







European Monitoring Centre  
for Drugs and Drug Addiction

# SELECTED TRENDS IN 2007

COCAINE AND CRACK COCAINE:  
A GROWING PUBLIC HEALTH ISSUE

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This publication is available in English.

Cataloguing data can be found at the end of this publication.

Luxembourg: Office for Official Publications of the European Communities, 2007

ISBN 978-92-9168-309-3

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*Printed in Belgium*

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## Contents

Acknowledgements	5
Introductory note	7
Prevalence of and patterns and trends in cocaine and crack cocaine use	9
Problems related to cocaine and crack cocaine use	15
Responses to and interventions in cocaine and crack cocaine use	22
References	28



## Acknowledgements

The EMCDDA would like to thank the following for their help in producing the 2007 selected issues:

- the heads of the Reitox national focal points and their staff;
- the services within each Member State that collected the raw data;
- the members of the Management Board and the Scientific Committee of the EMCDDA and the participants in the technical working groups of the EMCDDA/Reitox network;
- 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) and Europol;
- the Pompidou Group of the Council of Europe, the United Nations Office on Drugs and Crime, the WHO Regional Office for Europe, Interpol, the World Customs Organisation, the ESPAD project and the Swedish Council for Information on Alcohol and other Drugs (CAN), the Centre for the Epidemiological Monitoring of AIDS (EuroHIV), the International Council on Alcohol, Drugs and Traffic Safety and the University of Ghent, Belgium;
- the Office for Official Publications of the European Communities;
- Prepress Projects Ltd.

### 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 at: <http://www.emcdda.europa.eu/?nnodeid=1596>



## Introductory note

Three in-depth reviews of topical interest are published as 'Selected issues' in conjunction with the annual report each year. These selected issues are based on information provided to the EMCDDA by the EU Member States and candidate countries and Norway (participating in the work of the EMCDDA since 2001) as part of the national reporting process.

The three issues selected for 2007 are:

- Drugs and driving;
- Drug use and related problems among very young people (under 15 years old);
- Cocaine and crack cocaine: a growing public health issue.

Online versions of the 2007 selected issues (in English) and summaries (in 23 languages) are available at:  
<http://issues07.emcdda.europa.eu>

The national reports of the Reitox focal points are available on the EMCDDA website (<http://www.emcdda.europa.eu/?nnodeid=435>).

The 2007 *Annual report on the state of the drugs problem in Europe* is available in 23 languages and may be found at <http://annualreport.emcdda.europa.eu>

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# Cocaine and crack cocaine: a growing public health issue

## Prevalence of and patterns and trends in cocaine and crack cocaine use

In recent years, there has been considerable concern about cocaine use in some European countries in recreational settings (e.g. discos and clubs), among young people in general, and among current or former problematic opioid users and other marginalised groups (e.g. sex workers in some cities)<sup>(1)</sup>.

Recreational or integrated users mainly snort cocaine in powder form (cocaine hydrochloride), whereas users within marginalised groups usually inject cocaine or use crack cocaine<sup>(2)</sup>. In Europe, crack cocaine use seems to be stable at a low level and concentrated among certain marginalised subpopulations in some cities.

Surveys have found that some countries have seen a marked increase in cocaine use among young people since the mid-1990s. In addition, targeted studies have observed very high levels of cocaine use in some recreational settings (discos and parties). This is supported by data on indicators of cocaine availability in Europe; for example, the number of seizures, and more particularly amounts seized, increased dramatically.

In a few EU Member States, the demand for treatment for cocaine use has increased substantially in recent years, and now even exceeds that for opioid treatment in some countries, cities and regions. Moreover, a substantial proportion of opioid users in treatment report cocaine as their secondary drug, which may be contributing to their problems and can complicate their care. In many countries, cocaine is also reported in the toxicological analysis of a high proportion of drug-related deaths, generally in combination with opioids and other substances.

Although most of the focus on cocaine use is on more general patterns of recreational use, there is concern that the drug may be becoming more popular among socially disadvantaged groups. Cocaine injecting and the use of crack cocaine are both associated with considerable health risks such as drug overdose and the transmission of infectious diseases.

