 000
<b>Australia</b>	90 000	43 000
<b>Canada</b>	80 000	22 000
<b>China</b>	2 500 000	242 000
<b>Russia</b>	1 600 000	0
<b>USA</b>	1 200 000	660 000

NB: Year: 2009, except for Canada (reference year is 2003).  
Sources: Arfken et al. (2010), Chalmers et al. (2009), Popova et al. (2006), UNODC (2010), Yin et al. (2010).

<sup>(103)</sup> See Figure HSR-1 in the 2011 statistical bulletin.

<sup>(104)</sup> See Table HSR-3 in the 2011 statistical bulletin.

<sup>(105)</sup> See the box ‘Heroin-assisted treatment’.



(80.6 % to 95 %), and no different from those reported for methadone. Most studies showed that quality of life, withdrawal symptoms, craving and illicit drug consumption improved with morphine, but there was no comparison with other substitution drugs. More information might be provided by a forthcoming Cochrane systematic review.

### Opioid treatment: effectiveness and outcomes

Opioid substitution treatment, combined with psychosocial interventions, is considered to be the most effective treatment option for opioid dependence. In comparison with detoxification or no treatment at all, both methadone and high dosage buprenorphine treatments show better rates of retention in treatment and significantly better outcomes for drug use, criminal activity, risk behaviours and HIV-transmission, overdoses and overall mortality (WHO, 2009).

A number of recent studies focus on medication that may complement substitution treatment. Two systematic reviews have explored whether antidepressants reduced dropout among methadone or buprenorphine patients, but did not find evidence of effectiveness (Pani et al., 2010b; Stein et al., 2010). Another study showed that a single additional methadone dose could help reduce craving-induced mood problems among stabilised methadone patients (Strasser et al., 2010).

The opioid receptor antagonist naltrexone is used to prevent relapse to opioid use. In a small-scale trial, naltrexone implants were found to be more effective than oral naltrexone in reducing both craving and relapse (Hulse et al., 2010). A study among released prisoners showed that naltrexone implants provided similar reductions in heroin and benzodiazepines use to methadone (Lobmaier et al., 2010). Buprenorphine implants, developed to overcome problems of non-compliance and to prevent treatment diversion, have also been tested in the United States against placebo implants. A preliminary study showed a minor difference regarding abstinence in favour of the active implants (Ling et al., 2010), and the next step will be to compare these implants against other treatments (O'Connor, 2010). In Europe, a Finnish study is testing whether providing suboxone in an electronic device that registers use improves compliance and limits the diversion of take-home drugs.

Treatment outcome research documents some encouraging results. The Drug Treatment Outcome Research Study used a 12-month window to assess treatment outcomes of 1 796 drug users recruited from 342 agencies <sup>(106)</sup> across England (Jones, A., et al., 2009). Among heroin users involved in the baseline interviews, 44 % had stopped using at first follow-up and 49 % at second follow-up, and there were also consistent reductions for all of the other major substances assessed.

### Heroin-assisted treatment

Heroin-assisted treatment is provided to a total of about 1 100 problem opioid users in five EU Member States (Denmark, Germany, Spain, Netherlands, United Kingdom) and 1 360 problem opioid users in Switzerland. This treatment is not proposed as a first-line option, but is reserved for patients who have not responded to other approaches, such as methadone maintenance treatment. All injectable doses (typically about 200 mg diamorphine per injection) are taken under direct supervision, in order to ensure compliance, safety and prevention of any possible diversion to the illicit market: this requires the clinics to be open for several sessions per day, every day of the year.

Six randomised clinical trials examining the outcomes and the cost-effectiveness of this type of treatment have been conducted over the last 15 years (see EMCDDA, 2011a). All trials included chronic heroin-dependent individuals who have repeatedly failed other treatment approaches, and who were randomly attributed to heroin-assisted treatment or to

oral methadone treatment. The studies used different methods and outcome variables, and their results are therefore only moderately consistent. Overall, they indicate an added value of supervised injectable heroin alongside supplementary doses of methadone for long-term opioid users for whom other approaches have not succeeded. Patients use less street drugs and appear to achieve some gains in physical and mental health functioning.

Heroin-assisted treatment is estimated to cost EUR 19 020 per patient per year in Germany and EUR 20 410 in the Netherlands (adjusted to 2009 prices). This is substantially higher than the cost of providing a patient with one year's oral methadone treatment, which is estimated to be EUR 3 490 in Germany and EUR 1 634 in the Netherlands. The cost difference between heroin-assisted and methadone treatment is largely due to the higher staffing requirements for specialist clinics. Despite its higher costs, heroin-assisted treatment has been shown to be a cost-effective intervention for a selected group of chronic heroin users (EMCDDA, 2011a).

<sup>(106)</sup> Community-based treatment (mainly oral methadone maintenance) and residential treatment.

### Oral substitution treatment in pregnancy

Opioid-dependent expectant mothers are recommended to take methadone substitution treatment for the duration of their pregnancy. While many women will want to stop using opioids on finding out that they are pregnant, opioid withdrawal during pregnancy should be avoided because of the high risk of relapse to heroin use and the danger of withdrawal symptoms inducing miscarriage or premature labour (WHO, 2009). Prenatal exposure to methadone is, however, also associated with neonatal abstinence syndrome which requires medication and hospitalisation.

Buprenorphine is an alternative to methadone in maintenance treatment, and it has recently been studied in a sample

of 175 opioid-dependent pregnant women enrolled in an international randomised controlled trial (Jones, H., et al., 2009a) carried out at six locations in the USA, one in Canada and one in Vienna. The women, who enrolled at between 13 and 30 weeks of pregnancy, were randomly assigned to receive methadone or buprenorphine, and were followed up with their newborn children until six months post-partum. As in other studies, buprenorphine was associated with a higher dropout rate (33 %) than methadone (18 %), but the children in the buprenorphine group appeared to need less morphine to treat neonatal abstinence syndrome and fewer days of hospitalisation. The study concluded that, when retained in treatment, pregnant women can be offered buprenorphine or methadone for treating opioid dependence in pregnancy (Jones, H., et al., 2009b).



## Chapter 7

# Drug-related infectious diseases and drug-related deaths

### Introduction

Drug use can produce a wide range of negative consequences, such as accidents, mental health disorders, pulmonary diseases, cardiovascular problems, unemployment or homelessness. Harmful consequences are particularly prevalent among problem drug users, whose general health and socioeconomic situation can be far below those in the general population.

Opioid use and injecting drug use are two forms of drug use closely associated with such harm, notably overdoses and the transmission of infectious diseases. The number of fatal overdoses reported in the European Union in the last two decades is equivalent to about one overdose death every hour. Research also shows that, in the last two decades, a large number of drug users have died from other causes, such as AIDS or suicide (Bargagli et al., 2006; Degenhardt et al., 2009).

Reducing the mortality and morbidity related to drug use is central to European drug policies. The main efforts in this area are through interventions that are directed at the groups that are most at risk, and targeting the types of behaviour directly associated with drug-related harm.

### Drug-related infectious diseases

The EMCDDA is systematically monitoring infection with HIV and hepatitis B and C viruses among injecting drug users<sup>(107)</sup>. The infectious diseases caused by these viruses are among the most serious health consequences of drug use. Other infectious diseases, including hepatitis A and D, sexually transmitted diseases, tuberculosis, tetanus, botulism, anthrax and human T-lymphotropic virus, may also disproportionately affect drug users.

### HIV and AIDS

By the end of 2009, the rate of reported new HIV diagnoses among injecting drug users has remained low in most countries of the European Union, and

the overall EU situation compares positively, both in a global and in a wider European context (ECDC and WHO-Europe, 2010; Wiessing et al., 2009) (Figure 15). This may, at least partly, follow from the increased availability of prevention, treatment and harm-reduction measures, including substitution treatment and needle and syringe programmes. Other factors, such as the decline in injecting drug use that has been reported in several countries, may also have played an important role (EMCDDA, 2010g). The average rate of newly diagnosed cases in the 26 EU Member States able to provide data for 2009 reached a new low of 2.85 per million population, or 1 299 newly reported cases<sup>(108)</sup>. Nonetheless, in some parts of Europe, data suggest that HIV transmission related to injecting drug use continued in 2009, underlining the need to ensure the coverage and effectiveness of local prevention practice.

The available data on prevalence of HIV in samples of injecting drug users in the EU compare again positively with prevalence in neighbouring countries in the east<sup>(109)</sup>, although comparisons between countries should be undertaken with caution due to differences in study methods and coverage.