In addition, there is concern about the possibly serious longer-term health effects of cocaine use (e.g. cardiovascular, neurological and psychiatric problems). These problems may occur among chronic users, including those who are socially well integrated. Some of these health problems could be aggravated by the concomitant use of alcohol and other substances, a pattern of drug use that is increasingly common. The health problems associated with cocaine use can be acute, but chronic use can cause cardiovascular toxicity, and this risk is elevated when cocaine use is combined with additional risk factors. The role of cocaine in these chronic health problems is often not apparent and may go unreported.

## Cocaine use among the general population

In many EU countries, and in Europe overall, cocaine is, after cannabis, the second most commonly used illicit substance among the general population, as self-reported in surveys. Use is not evenly distributed, but seems to concentrate particularly in some countries and in some settings and social groups.

### Prevalence among all adults

An overall prevalence of 3.7 % of the total adult population (15–64 years) in EU Member States and Norway translates into at least 12 million Europeans who have used this drug at least once in their lifetime<sup>(3)</sup>. Ever in lifetime experience

(1) 'Marginalisation' is a social concept made up of a number of indicators that tend to cluster, particularly among minority groups, such as poverty, unemployment, poor education and poor health. In this selected issue, the term is used to describe groups that are not marginalised by choice, but that 'suffer from marginalisation and vulnerability'.

(2) For an objective and scientifically sound description of cocaine and crack cocaine and other drugs see the EMCDDA drug profiles (<http://www.emcdda.europa.eu/?nnodeid=25482>).

(3) The average proportion was computed as the average of national prevalence rates weighted according to the population of the relevant age group in each country. Total numbers were computed by multiplying prevalence among the population concerned in each country and, in countries for which no information was available, imputing the average prevalence. Figures here are probably a minimum, as there could be some under-reporting.

of cocaine is reported by more than 5 % of the total adult population (15–64 years) in three countries: Spain, Italy and the United Kingdom<sup>(4)</sup>; in contrast, in half of EU countries the prevalence is lower than 1.2 %.

Use in the last year is reported by at least 4.5 million Europeans (1.3 % on average). In Spain, Italy and the United Kingdom, last year prevalence is more than 2 %, but in half of EU countries it is about 0.5 % or less<sup>(5)</sup>.

Use in the last month may be considered an indicator of current use. It is estimated that around 2 million Europeans (0.6 % on average) have used cocaine in the last month<sup>(6)</sup>, although it is possible that this figure is an underestimate<sup>(7)</sup>.

However, national averages do not reflect the level of cocaine use among young people (mainly males) in urban areas, especially use related to certain lifestyles. For instance, in the United Kingdom<sup>(8)</sup>, it is estimated that around 13 % of 16- to 29-year-olds who frequently visit pubs or wine bars reported using cocaine in the last year, compared with 3.7 % among less frequent visitors. Among 30- to 59-year-olds, the figures were 3.1 % and 1 % respectively.

### Prevalence among young adults and by gender

The prevalence of use of cocaine, as of other drugs, is higher among young adults (15–34 years), with around 7.5 million young Europeans (5.3 % on average) estimated as having used it at least once in their lifetime. In six countries, ever in lifetime prevalence is 5 % or higher (Denmark, Germany, Spain, Italy, the Netherlands and the United Kingdom)<sup>(9)</sup>, with a median prevalence among all EU Member States of 2 %. In the last year, an estimated 3.5 million (2.4 %) young adults have used cocaine, with the highest prevalence levels, of over 3 %, being found in Spain, Italy and the United Kingdom<sup>(10)</sup>. In the last month, 1.5 million young adults are estimated to have used the drug. This represents around 1 % of the EU population aged 15 to 34, with the prevalence in Spain and the United Kingdom being over 2 %<sup>(11)</sup>.

It is worth noting that among young males (15–34 years), the prevalence is even higher. Ever in lifetime prevalence in this group is estimated at over 10 % in Denmark, Spain and the United Kingdom, and in the same three countries last year prevalence levels are reported to be over 5 %<sup>(12)</sup>.

The male to female prevalence ratio for last year use ranged between unity and 1:12 for all adults and unity and 1:18 for young adults in different countries. Weighted averages for the EU as a whole suggest that, among adult users of the drug, there were 2.5 males for each female. In young adults, this ratio was similar, at 2.4.

### Evidence of polydrug use in survey data

Cocaine users very often also use alcohol and tobacco and other illicit drugs, including cannabis and other stimulants, and can be considered polydrug users in many cases<sup>(13)</sup>.

At an overall population level, there is a positive relationship between last year prevalence of cocaine and cannabis use: countries where there is a higher prevalence of cannabis use in the last year also have a higher prevalence of cocaine use in the same time period (see Figure 1)<sup>(14)</sup>. Different hypotheses can be put forward to explain this correlation. It appears that the phenomenon of cocaine use does not exist in isolation but, rather, if people are using one drug they have a higher probability of using another drug. Another possible explanation might be the existence of a common factor underlying use of both drugs, e.g. the amount of disposable income among young people (e.g. Ramful and Zhao, 2007), some type of personal characteristic (e.g. Van Ours, 2003) or some other factor.

The relationship between use of cocaine and use of other stimulants (ecstasy and amphetamines) is very weak. It might be related to the possible process of replacement of stimulants (see below).

Surveys cannot easily identify crack cocaine use as such users will probably not be included in the sample. But, as an illustration, ever in lifetime prevalence in 2005/06 surveys

<sup>(4)</sup> See Table GPS-8 in the 2007 statistical bulletin.

<sup>(5)</sup> See Table GPS-10 in the 2007 statistical bulletin.

<sup>(6)</sup> See Table GPS-12 in the 2007 statistical bulletin.

<sup>(7)</sup> Population surveys may underestimate drug use, especially the more problematic forms, as this group of users may have no permanent address, refuse to participate or be unwilling to disclose their use. On the other hand, in targeted surveys (e.g. at discos or parties) cocaine use is reported by a high proportion of interviewees, in some cases in large amounts, suggesting that cocaine users are willing to discuss their use provided the information remains confidential.

<sup>(8)</sup> British Crime Survey (England and Wales) 2003/04. Frequent visitors to pubs or wine bars (more than three times a week in the last month) were compared with infrequent visitors (fewer than three visits per week).

<sup>(9)</sup> See Table GPS-9 in the 2007 statistical bulletin.

<sup>(10)</sup> See Table GPS-11 in the 2007 statistical bulletin.

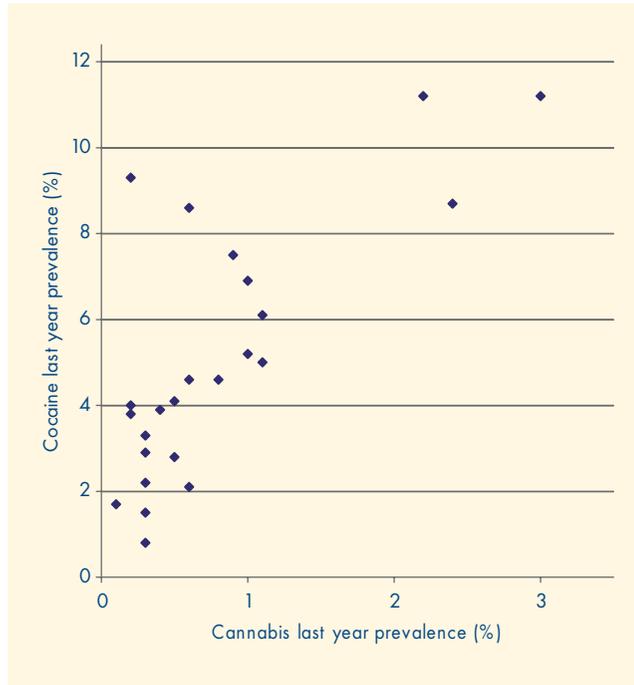
<sup>(11)</sup> See Table GPS-13 in the 2007 statistical bulletin.