### Trends in HIV infection

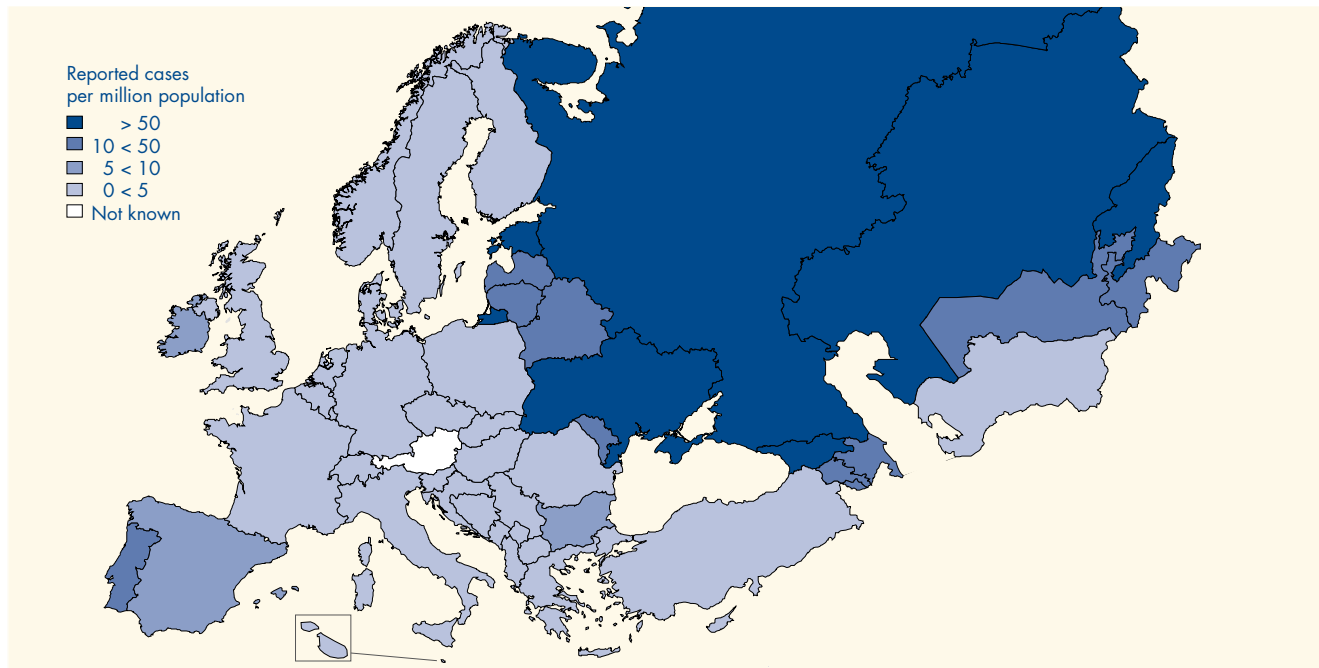
Data on reported newly diagnosed cases related to injecting drug use for 2009 suggest that infection rates are still generally falling in the European Union following the peak in 2001–02, which was due to outbreaks in Estonia, Latvia and Lithuania. Of the five countries reporting the highest rates of newly diagnosed infections among injecting drug users between 2004 and 2009 (Estonia, Spain, Latvia, Lithuania, Portugal), three continued their downward trend, but the rate in Estonia and Lithuania increased again from 2008 levels (Figure 16)<sup>(110)</sup>. In Estonia, the increase was from 26.8 cases per million in 2008 to 63.4 per million in 2009, and in Lithuania from 12.5 cases per million in 2008 to 34.9 per million in 2009. Over the same period, the rate of new infections

<sup>(107)</sup> For details on methods and definitions, see the 2011 statistical bulletin.

<sup>(108)</sup> Data for Austria are missing. The average rate is 2.44 cases per million population for the EU Member States, Croatia, Turkey and Norway.

<sup>(109)</sup> See Table INF-1 in the 2011 statistical bulletin.

<sup>(110)</sup> Data for Spain do not have national coverage.

**Figure 15:** HIV infections newly diagnosed in injecting drug users in 2009 in Europe and central Asia

NB: Colour indicates the rate per million population of reported newly diagnosed HIV cases attributed to the injecting drug use risk group that were diagnosed in 2009.

Sources: ECDC and WHO-Europe, 2010. Russian data are from the Federal Research and Methodological Centre for AIDS Prevention and Control. HIV infection. Information bulletin No 34, p.35, Moscow, 2010 (in Russian).

among injectors in Bulgaria also increased from 0.9 new cases per million population in 2004 to 9.7 per million in 2009, whereas in Sweden the rate peaked at 6.7 new cases per million (61 new diagnoses) in 2007. These data indicate that a continued potential for HIV outbreaks among injecting drug users exists in some countries.

Trend data from HIV prevalence monitoring in samples of injecting drug users are an important complement to data from HIV-case reporting. Prevalence trend data are available from 27 European countries within the period 2004–09<sup>(111)</sup>. In 19 countries, HIV prevalence estimates remained unchanged. In five countries (France, Italy, Austria, Poland, Portugal), HIV prevalence data showed a decrease; in three this is based on national samples, while in France the trend is based on data from five cities. In Austria, the national sample shows no change, but a decrease is observed in Vienna. Two countries report increasing HIV prevalence: Slovakia (national data) and Latvia (self-reported test results from seven cities). In Bulgaria, a decrease at national level is not reflected in the capital city (Sofia), where the trend is upward. In Italy, there is a nationally declining

trend, with only one out of the 21 regions reporting an increase<sup>(112)</sup>.

The comparison of trends in newly reported infections related to injecting drug use with trends in HIV prevalence among injecting drug users suggests that the incidence of HIV infection among injecting drug users is declining in most countries at national level.

Despite mostly declining trends since 2004, the rate of reported new HIV diagnoses (per million population) in 2009 related to injecting drug use is still relatively high in Estonia (63.4), Lithuania (34.9), Latvia (32.7), Portugal (13.4) and Bulgaria (9.7), indicating that considerable numbers of new infections continue to occur among injecting drug users in these countries<sup>(113)</sup>.

Further indications of ongoing HIV transmission are observed in six countries (Estonia, Spain, France, Latvia, Lithuania, Poland) with prevalence levels above 5 % among samples of young (under age 25) injecting drug users in 2005–07<sup>(114)</sup>, and two countries (Bulgaria, Cyprus) where prevalence in young injecting drug users increased in 2004–09.

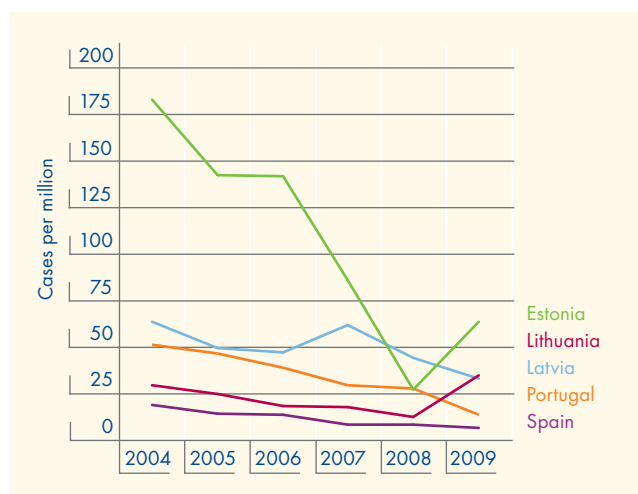
<sup>(111)</sup> Trend data are not available from Estonia, Ireland and Turkey. See Table INF-108 in the 2011 statistical bulletin.

<sup>(112)</sup> Data for Italy are for drug users in treatment where injection status is unknown, therefore a decline in HIV prevalence could also be due to a decline in injecting drug use among the tested population.

<sup>(113)</sup> See Table INF-104 in the 2011 statistical bulletin.

<sup>(114)</sup> See Table INF-109 in the 2011 statistical bulletin.

**Figure 16:** Trends in newly reported HIV infections in injecting drug users in the five EU Member States reporting the highest rates



NB: Data reported by end of October 2010, see Figure INF-2 in the 2011 statistical bulletin.  
Sources: ECDC and WHO-Europe, 2010.

### AIDS incidence and access to HAART

Information on the incidence of AIDS, though a poor indicator of HIV transmission, can be important for showing the new occurrence of symptomatic disease. High incidence rates of AIDS may indicate that many injecting drug users infected with HIV do not receive highly active antiretroviral treatment at a sufficiently early stage in their infection to obtain maximum benefit from the treatment. A recent global review suggests that this may still be the case in some European countries (Mathers et al., 2010).

Latvia is now the country with the highest incidence of AIDS related to injecting drug use, with an estimated 20.8 new cases per million population in 2009, down from 26.4 per million in 2008. Relatively high AIDS incidence among injecting drug users is also reported for Estonia, Spain, Portugal and Lithuania, with 19.4, 7.3, 6.6 and 6.0 new cases per million population, respectively. Among these countries, the trend 2004–09 was downward in Spain and Portugal, but not in Estonia and Lithuania <sup>(115)</sup>.

### Hepatitis B and C

Viral hepatitis in particular, an infection caused by the hepatitis C virus (HCV), is highly prevalent in injecting drug users across Europe. HCV antibody levels among national samples of injecting drug users in 2008–09 varied from 22 % to 83 %, with eight out of the 12

countries reporting findings in excess of 40 % <sup>(116)</sup>. Three countries (Czech Republic, Hungary, Slovenia) report prevalences of under 25 %; though infection rates at this level still constitute a significant public health problem.

Within countries, HCV prevalence levels can vary considerably, reflecting both regional differences and the characteristics of the sampled population. For example, in Italy, regional estimates range from 37 % to 81 % (Figure 17).

Recent studies (2008–09) show a wide range of HCV prevalence levels among injecting drug users under 25 years and those injecting for less than two years, suggesting different levels of HCV incidence in those populations across Europe <sup>(117)</sup>. Nonetheless, these studies also show that many injectors contract the virus early in their injecting career. This implies that there may be only a small time window for initiating HCV prevention measures.