<sup>(12)</sup> See Figure GPS-13 in the 2007 statistical bulletin.

<sup>(13)</sup> See Figure 15 in the 2006 annual report.

<sup>(14)</sup> The overall Pearson correlation ( $r$ ) is 0.75. The Czech Republic and France are exceptions to this general rule, and if they are excluded as outliers the correlation becomes higher ( $r = 0.9$ ).

**Figure 1:** Correlation between last year prevalence of cocaine use and cannabis use among all adults (15–64 years), measured by population surveys



Source: Reitox national reports, taken from surveys, reports or scientific articles.

was 0.9 % in the United Kingdom (England and Wales) (0.2 % last year prevalence) and 0.6 % in Spain (0.2 % last year).

### International comparisons of prevalence

Overall, among young adults in the EU, ever in lifetime prevalence of cocaine use is lower than that reported in Australia, Canada and the USA. However, at the national level Denmark, Spain, Italy and the United Kingdom (England and Wales) report higher figures than Australia (see Figure 2).

Among young people, estimates of last year prevalence are higher in Spain and the United Kingdom (England and Wales) than in the USA, although the EU average is clearly lower.

Recent data from general population surveys show an upward trend in cocaine use during the 1990s in many European countries (last year use among young adults aged 15–34 years). This trend seems to be continuing in many reporting countries, although there are signs that it may be stabilising in the Member States with the highest prevalence levels (Spain and the United Kingdom). In Germany, Greece,

the Netherlands and Finland, cocaine use appears to have stabilised or even decreased in recent years<sup>(15)</sup>. However, in Denmark and Italy, a marked increase was again reported in the most recent surveys (2005 in each case).

A similar pattern can also be observed in the 15–24 age group, with a pronounced increase in Spain, a somewhat smaller increase in the United Kingdom, and smaller, but steady, increases and in general lower prevalence in France and Denmark<sup>(16)</sup>.

In countries with longer series of data and higher prevalences, it is possible to analyse trends in subgroups of the population, mainly by age and gender, or by the period of time over which prevalence is estimated (lifetime, last year, last month). In general, these data show a much bigger increase in lifetime prevalence than in last year or last month prevalence. This could be interpreted as an increase in the number of people who have tried the drug once or a few times in their lives but did not remain ‘active users’, or even ‘recreational users’. Analysis of Spanish and United Kingdom data by age group reveals that the largest increases occurred in the 15–34 age group, although in Spain the increase in recent years (since 2001) has continued only among 15- to 24-year-olds. In these two countries, a bigger increase was generally observed for males, especially between 1999 and 2001 in Spain and between 1998 and 2000 in the United Kingdom.

It has been argued that, in some European countries, cocaine may have displaced other stimulants (ecstasy and amphetamines). Survey series data support this hypothesis in the United Kingdom, and to some extent in Denmark and Spain, although not in Germany, France or Italy. If true, the reasons could be changes in fashion, perceived status and risk for each substance and/or possible changes in the market.

### Problem cocaine use

Some countries have conducted studies that attempt to estimate the extent of ‘problem cocaine use’ (injection or long duration/regular use)<sup>(17)</sup>, which is associated with significant health and social consequences (e.g. dependence, marginalisation, acute health problems). However, at present, there is not enough information available to derive trends in estimated problem cocaine use with any precision at the European level.

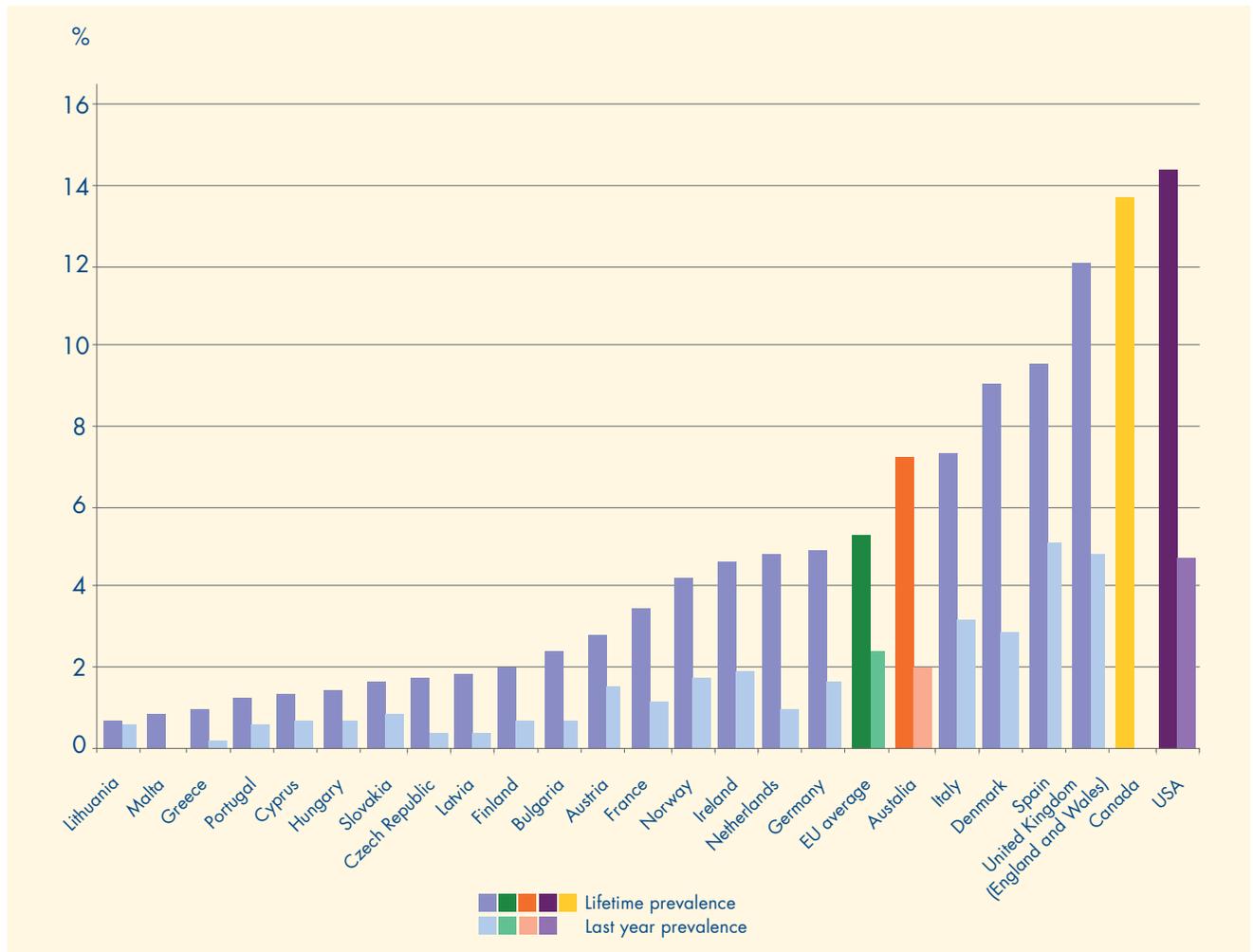
Estimates of the total population of problem cocaine users have been made in Spain and Italy, and in England, there

<sup>(15)</sup> See Figure 7 in the 2007 annual report.

<sup>(16)</sup> See Table GPS-15 in the 2007 statistical bulletin.

<sup>(17)</sup> The EMCDDA definition of problem drug use is ‘injecting drug use or long-duration/regular use of opioids, cocaine and/or amphetamines’. Similarly, problem cocaine use is defined as its injecting use or long-duration/regular use.