Over the period 2004–09, declining HCV prevalence in injecting drug users is reported from eight countries and increasing prevalence from one (Cyprus), while a further four countries report diverging trends in different datasets. Nonetheless, caution is warranted given the limited geographical coverage and/or sample size of the studies in some instances <sup>(118)</sup>. Studies on young injectors (under age 25) again suggest that some countries may be experiencing declines in prevalence in this group at national (Bulgaria, Slovenia, United Kingdom) or sub-national level (Crete in Greece, Vorarlberg in Austria), which may indicate declining transmission rates. However, some increases are reported as well (Cyprus, Graz in Austria). Some of these trends are confirmed in data for new injectors (injecting less than two years). Increasing HCV prevalence among new injectors is reported in Greece (Attica), whereas declines are reported from Austria (Vorarlberg) and Sweden (Stockholm) <sup>(119)</sup>.

The prevalence of antibodies to hepatitis B virus (HBV) also varies to a great extent, possibly partly due to differences in vaccination levels, although other factors may play a role. The most informative serological marker of HBV infection is HBsAg (hepatitis B virus surface antigen), which indicates current infection. For 2004–09, four of the 14 countries providing data on this virus among injecting drug users report studies with HBsAg prevalence levels of over 5 % (Bulgaria, Greece, Lithuania, Romania) <sup>(120)</sup>.

<sup>(115)</sup> See Figure INF-1 and Table INF-104 (part ii) in the 2011 statistical bulletin.

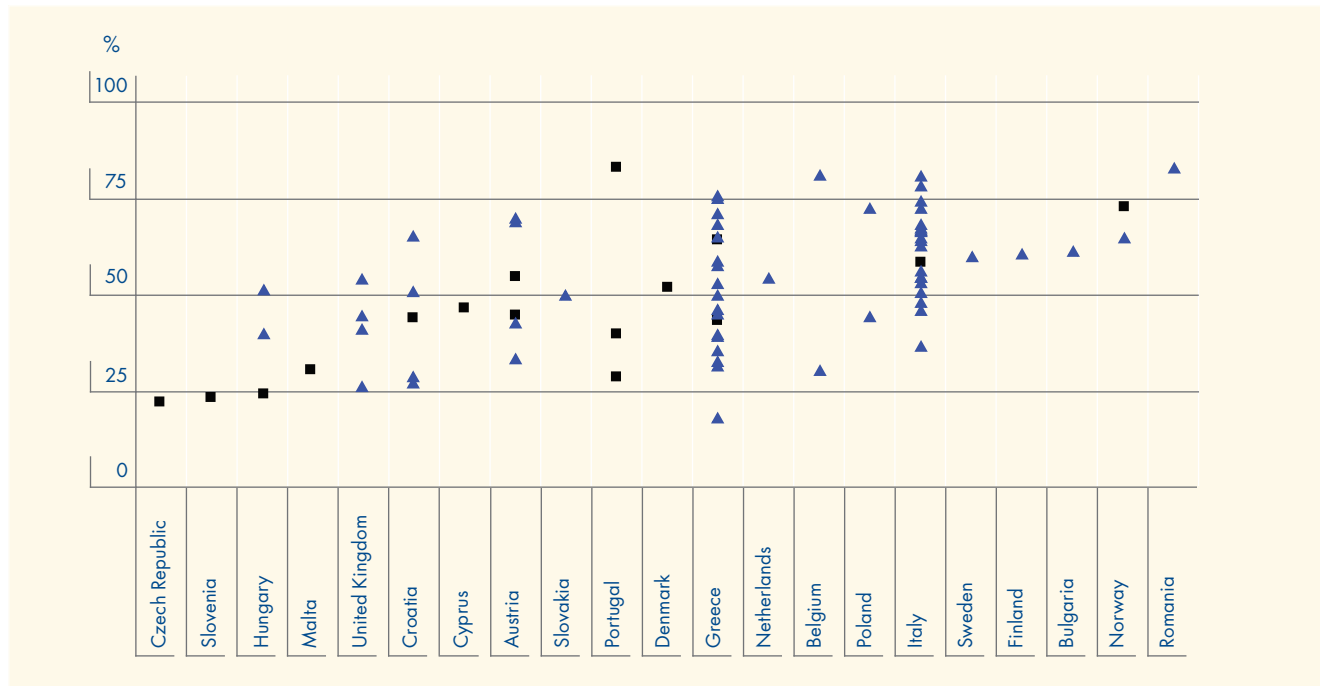
<sup>(116)</sup> See Tables INF-2 and INF-111 in the 2011 statistical bulletin.

<sup>(117)</sup> See Tables INF-112 and INF-113 and Figure INF-6 (part ii) and (part iii) in the 2011 statistical bulletin.

<sup>(118)</sup> See Table INF-111 in the 2011 statistical bulletin.

<sup>(119)</sup> See Tables INF-112 and INF-113 in the 2011 statistical bulletin.

<sup>(120)</sup> See Table INF-114 in the 2011 statistical bulletin.

**Figure 17:** Prevalence of HCV antibodies among injecting drug users

NB: Data are for the years 2008 and 2009. Black squares are samples with national coverage; blue triangles are samples with sub-national (local or regional) coverage. Differences between countries have to be interpreted with caution owing to differences in types of settings and study methods; national sampling strategies vary. Countries are presented by order of increasing prevalence, based on the average of national data or, if not available, of sub-national data. For more information, see Figure INF-6 in the 2011 statistical bulletin.

Sources: Reitox national focal points.

Trends in notified cases of hepatitis B and C show different pictures, but these are difficult to interpret as data quality is low. However, some insight into the epidemiology of these infections may be provided by the proportion of injecting drug users among all notified cases where risk factors are known (Wiessing et al., 2008). Averaged across the 20 countries for which data are available for the period 2004–09, injecting drug use accounts for 63 % of all HCV cases and for 38 % of acute HCV cases notified where the risk category is known. For hepatitis B, injecting drug users represent 20 % of all notified cases and 26 % of acute cases. These data confirm that injecting drug users continue to form an important at-risk group for viral hepatitis infection in Europe <sup>(121)</sup>.

### Other infections

In addition to viral infections, injecting drug users are vulnerable to bacterial diseases <sup>(122)</sup>. The outbreak of anthrax among injecting drug users in Europe (see EMCDDA, 2010a) has highlighted an ongoing problem with severe illness due to spore-forming bacteria among injectors. A European study collated data on reported cases of four bacterial infections (botulism, tetanus,

*Clostridium novyi*, anthrax) in injecting drug users in the past decade. During the period 2000–09, six countries reported 367 cases, with population rates varying from 0.03 to 7.54 per million population. Most cases of infection (92 %) were reported from three countries in the north-west of Europe: Ireland, the United Kingdom and Norway. This geographical variation is not understood and needs further investigation (Hope et al., 2011).

### Preventing and responding to infectious diseases

The prevention of infectious diseases among drug users is an important public health goal of the European Union and a component of most Member States' drug policies. Countries aim to prevent and control the spread of infectious diseases among drug users by a combination of approaches, including surveillance, vaccination and treatment of infections; drug treatment, particularly opioid substitution treatment; and the provision of sterile injection equipment. In addition, community-based activities provide information, education and behavioural interventions, often implemented through outreach or low-threshold agencies. These measures, together with antiretroviral

<sup>(121)</sup> See Tables INF-105 and INF-106 in the 2011 statistical bulletin.

<sup>(122)</sup> See the box 'Tuberculosis among drug users'.

### Tuberculosis among drug users

Tuberculosis (TB) is a bacterial disease, usually attacking the lungs, which can be fatal. In 2008, a total of 82 605 cases were identified in 26 EU Member States and Norway, with rates higher than 20 per 100 000 in Romania (114.1), Lithuania (66.8), Latvia (47.1), Bulgaria (41.2), Estonia (33.1) and Portugal (28.7) (ECDC, 2010). In Europe, the disease is predominantly concentrated in high-risk groups, such as migrants, homeless people, drug users and prisoners. Due to marginalisation and lifestyle, drug users can face higher risks of contracting TB than the general population. HIV-positive status poses an additional risk of developing TB, which is estimated to be between 20 and 30 times greater than among those who do not have HIV infection (WHO, 2010a).

Data on TB prevalence among drug-using populations are scarce. In Europe, high rates of active (symptomatic) TB are reported among drug users in treatment in Greece (1.7 %), Lithuania (3 %) and Portugal (1 % to 2 %), while systematic testing in drug treatment facilities in Austria, Slovakia and Norway did not identify any cases.

Tuberculosis in drug users can be effectively treated, although this requires a complex curative regimen of at least six months. Completion of treatment is essential, as the disease organism quickly becomes tolerant to medicines and develops resistance to treatment. For problem drug users, especially those with chaotic lifestyles, achieving adherence to treatment may be difficult. New approaches that aim to shorten the duration of treatment have the potential to increase the likelihood of successful completion.

therapy and tuberculosis diagnosis and treatment, have been promoted by UN agencies as the core interventions for HIV prevention, treatment and care for injecting drug users (WHO, UNODC and UNAIDS, 2009).

### Interventions

The effectiveness of opioid substitution treatment in reducing HIV transmission and self-reported injecting risk behaviour has been confirmed in several studies and reviews. There is growing evidence that the combination of opioid substitution treatment and needle and syringe programmes is more effective in reducing HIV or HCV incidence and injecting risk behaviour than either approach alone (ECDC and EMCDDA, 2011).

Building on improvements in the treatment of hepatitis C, many countries are increasing their efforts to prevent, detect and treat hepatitis among drug users. The European Union is supporting several initiatives to improve hepatitis C prevention among drug users. These initiatives include: mapping national standards and guidelines for HCV

### Prevention of infections among injecting drug users: ECDC–EMCDDA joint guidelines

In 2011, the European Centre for Disease Prevention and Control (ECDC) and the EMCDDA issued joint guidance on the prevention and control of infectious disease among injecting drug users. The guidance provides a comprehensive overview of the effectiveness of interventions, including measures such as the provision of clean syringes and other injecting equipment; drug treatment, including opioid substitution therapy; vaccination; testing; and the treatment of infections among drug users. The guidance examines models of service delivery, and the most appropriate information and education messages for this population.

This publication is available in print and on the EMCDDA website in English only.

prevention in the EU (Zurhold, 2011); compilation of examples of awareness-raising, prevention, treatment and care interventions (Correlation Project and EHRN, 2010); development of training materials for policymakers, medical professionals and local service providers (e.g. Hunt and Morris, 2011).

Provision of free, clean syringes organised through specialised facilities or pharmacies exists in all countries except Turkey, but despite considerable expansion in the past two decades, information on geographical coverage shows imbalances, with several countries in central and eastern Europe and Sweden reporting lack of availability in some areas (see Figure 18).

Recent data on syringe provision through specialised needle and syringe programmes are available for all but three countries and are incomplete in another two<sup>(123)</sup>. They show that nearly 50 million syringes per year are distributed through these programmes. This is equivalent to an average of 94 syringes per estimated injecting drug user in the countries providing syringe data.

For 13 countries, the average number of syringes distributed in a year per injecting drug user can be estimated<sup>(124)</sup>. In seven of these countries, the average number of syringes given out by specialised programmes is equivalent to less than 100 per injector, four countries give out between 100 and 200 syringes, and Luxembourg and Norway report the distribution of more than 200 syringes per injector<sup>(125)</sup>. For the prevention of HIV, UN agencies judge the annual distribution of 100 syringes per injecting drug user as low, and

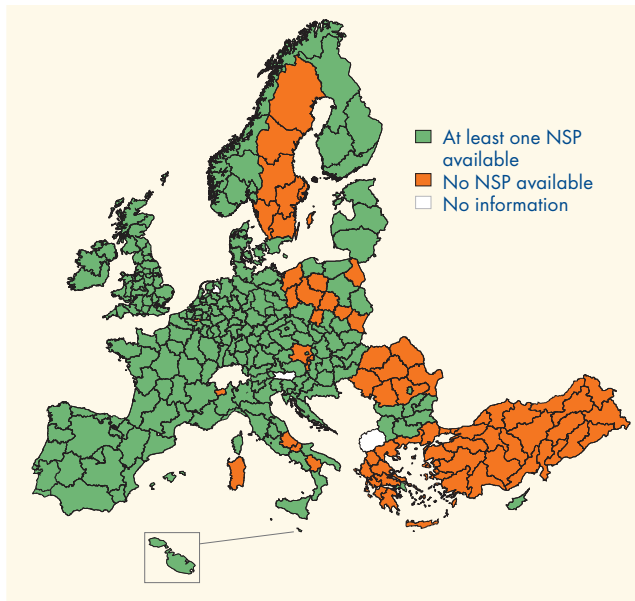
<sup>(123)</sup> See Table HSR-5 in the 2011 statistical bulletin. For 2007–09, data on the number of syringes were not available for Denmark, Germany and Italy. Data on the Netherlands cover only Amsterdam and Rotterdam and data on the United Kingdom do not include England.

<sup>(124)</sup> See Figure HSR-3 in the 2011 statistical bulletin.

<sup>(125)</sup> These figures do not include pharmacy sales, which may represent an important source of sterile syringes for drug users in several countries.



**Figure 18:** Geographical availability of needle and syringe programmes at regional level



NB: Regions defined according to the nomenclature of territorial units for statistics (NUTS) level 2; for further information see the Eurostat website.

Source: See Table HSR-4 in the 2011 statistical bulletin.

200 syringes per injector as high (WHO, UNODC and UNAIDS, 2009).

Over the last four reporting years (2005–09) the total number of syringes given out by syringe programmes has increased 32 %. A sub-regional analysis of syringe provision trends shows a flattening of the increase among the pre-2004 EU Member States and a rise in the newer Member States.

## Drug-related deaths and mortality

Drug use is one of the major causes of health problems and mortality among young people in Europe, and can account for a considerable proportion of all deaths among adults. Studies have found that between 10 % and 23 % of mortality among those aged 15–49 could be attributed to opioid use (Bargagli et al., 2006; Bloor et al., 2008).

Mortality related to drug use comprises the deaths caused directly or indirectly by the use of drugs. This includes deaths from drug overdoses (drug-induced deaths), HIV/AIDS, traffic accidents (in particular when combined with alcohol), violence, suicide and chronic

health problems caused by repeated use of drugs (e.g. cardiovascular problems in cocaine users) <sup>(126)</sup>.

### Drug-induced deaths

The most recent estimates suggest that there were about 7 630 drug-induced deaths in 2009 in the EU Member States and Norway, indicating a stable situation when compared with the 7 730 cases reported in 2008 <sup>(127)</sup>. The numbers are likely to be conservative, as national data may be affected by under-reporting or under-ascertainment of drug-induced deaths. Few countries have assessed the magnitude of underestimation in their national data.

During the period 1995–2008, between 6 300 and 8 400 drug-induced deaths were reported each year by EU Member States and Norway. In 2008, the most recent year for which data are available for almost all countries, more than half of all reported drug-induced deaths were accounted for by two countries, Germany and the United Kingdom, who together with Spain and Italy registered two thirds of all reported cases (5 075).

For 2009, the average EU mortality rate due to overdoses is estimated at 21 deaths per million population aged 15–64 years, with most countries reporting rates of between 4 and 59 deaths per million (Figure 19). Rates of over 20 deaths per million are found in 13 out of 28 European countries, and rates of over 40 deaths per million in seven countries. Among Europeans aged 15–39 years, drug overdoses accounted for 4 % of all deaths <sup>(128)</sup>.

The number of reported drug-induced deaths can be influenced by the prevalence and patterns of drug use (injection, polydrug use), the age and the co-morbidities of drug users and the availability of treatment and emergency services, as well as by the quality of data collection and reporting. Improvements in the reliability of European data have allowed better descriptions of trends, and most countries have now adopted a case definition endorsed by the EMCDDA <sup>(129)</sup>. Nevertheless, caution must be exercised when comparing countries because there are still differences in reporting methodology and data sources.

### Deaths related to opioids

#### Heroin

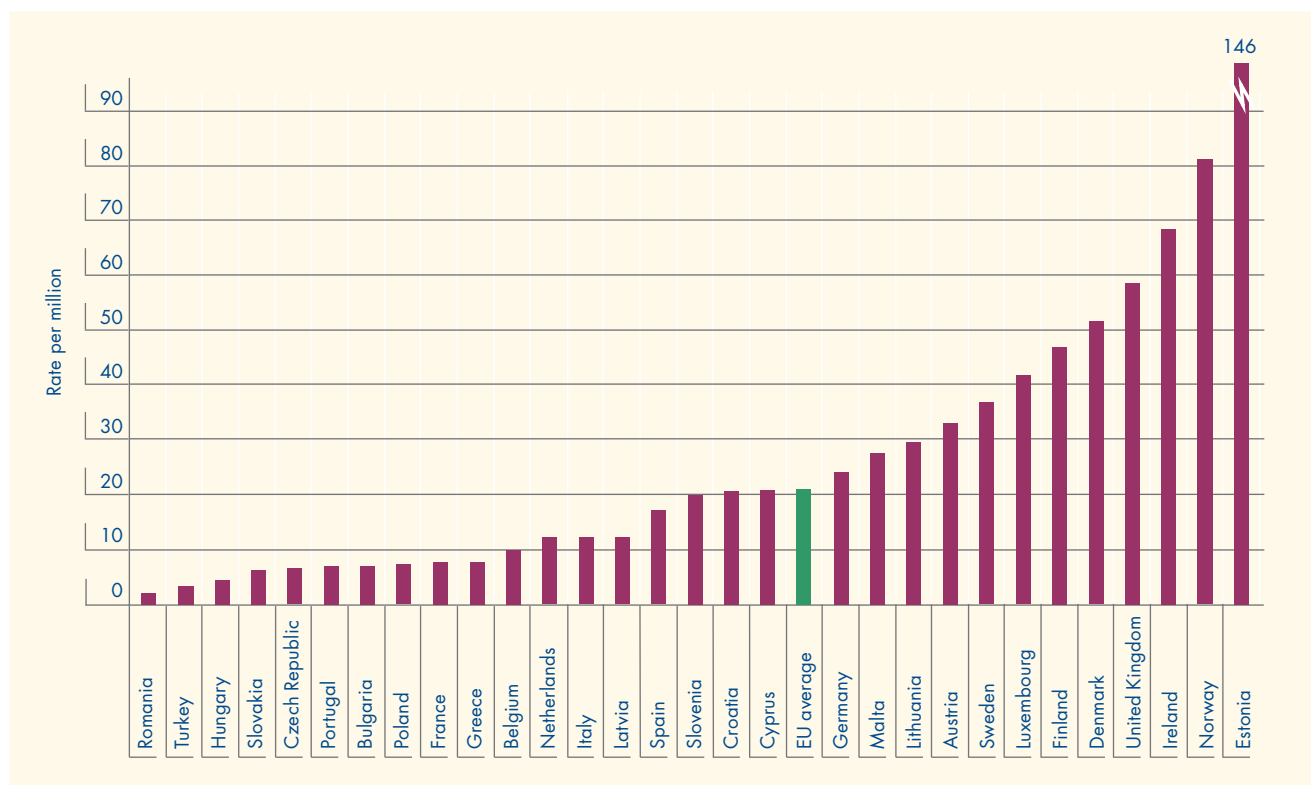
Opioids, mainly heroin or its metabolites, are present in the majority of drug-induced deaths reported in Europe.