**Figure 2:** Lifetime and last year prevalence of cocaine use among young adults (15–34 years) in Europe, Canada, Australia and the USA



NB: Countries have been ordered according to lifetime prevalence of cocaine use.  
 In the European countries, most surveys were conducted between 2001 and 2006, and the standard age range is 15 to 34 years. (In some countries the lower end may be 16 or 18 years.)  
 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 (2004, taken from Eurostat).  
 In the USA, the survey was conducted in 2005, and the age range is 16 to 34 years (recalculated from original data).  
 In Canada, the survey was conducted in 2004, and the age range is 15 to 34 years (recalculated from original data).  
 For Australia, the survey was conducted in 2004, and the age range is 14 to 39 years (recalculated from original data).  
 Variations in age ranges may slightly influence disparities between countries.  
 See also Table GPS-9.

Sources: USA: SAMHSA, Office of Applied Studies, National Survey on Drug use and Health (2005), ([www.samhsa.gov](http://www.samhsa.gov) and (<http://oas.samhsa.gov/nhsda.htm#NHSDAinfo>).  
 Canada: Adlaf, E. M., Begin, P. and Sawka, E. (eds) (2005), Canadian Addiction Survey (CAS) — A national survey of Canadians’ use of alcohol and other drugs — Prevalence of use and related harms: detailed report. Ottawa: Canadian Centre on Substance Abuse.  
 Australia: Australian Institute of Health and Welfare (2005), 2004 National Drug Strategy Household Survey —Detailed Findings. AIHW Cat. No PHE 66. Canberra: AIHW (Drug Statistics Series No 16).  
 Europe: based on Reitox national reports (2006).

are estimates of the number of problem crack cocaine users (18). Statistical methods based on treatment and law enforcement data were used in an attempt to account for unobservable data on hidden populations. Spain estimated that in 2002 there were between 4.5 and 6 problem cocaine users per 1 000 adult population (aged 15–64 years). In Italy, there were estimated to be

between 2.9 and 4.1 problem cocaine users per 1 000 adults in 2005. For 2004/05 (19), the estimated number of problem crack cocaine users in England was 5.7 to 6.4 per 1 000 adult population. Of the nine government regions in England, London was estimated to have the highest prevalence (9.9 to 10.8 per 1 000) and the South East (which excludes London) the lowest (3.0–5.0 per 1 000).

(18) For more information on the studies, see Table PDU-2 in the 2007 statistical bulletin.  
 (19) The period 1 April 2004 to 31 March 2005.

The Netherlands has estimated the population of problem opioid users who use crack cocaine to be between 2.2 and 4.3 per 1 000 adults in 2001. However, this estimate does not include problem cocaine users who do not use opioids.

## Cocaine use among school students

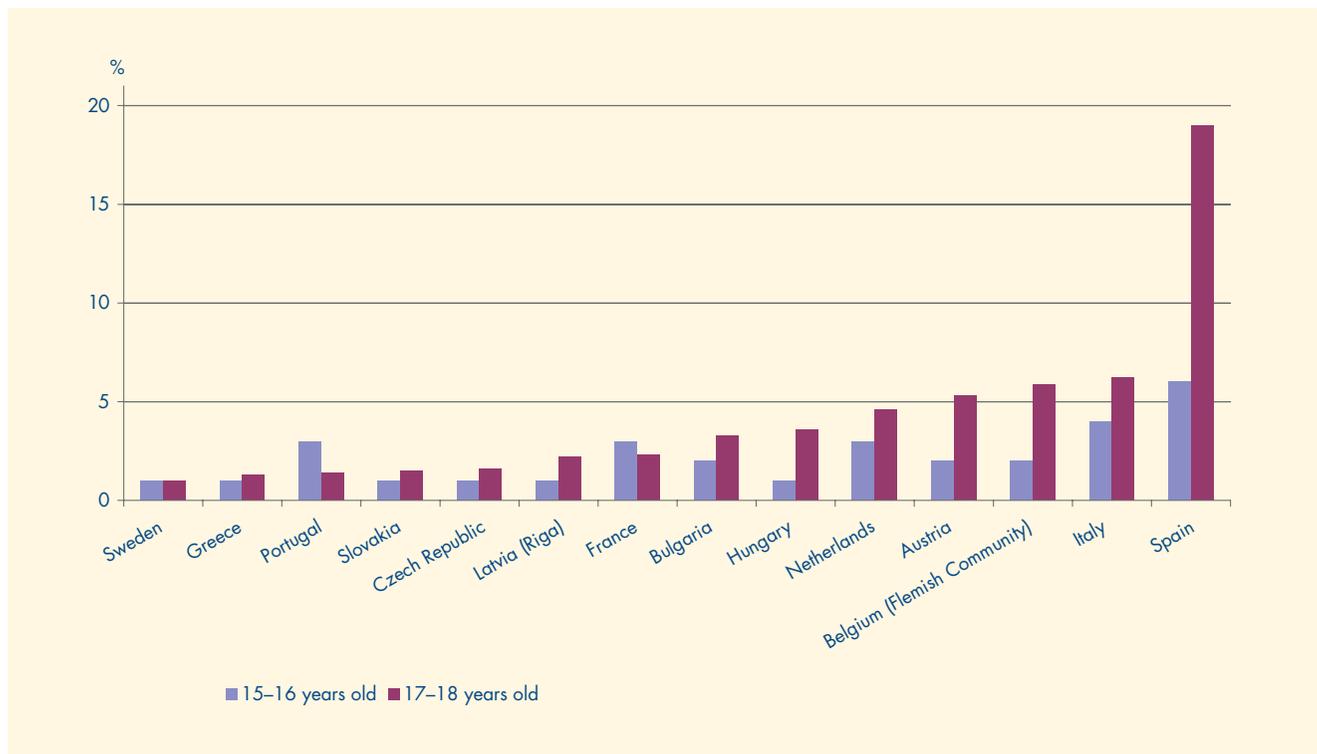
Overall prevalence rates for cocaine use are generally very low among school students and always considerably lower than for cannabis. School surveys conducted in 28 countries in 2003 revealed that, in most countries, less than 2 % of 15- to 16-year-olds had tried the drug (Figure 3). Higher prevalence estimates for ever in lifetime use were reported in France, the Netherlands and Portugal (3 %), Italy, the United Kingdom (4 %) and Spain (6 % in 2004 and 4 % in 2006). In 14 countries where school survey data are available for 17- to 18-year-old school students, lifetime prevalence of cocaine use rises to 5 % in the Netherlands, 6 % in Italy and, significantly, to 19 % in Spain in 2004 — although this has fallen to 11 % in 2006 <sup>(20)</sup>.

Prevalence appears to be linked with perceptions about availability and risk; for example, in the countries with the highest levels of cocaine use, school students more often perceive the drug to be easily available and their perceptions about the risks associated with cocaine use are generally lower. However, caution is required in interpreting these data because of the relatively small numbers of 15- to 16-year-olds who have ever tried cocaine in these ESPAD school surveys.

### Trends in cocaine use among school children

Spanish national school surveys show a continuous increase in the prevalence of cocaine use over the past decade until the 2006 survey, which reports a decrease of more than 3 percentage points between 2004 and 2006. ESPAD school surveys also show some increase in ever in lifetime prevalence of cocaine use among 15- to 16-year-old school students over the past decade, but caution is needed in drawing conclusions about increases of less than 3 percentage points among school students because of the small numbers involved in some of the surveys <sup>(21)</sup>.

**Figure 3:** Lifetime prevalence of cocaine use among the 15–16 and 17–18 age groups



NB: Countries are ordered by lifetime prevalence among the 17–18 age group. Data for 15- to 16-year-olds are based on ESPAD 2003 surveys except for Belgium, Spain and Sweden where data are based on national surveys conducted in 2004. Data for 17- to 18-year-olds are based on national surveys reported by the Reitox network, generally using ESPAD methods. Among the 17- to 18-year-olds, data from Latvia are based on a sample from Riga only.

Sources: ESPAD and Reitox network in 2003 and 2004.

<sup>(20)</sup> Data on 17- to 18-year-old school students are nationally representative of that age group only in countries where the compulsory school leaving age requires school attendance to the age of 18 years.