<sup>(126)</sup> See 'Drug-related mortality: a complex concept', in the 2008 annual report.

<sup>(127)</sup> The European estimate is based on 2009 data for 17 of the 27 Member States and Norway, 2008 data for nine countries and projected data for one country. Belgium is excluded as no data are available. For more information, see Table DRD-2 (part i) in the 2011 statistical bulletin.

<sup>(128)</sup> See Figure DRD-7 (part i) and Tables DRD-5 (part ii) and DRD-107 (part i) in the 2011 statistical bulletin.

<sup>(129)</sup> For detailed methodological information, see the 2011 statistical bulletin and drug-related death key indicator pages.

**Figure 19:** Estimated mortality rates among all adults (15–64 years) due to drug-induced deaths

NB: For more information, see Figure DRD-7 in the 2011 statistical bulletin.  
Sources: Reitox national focal points.

In the 22 countries providing data for 2008 or 2009, opioids accounted for the large majority of all cases: over 90 % in five countries, and between 80 % and 90 % in a further 12. Substances often found in addition to heroin include alcohol, benzodiazepines, other opioids and, in some countries, cocaine. This suggests that a substantial proportion of all drug-induced fatalities occur in a context of polydrug use, as illustrated by a review of toxicology of drug-related deaths in Scotland in 2000–07. It showed that the presence of heroin and alcohol were positively associated, particularly among older males. Among men whose deaths were related to heroin, alcohol was present in 53 % of those aged 35 and more, compared to 36 % in cases under 35 years (Bird and Robertson, 2011; see also GROS, 2010).

Men account for most overdose deaths reported in Europe (81 %). Overall, there are around four males for each female case (with the ratio ranging from 1.4:1 in Poland to 31:1 in Romania) <sup>(130)</sup>. In the Member States that joined the EU more recently, reported drug-induced deaths are more likely in males and in younger people

compared to the pre-2004 Member States and Norway. Patterns differ across Europe, with higher proportions of males reported in southern countries (Greece, Italy, Romania, Cyprus, Hungary, Croatia) and in Estonia, Latvia and Lithuania. Denmark, the Netherlands, Sweden and Norway report higher proportions of older cases. In the majority of countries, the average age of those dying of heroin overdoses is in the mid-30s, and in many countries it is increasing. This suggests a possible stabilisation or decrease in the number of young heroin users, and an ageing cohort of problem opioid users. Overall, 12 % of overdose deaths reported in Europe occur among those aged under 25 years <sup>(131)</sup>.

A number of factors are associated with fatal and non-fatal heroin overdoses. These include injection and simultaneous use of other substances, in particular alcohol, benzodiazepines and some antidepressants. Other factors linked with overdoses are binge drug use, co-morbidity, homelessness, poor mental health (e.g. depression and intentional poisoning), not being in drug treatment, previous experience of overdose and being alone at the

<sup>(130)</sup> As most of the drug-induced deaths reported to the EMCDDA are opioid overdoses (mainly heroin), the general characteristics of the reported deaths are presented here to describe and analyse deaths related to heroin use.  
See Figure DRD-1 in the 2011 statistical bulletin.

<sup>(131)</sup> See Figures DRD-2 and DRD-3 and Table DRD-1 (part i) in the 2011 statistical bulletin.

time of overdose (Rome et al., 2008). The time immediately after release from prison (WHO, 2010a) or discharge from drug treatment is a particularly risky period for overdoses, as illustrated by a number of longitudinal studies.

### *Other opioids*

Besides heroin, a range of other opioids are found in toxicological reports, including methadone<sup>(132)</sup> and buprenorphine. Deaths due to buprenorphine poisoning are infrequent and mentioned by very few countries, despite its increasing use in substitution treatment in Europe. In Finland, however, buprenorphine remains the most common opioid detected in forensic autopsies, but usually in combination with other substances. This was illustrated by a recent Finnish report investigating drug findings in cases of accidental poisoning, which reported the presence of benzodiazepines in almost all (38 out of 40) cases where buprenorphine was identified as the primary cause of death. Alcohol was also a significant contributory factor identified in 22 out of 40 cases (Salasuo et al., 2009). In Estonia, most drug-induced deaths reported in 2009 were, as in previous years, due to 3-methylfentanyl.

### **Deaths related to other drugs**

Deaths caused by acute cocaine poisoning seem to be relatively uncommon (EMCDDA, 2010a). But, as cocaine overdoses are more difficult to define and identify than those related to opioids, they may be under-reported (see Chapter 5).

In 2009, about 900 deaths related to cocaine were reported in 21 countries. Due to the lack of comparability in the available data, it is difficult to describe the European trend. The most recent data for Spain and the United Kingdom, the two countries with the highest levels of cocaine prevalence, indicate a decrease in deaths related to the drug: in Spain, from 25.1 % of the reported cases with cocaine (and no opiates) in 2007 to 19.3 % in 2008; and in the United Kingdom, from 12.7 % in 2008 to 9.6 % in 2009. Cocaine is very rarely identified as the only substance contributing to a drug-induced death.

A recent international review on mortality among cocaine users concluded that there are limited data on the extent of elevated mortality among problematic or dependent cocaine users (Degenhardt et al., 2011). The review included findings from three European follow-up studies: a French study following individuals arrested for cocaine offences; a Dutch study with cocaine injectors recruited via low-threshold services; and an Italian study with dependent cocaine users receiving treatment. Crude

### **Methadone and mortality**

With an estimated 700 000 opioid users undergoing substitution treatment, drugs such as methadone have recently come under the spotlight with regard to drug-induced deaths. Methadone is often mentioned in the toxicology reports for deaths related to drug use, and is sometimes identified as the cause of death. In spite of this, the current available evidence strongly supports the benefits of well-regulated and supervised opioid substitution treatment, combined with psychosocial assistance interventions, for keeping patients in treatment and reducing illicit opioid use and mortality.

Observational studies report the mortality rate for opioid users in methadone treatment to be approximately one third the rate of those out of treatment. Treatment duration is an important factor, with recent studies showing that opioid substitution treatment has a greater than 85 % chance of reducing overall mortality among opioid users, if they remain in treatment for 12 months or more (Cornish et al., 2010). Survival benefits increase with cumulative exposure to treatment (Kimber et al., 2010). Furthermore, methadone appears to reduce the risk of HIV infection by approximately 50 % compared to withdrawal or no treatment (Mattick et al., 2009). With regard to methadone-related deaths in a population, a recent study in Scotland and England concluded that the introduction of supervised methadone dosing was followed by a substantial decline in deaths where methadone was involved. Between 1993 and 2008, there was at least a four-fold reduction in deaths due to methadone-related overdose per amount of methadone prescribed, against a background of treatment expansion (Strang et al., 2010).

mortality rates in these studies ranged from 0.54 to 4.6 per 100 person-years. A recent Danish cohort study, with individuals in treatment for cocaine use, showed an excess mortality risk of 6.4 compared to same age and sex peers in the general population (Arendt et al., 2011).

Deaths in which ecstasy (MDMA) is present are infrequently reported and, in many of these cases, the drug has not been identified as the direct cause of death<sup>(133)</sup>. In 2009, deaths possibly related to cathinones were reported in England (mephedrone) and Finland (MDPV) (see Chapter 8).

### **Trends in drug-induced deaths**

Drug-induced deaths increased sharply in Europe during the 1980s and early 1990s, paralleling the increase in heroin use and drug injection, and thereafter remained at high levels<sup>(134)</sup>. Between 2000 and 2003, most EU Member States reported a decrease, followed by

<sup>(132)</sup> See the box 'Methadone and mortality'.

<sup>(133)</sup> For data on deaths related to drugs other than heroin, see Table DRD-108 in the 2011 statistical bulletin.

<sup>(134)</sup> See Figures DRD-8 and DRD-11 in the 2011 statistical bulletin.

a subsequent increase from 2003 until 2008. Preliminary data available for 2009 suggest an overall figure equal to or slightly below that for 2008. Where a comparison is possible, the numbers of deaths reported have decreased in some of the largest countries, including Germany, Italy and the United Kingdom.

The reasons for the sustained or increasing numbers of reported drug-induced deaths in some countries are difficult to explain, especially given the indications of decreases in injecting drug use and increases in the numbers of opioid users in contact with treatment and harm-reduction services. Possible explanations include: increased levels of polydrug use (EMCDDA, 2009b) or high-risk behaviour; increases in the numbers of relapsing opioid users leaving prison or treatment; and an ageing cohort of more vulnerable drug users.

### Overall mortality related to drug use

Overall mortality related to drug use comprises drug-induced deaths and those caused indirectly through the use of drugs, such as through the transmission of infectious diseases, cardiovascular problems and accidents. Deaths indirectly related to drug use are difficult to quantify, but their impact on public health can be considerable. Such deaths are mainly concentrated among problem drug users, although some (e.g. traffic accidents) occur among occasional users.

Estimates of overall drug-related mortality can be derived in various ways, for example by combining information from mortality cohort studies with estimates of drug use prevalence. Another approach is to use existing general mortality statistics and estimate the proportion related to drug use.

### Mortality cohort studies

Mortality cohort studies track the same groups of problem drug users over time and, through linkage with mortality registries, try to identify the causes of all deaths occurring in the group. This type of study can determine overall and cause-specific mortality rates for the cohort, and can estimate the group's excess mortality compared to the general population<sup>(135)</sup>.

Depending on recruitment settings (e.g. drug treatment facilities) and enrolment criteria (e.g. injecting drug users, heroin users), most cohort studies show mortality rates in the range of 1 % to 2 % per year among problem drug users. These mortality rates are roughly 10 to 20 times higher than those of the same age group in the general population. The relative importance of the different causes

### 'Selected issue': Mortality related to drug use – a comprehensive approach and public health implications

An EMCDDA 'Selected issue', published this year, presents the findings on drug-related mortality from recent longitudinal studies among problem drug users in Europe. It examines the overall and cause-specific mortality, and describes the risk and protective factors identified through research. The public health implications are also reviewed.

This publication is available in print and on the EMCDDA website in English only.

of death varies across populations, between countries and over time. Generally, though, the main cause of death among problem drug users in Europe is drug overdose, accounting for up to 50 % to 60 % of deaths among injectors in countries with low prevalence of HIV/AIDS. In addition to HIV/AIDS and other diseases, frequently reported causes of deaths include suicide, accidents and alcohol abuse.

### Deaths indirectly related to drug use

By combining existing data from Eurostat and HIV/AIDS surveillance, the EMCDDA has estimated that about 2 100 people died of HIV/AIDS attributable to drug use in the European Union in 2007<sup>(136)</sup>, with 90 % of these deaths occurring in Spain, France, Italy and Portugal.

Other diseases that also account for a proportion of deaths among drug users include chronic conditions such as liver diseases, mainly due to infection with the hepatitis C virus (HCV) and often worsened by heavy alcohol use and HIV co-infection. Deaths caused by other infectious diseases are rarer. Causes of death among drug users such as suicide and trauma as well as homicide have received much less attention, despite indications of a considerable impact on mortality.

### Reducing drug-related deaths

Fifteen European countries report that their national drug strategy has a focus on the reduction of drug-related deaths, that such policies exist at regional level, or that they have a specific action plan for the prevention of drug-related deaths. In some of the other countries (Estonia, France, Austria), recent increases in drug-related deaths (partly among younger age groups and integrated users) have raised awareness of the need for improved responses.

<sup>(135)</sup> For information on mortality cohort studies, see the 'Key indicators' on the EMCDDA website.

<sup>(136)</sup> See Table DRD-5 (part iii) in the 2011 statistical bulletin.

Treatment can significantly reduce the mortality risk of drug users, although risks related to drug tolerance arise when entering or leaving treatment. Studies show that the risk of drug-induced death on relapse after treatment or in the weeks after release from prison is substantially elevated.

Due to its pharmacological safety profile, buprenorphine is recommended for opioid maintenance in some countries <sup>(137)</sup>, and a buprenorphine/naloxone combination has obtained marketing authorisation in at least half of the countries <sup>(138)</sup>.

While progress has been made in some European countries towards closing the treatment gap between community and prison <sup>(139)</sup>, disruption of drug treatment, whether due to arrest, imprisonment or discharge, has been identified as increasing overdose risk (Dolan et al., 2005). This has led to the European regional office of the World Health Organisation (2010c) issuing recommendations on overdose prevention in prison and improved continuity of care after release.

Alongside improving access to drug treatment, other interventions to reduce overdose risks in drug users have been studied. These interventions address personal, situational and drug-use related factors. Overdose risk information materials, often produced in several languages to reach migrant drug users, are distributed in the majority of countries through specialised drugs agencies and websites, and more recently also through telephone messaging and e-mail. Counselling and safer-use training for drug users, delivered by drug workers or through peer educators, exist in 27 countries but provision of these interventions is often sporadic and limited <sup>(140)</sup>.

Additional responses reported by small numbers of countries include: follow-up of those who have suffered a drug-related emergency (Belgium, Denmark, Luxembourg, Netherlands, Austria); 'early-warning systems' to alert users to dangerous substances (Belgium, Czech Republic, France, Hungary, Portugal, Croatia); and improved controls to prevent multiple drug prescriptions (Luxembourg, United Kingdom). Supervised

drug consumption facilities, such as those available in Germany, Spain, Luxembourg, the Netherlands and Norway, provide opportunities for immediate intervention by professionals in cases of overdose, and reduce the health impact of non-fatal overdoses. Evidence for the effect of supervised drug consumption rooms on drug-induced deaths in the community include a recent study carried out in Vancouver, which reported a 35 % reduction in overdose fatalities in the affected community after a supervised injecting facility was opened (Marshall, B., et al., 2011). This result points in the same direction as earlier studies reviewed in a monograph on harm reduction (EMCDDA, 2010b).

Overdose training combined with a take-home dose of naloxone — which reverses the effects of opioids, and is widely used in hospitals and emergency medicine — is an intervention that can prevent deaths from opioid overdose. Some European countries report the existence of community-based programmes that prescribe naloxone to drug users at risk of opioid overdose. Naloxone prescribing is accompanied by compulsory training in recognising overdoses, providing basic life-support techniques (e.g. rescue breathing, recovery position) and how to administer naloxone. This intervention targets drug users, their families and peers, and aims to help them to take effective action in overdose situations, while awaiting the arrival of emergency services.

The distribution of naloxone to drug users is reported by Italy (where 40 % of drugs agencies provide the substance), Germany and the United Kingdom (England and Wales). New initiatives are reported by Bulgaria, Denmark and Portugal. In Scotland, provision of 'take-home naloxone' to all at-risk individuals leaving prison was introduced nationally in 2010, and the government is supporting a national take-home naloxone programme for those deemed to be at risk of opioid overdose and those who may come into contact with them. The effectiveness of naloxone-on-release in reducing overdose deaths in the weeks after release from prison is being evaluated in England by the N-Alive project study, which will perform a randomised controlled trial among 5 600 prisoners.

<sup>(137)</sup> See treatment guidelines on the 'Best practice' portal.

<sup>(138)</sup> See Table HSR-1 in the 2011 statistical bulletin.

<sup>(139)</sup> See Chapter 2 and Table HSR-9 in the 2011 statistical bulletin.

<sup>(140)</sup> See Table HSR-8 in the 2011 statistical bulletin.

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## Chapter 8

# New drugs and emerging trends

### Introduction

The provision of timely and objective information on new drugs and emerging trends is of growing importance, given the increasingly dynamic and fast-moving nature of the European drugs problem. The new drugs market is distinguished by the speed at which suppliers respond to the imposition of control measures by offering new alternatives to restricted products. A range of information sources and leading-edge indicators, including Internet monitoring and wastewater analysis, can assist in providing a better picture of emerging drug trends in Europe. This chapter details the new psychoactive substances detected through the early-warning system, and follows up on the risk assessment of mephedrone. The 'legal highs' phenomenon is examined, along with a number of national responses to the open sale of new substances.

### Action on new drugs

The European Union's early-warning system has been developed as a rapid-response mechanism to the emergence of new psychoactive substances on the drug scene. The system is currently under review in the framework of the European Commission's assessment of the functioning of Council Decision 2005/387/JHA <sup>(141)</sup>.

### New psychoactive substances

Between 1997 and 2010, more than 150 new psychoactive substances were formally notified through the early-warning system, and are now being monitored. Over this period, the rate at which new substances appear on the market has increased, with record numbers of new substances being reported in the last two years — 24 in 2009 and 41 in 2010 <sup>(142)</sup>. Many of these new substances have been detected through testing products sold on the Internet and in specialist shops (e.g. smart shops, head shops).

Most of the 41 new psychoactive substances identified in 2010 are synthetic cathinones or synthetic cannabinoids. With 15 new derivatives detected in 2010, synthetic cathinones are now, after the phenethylamines, the second-largest drug family monitored by the early-warning system. The list of newly notified substances also contains a diverse group of chemicals, including a synthetic cocaine derivative, a natural precursor and various synthetic psychoactive substances. Derivatives of phencyclidine (PCP) and ketamine, two established drugs used now or in the past in human or veterinary medicine, were reported for the first time in 2010.

The emergence of new drugs based on medicines with known abuse potential is an example of how innovation in the illicit market requires a joined-up response from medicines and drug control regulators. This issue is more of a potential threat than an immediate problem, but given the speed at which new developments occur in this area, anticipating future challenges may be important.

### Risk assessment

In 2010, mephedrone (4-methylmethcathinone) became the first cathinone derivative to be formally risk assessed. It was also the first substance to be risk assessed under new operating guidelines <sup>(143)</sup>. The risk assessment faced challenges related to limited availability of data, and also mephedrone's dissimilarity to previously assessed compounds. However, for the first time, toxicological screening data from an exploratory study with a group of mephedrone users was incorporated, allowing the findings to be better grounded in evidence than in earlier risk assessments.

Based on the findings of the risk assessment report (EMCDDA, 2010e), in December 2010 the European Council decided to submit mephedrone to control measures and criminal penalties throughout Europe <sup>(144)</sup>.

<sup>(141)</sup> Council Decision 2005/387/JHA of 10 May 2005 on the information exchange, risk assessment and control of new psychoactive substances (OJ L 127, 20.5.2005, p. 32).

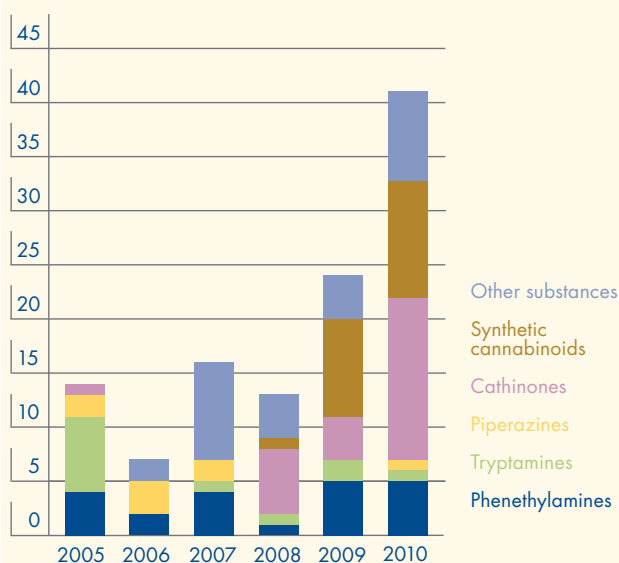
<sup>(142)</sup> See the box 'Main groups of new psychoactive substances monitored by the early-warning system'.

<sup>(143)</sup> See the box 'Risk assessment guidelines'.

<sup>(144)</sup> Council Decision 2010/759/EU of 2 December 2010 on submitting 4-methylmethcathinone (mephedrone) to control measures (OJ L 322, 8.12.2010, p. 44).

## Main groups of new psychoactive substances monitored by the early-warning system

New psychoactive substances appearing on the drugs market in Europe have historically belonged to a small number of chemical families, with the phenethylamines and tryptamines accounting for the majority of reports to the early-warning system. In the past five years, however, increasing numbers of new substances from an expanding range of chemical families have been reported (see Figure).



NB: Number of new psychoactive substances notified to the European early-warning system under Council Decision 2005/387/JHA.

Phenethylamines encompass a wide range of substances that may exhibit stimulant, entactogenic or hallucinogenic effects. Examples include the synthetic substances amphetamine, methamphetamine and MDMA (3,4-methylenedioxy-methamphetamine) and mescaline, which occurs naturally.

Tryptamines include a number of substances that have predominantly hallucinogenic effects. The main representatives are the naturally occurring compounds dimethyltryptamine (DMT), psilocin and psilocybin (found in hallucinogenic mushrooms) as well as the semi-synthetic lysergic acid diethylamide (LSD).

Piperazines are represented by *m*CPP (1-(3-chlorophenyl) piperazine) and BZP (1-benzylpiperazine), both of which are central nervous system stimulants.

Cathinones have stimulant effects. The main cathinone derivatives are the semi-synthetic methcathinone and the synthetic compounds mephedrone, methylone and MDPV (3,4-methylenedioxypropylone).

Synthetic cannabinoids are functionally similar to delta-9-tetrahydrocannabinol (THC), the active principle of cannabis. Like THC, they can have hallucinogenic, sedative and depressant effects. They have been detected in herbal smoking mixtures such as 'Spice' (see EMCDDA, 2009d).

Other substances reported to the early-warning system include various plant-derived and synthetic psychoactive substances (e.g. indanes, benzodifuranyls, narcotic analgesics, synthetic cocaine derivatives, ketamine and phencyclidine derivatives), which do not strictly belong to any of the previous families. Also included here are a small number of medicinal products and derivatives.

For more information on selected new psychoactive substances, see the EMCDDA 'Drug profiles'.

By that time, 18 European countries had already introduced control measures on mephedrone<sup>[145]</sup>. The remaining EU Member States have one year to take the necessary measures.

## Follow-up on mephedrone

A small number of sources allow some ongoing monitoring of mephedrone use and availability in Europe, primarily Internet surveys with clubbers and studies of online sales. Internet surveys among readers of a UK clubbers' magazine placed lifetime use of mephedrone at around 40 % in 2010 (2 295 respondents, Dick and Torrance, 2010), and 61 % in 2011 (2 560 respondents, Winstock, 2011), though last month use fell from 33 % to 25 % over the same period. These surveys cannot be considered as representative of the wider population of club-goers.

The online availability of mephedrone has been assessed through six EMCDDA Internet studies (snapshots) between December 2009 and February 2011. In the first half of 2010, mephedrone was widely and legally available from suppliers on the Internet, where it was sold both in retail and bulk quantities. EMCDDA snapshots of online drug shops carried out in English showed a peak in mephedrone online availability in March 2010, with 77 retailers offering it for sale. Since then, the total number of online shops selling mephedrone has been falling as, from April 2010, European countries started to place control measures on the substance. Despite mephedrone being controlled in the majority of Member States by early 2011, an EMCDDA multilingual snapshot showed that the drug continued to be available online at this time, with 23 sites identified to be offering mephedrone to buyers in the European Union. Of the original 77 online shops identified in March 2010, only 15 were still in operation a year later and

[145] Belgium, Denmark, Germany, Estonia, Ireland, France, Italy, Latvia, Lithuania, Luxembourg, Malta, Austria, Poland, Romania, Sweden, United Kingdom, Croatia, Norway.



## Risk assessment guidelines

The current operating guidelines for the risk assessment of new psychoactive substances, adopted in 2008, were implemented for the first time in 2010 with mephedrone (EMCDDA, 2010c). The guidelines provide a conceptual framework for conducting a scientifically sound, evidence-based assessment in a timely fashion and where information sources are limited. The main areas under consideration are health and social risks, manufacture and trafficking, involvement of organised crime and the possible consequences of control measures.

The guidelines consider all factors that, according to the 1961 and 1971 UN Conventions, would warrant placing

a substance under international control. They also introduce a novel semi-quantitative scoring system based on expert judgment. The guidelines take into account a dual definition of risk, namely the probability that some harm may occur (usually defined as 'risk'), and the degree of seriousness of such harm (usually defined as 'hazard'). In addition, there is a review of the prevalence of use, the potential benefits and the risks of the substance independent of its legal status in the Member States and comparison with better known drugs.

In 2010, the World Health Organisation also adopted a revision of their guidelines for the review of psychoactive substances for international control (WHO, 2010b).

only two of these still sold mephedrone. The 13 remaining shops continued to sell other products, often presented as 'research chemicals' and marketed as 'legal alternatives to mephedrone' <sup>(146)</sup>. The 2011 EMCDDA snapshot also identified a major decrease since 2010 in the number of online shops offering mephedrone that appear to be based in the United Kingdom. In 2011, the country with the highest number of online shops selling mephedrone was the United States (six), followed by the Czech Republic and the United Kingdom (three each). Over the same period, the price of mephedrone increased, from between EUR 10 and EUR 12 per gram in 2010, to between EUR 20 and EUR 25 per gram in 2011.

Intoxications and deaths related to mephedrone continue to be closely monitored by the early-warning system. Non-fatal adverse health effects of mephedrone consumption have been reported in Ireland and the United Kingdom. In 2010, reports were received of 65 suspected mephedrone-related deaths in England, of which tests showed the drug to be present in 46 cases. However, identification of a substance in a toxicology sample does not necessarily mean that it caused or contributed to death, and reports of fatalities linked to mephedrone need to be interpreted with caution.

## Follow-up on other substances

There is no routine monitoring in Europe of substances that have been risk-assessed, including those subsequently controlled. The available information on such substances comes mainly from drug seizures and from reports of adverse health effects of controlled substances reported to the early-warning system. A number of Member

States report that the piperazines BZP and *m*CPP were still available in 2009 and 2010. *m*CPP was often found in tablets sold as ecstasy, identified by pill-testing programmes, for example in the Netherlands. Also in 2010, Finland reported the presence of MDPV <sup>(147)</sup> in 13 post-mortem toxicology samples, while the reappearance of two phenethylamines, PMA and PMMA <sup>(148)</sup>, was reported by three countries. In the Netherlands, powders sold as amphetamine were found to contain up to 10 % PMA, and tablets sold as ecstasy had a high content of PMMA; in Norway, a considerable amount of PMMA was seized; and, in Austria, a mixture sold as amphetamine contained 50 % PMMA. All countries reported health incidents and fatalities related to PMA and PMMA, two substances that are known to have considerable toxicity and that have been responsible for fatal overdoses in the past.

## 'Legal highs'

Since the 1980s, new psychoactive substances have been referred to as 'designer drugs', though in recent years the term 'legal highs' has become popular. 'Legal highs' refers to a broad category of unregulated psychoactive compounds or products containing them that are marketed as legal alternatives to well-known controlled drugs, usually sold via the Internet or in smart shops or head shops. This term is applied to a wide range of synthetic and plant-derived substances and products, including 'herbal highs', 'party pills' and 'research chemicals', many of which may be specifically designed to circumvent existing drug controls. The term itself, though in common usage, remains problematic <sup>(149)</sup>.

<sup>(146)</sup> Such products included MDAI (5,6-methylenedioxy-2-aminoindane), 5-IAI (5-iodo-2-aminoindane), MDAT (6,7-methylenedioxy-2-aminotetralin), 5-APB (5-[2-aminopropyl]benzofuran, sold as 'Benzo fury'), 6-APB (6-[2-aminopropyl]benzofuran), naphyrone (naphthylpyrovalerone, sold as NRG-1), 4-MEC (4-methylethcathinone, sold as NRG-2) and methoxetamine (2-[3-methoxyphenyl]-2-(ethylamino)cyclohexanone).

<sup>(147)</sup> 3,4-Methylenedioxypropylvalerone, a derivative of pyrovalerone, which is controlled under Schedule IV of the 1971 UN Convention.

<sup>(148)</sup> PMA (para-methoxyamphetamine) has been listed in Schedule I of the 1971 UN Convention since 1986 and PMMA (para-methoxymethylamphetamine) has been controlled at EU level since 2002; see EMCDDA (2003).

<sup>(149)</sup> See the box 'Not so 'legal highs''.

## Not so 'legal highs'

The term 'legal highs' is used as an umbrella term for psychoactive substances not controlled by drug laws. Describing these substances as 'legal' can be incorrect or misleading to customers, as many of them may be covered by medicines or food safety law.

Under the European product safety directive, producers are obliged to put only safe products on the market. Under reasonably foreseeable conditions of use, a product should not 'present any risk or only the minimum risks compatible with the product's use, considered to be acceptable and consistent with a high level of protection for the safety and health of persons', taking into account its characteristics, the labelling, any warnings and instructions for its use. Perhaps in response to this, online shops are increasingly displaying health warnings about their products. Under the directive, distributors must also inform the competent authorities of serious risks, and the distributors' actions for their prevention. Offences can be punishable by imprisonment.

In Europe, selling a new drug is no more 'legal' than selling any other untested, mislabelled product. Examples of measures against the sale of 'legal highs' based on consumer protection regulations include the confiscation of 'Spice' and mephedrone from suppliers in Italy and the United Kingdom on the basis of inappropriate labelling. Also, in 2010 in Poland, 1 200 'head shops' were closed down by the health inspectorate.

## Prevalence and Internet availability

In Europe, there are few studies on the prevalence of 'legal highs', as a collective term or referring to individual substances. A 2008 Polish study among 1 400 18-year-old students found that 3.5 % had used 'legal highs' at least once in their life, while a follow-up study on 1 260 students in 2010 reported an increase to 11.4 %. The use of 'legal highs' during the last 12 months was reported by 2.6 % of students in 2008, and increased to 7.2 % in 2010. Last month use, however, dropped from 1.5 % in 2008 to 1.1 % in 2010. Further studies on the prevalence of 'legal highs' are expected from the Czech Republic, Ireland and Spain in 2011.

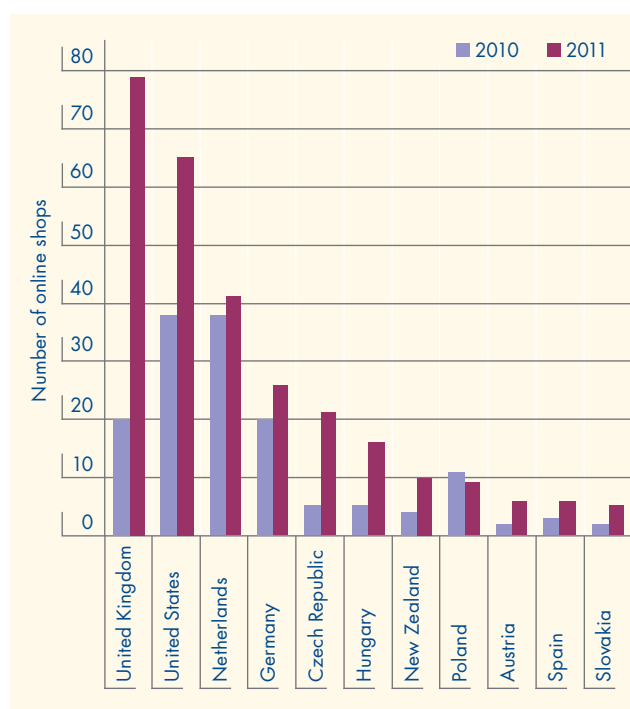
The EMCDDA monitors the online availability of 'legal highs' through regular targeted Internet snapshots, the most recent one using 18 of the 23 official EU languages (<sup>150</sup>), spoken as mother tongue by 97 % of the EU population, as well as Russian and Ukrainian. In addition to searching for the term 'legal highs', the substances covered in these studies include 'herbal highs' ('Spice', kratom and salvia), GBL (gamma-

butyrolactone) and hallucinogenic mushrooms.

The 2011 Internet snapshot identified 314 online shops selling 'legal highs' that would dispatch products to at least one EU Member State. Establishing the country of origin of online shops is difficult, but based on attributes such as contact information, country code domain, currency and shipping information, the United Kingdom appeared to be the most common (Figure 20). English was the most common interface language, accounting for 83 % of the online shops surveyed in 2011. Kratom and salvia were the two most frequently offered 'legal highs', available in 92 and 72 online shops, respectively.

The availability of 'Spice'-like products on the Internet continued to fall in 2011, with 12 of the surveyed online retailers offering the substances, down from 21 shops in 2010 and 55 in 2009. In 2011, the price of a 3-gram packet of 'Spice'-like product was between EUR 12 and EUR 18, compared to around EUR 20 to EUR 30 in 2009. This parallel drop in availability and price may suggest competition from other new drugs.

**Figure 20:** Apparent country of origin of online shops offering 'legal highs' detected in the 2010 and 2011 Internet snapshots



NB: Only Member States with at least two online shops in both 2010 and 2011 have been included in the figure. In 2011, a search conducted in Romanian for the first time identified 13 online shops based in Romania.

<sup>150</sup> Bulgarian, Czech, Danish, German, Greek, English, Spanish, French, Italian, Latvian, Hungarian, Maltese, Dutch, Polish, Portuguese, Romanian, Slovak and Swedish.

## Controlling and policing the open sale of new drugs

The rapid spread of new substances is pushing Member States to rethink and revise some of their standard responses to the drug problem. In 2010, both Ireland and Poland rapidly passed legislation to limit the open sale of psychoactive substances not controlled under drug laws. This required both countries to work on a careful legal definition of such substances. The Irish law defines them as psychoactive substances, not specifically controlled under existing legislation, that have the capacity to stimulate or depress the central nervous system, resulting in hallucinations, dependence or significant changes to motor function, thinking or behaviour. Medicinal and food products, animal remedies, intoxicating liquor and tobacco are excluded. The Polish law refers to 'substitute drugs', defined as a substance or plant used instead of, or for the same purposes as, a controlled drug, and whose manufacture or placing on the market is not regulated by separate provisions. It makes no specific reference to whether the drug should be considered as harmful.

The Irish law is enforced by the police. High-level police officers can serve a 'prohibition notice' on a seller; if the offender does not comply with this, the courts can issue a 'prohibition order'. Selling, advertising and non-compliance with a 'prohibition order' are punishable by up to five years in prison. By contrast, in Poland, the law is enforced by the state sanitary inspectorate. The penalty for manufacturing substitute drugs or introducing them into circulation is a severe fine, while the penalty

for advertising them is up to one year in prison. The state sanitary inspectors may prohibit trade of a 'substitute drug' for up to 18 months in order to assess its safety, if there is a justified suspicion that it might pose a threat to life or health. If the drug is found to be harmful, the distributor is obliged to meet the costs of the assessment. The inspectors also have the right to close premises for up to three months. In both countries, no offence or punishment is set out for the users of these substances.

### Policing newly controlled psychoactive substances

Detailed guidance on policing newly controlled psychoactive substances, in particular, synthetic cannabinoids, piperazines and cathinones as well as GBL and 1,4-butanediol, was issued to police forces in the United Kingdom in 2010 (ACPO, 2010). The guidance provides information on the appearance, use patterns, effects and risks of the drugs and their manual handling. The guidance recommends a consistent national approach to policing the possession and distribution of such substances. The need for forensic analysis for the correct identification and the required standard of evidence is recognised. Emphasis is placed on the importance of a joint approach between the police and local authorities in policing head shops. Police visits to head shops are encouraged, in order to gather information and to provide information to the proprietors and to give them the opportunity to hand over controlled substances. For this purpose, a standardised letter is suggested, urging the shop owner to review the measures in place and to ensure that they comply with the law.

### Wastewater analysis

Wastewater analysis or sewage epidemiology is a rapidly developing scientific discipline with the potential for monitoring population level trends in illicit drug consumption.

Advances in analytical chemistry have made it possible to identify urinary excretion of illicit drugs and their main metabolites in wastewater at very low concentrations. This is comparable to taking a much diluted urine sample from an entire community (rather than from an individual user). With certain assumptions, it is possible to back-calculate from the amount of the metabolite in the wastewater to an estimate of the amount of a drug consumed in a community.

While early research focused on identifying cocaine and its metabolites in wastewater, recent studies have

produced estimates on levels of cannabis, amphetamine, methamphetamine, heroin and methadone. The identification of less commonly used drugs, such as ketamine and new psychoactive substances, looks promising.

This area of work is developing in a multidisciplinary fashion, with important contributions from a number of disciplines, including analytical chemistry, physiology, biochemistry, sewage engineering and conventional drug epidemiology. A 2011 EMCDDA expert meeting on wastewater analysis identified at least 18 research groups operating in 13 European countries working in this area. At the top of the current research agenda is the development of a consensus on sampling methods and tools, as well as the establishment of a code of good practice for the field.



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The European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) is one of the European Union's decentralised agencies. Established in 1993 and based in Lisbon, it is the central source of comprehensive information on drugs and drug addiction in Europe.

The EMCDDA collects, analyses and disseminates factual, objective, reliable and comparable information on drugs and drug addiction. In doing so, it provides its audiences with an evidence-based picture of the drug phenomenon at European level.

The Centre's publications are a prime source of information for a wide range of audiences including policymakers and their advisers; professionals and researchers working in the field of drugs; and, more broadly, the media and general public.

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