<sup>(21)</sup> See Table EYE-3 in the 2007 statistical bulletin.

## Prevalence and patterns of use among specific populations

Site-sampling studies of cocaine users, conducted in locations that are commonly visited by individuals who take cocaine, are not representative in any statistical sense, but they do provide a useful window on 'hidden' drug use. These studies tend to focus on settings where problematic drug users or recreational drug users congregate. Problematic cocaine users, for example, may be found in drug treatment service settings, low-threshold services and street settings where drugs are bought and sold, while more socially integrated recreational users of cocaine congregate in dance music and other nightlife settings. The information that these site studies provide is valuable for developing and targeting prevention and risk reduction initiatives. One European study of 1 855 cocaine users conducted in nine European cities (Barcelona, Budapest, Dublin, Hamburg, London, Paris, Rome, Vienna and Zurich) in 2002 and 2003 targeted three main categories of cocaine users: those attending drug treatment services; unemployed and marginalised cocaine users who were not attending drug treatment services; and individuals who use cocaine but are mainly employed and socially integrated. Some 86 % of all study participants had used cocaine powder during the 30 days prior to the interview and 27 % had used crack cocaine, but there were considerable variations between the cities and in patterns of use among the three groups.

This European nine-city study revealed that marginalised cocaine users displayed more problematic patterns of drug use than those attending drug treatment services — in terms of having the highest consumption of cocaine and crack cocaine use, the highest intensity of heroin use and injecting and the highest prevalence of polydrug use. These findings suggest that marginalised drug users who do not attend drug treatment services may adopt patterns of drug use that are more problematic than those who are receiving treatment (Prinzleve et al., 2004). Research among problem and marginalised drug users in Belgium has shown a progressive increase between 1994 and 2001 in the number of cocaine users, and that the combination of heroin and cocaine has become more popular than in the past. Six other countries report findings from studies of cocaine users not attending drug treatment services that broadly support the findings of the nine-city study (Ireland, France, Luxembourg, the Netherlands, Austria and the United Kingdom).

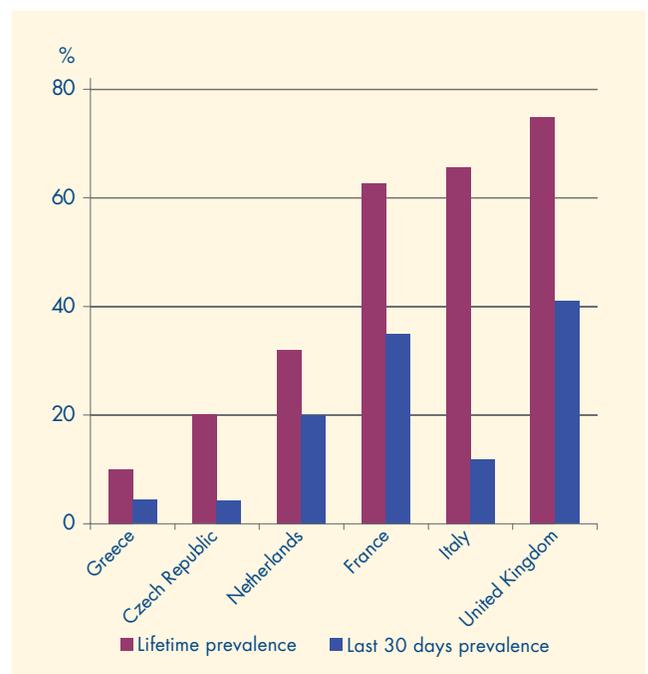
Three of the cities in the European city study (Hamburg, London and Paris) accounted for the majority of the crack cocaine users. However, crack cocaine has been reported to be a significant problem for users in three French overseas territories — Guadeloupe, Guyana and Martinique — and among marginalised groups in the Netherlands. In the United Kingdom, self-reported use of crack cocaine among sex workers has risen considerably in London and Liverpool over the past 15 years.

The United Kingdom Home Office suggests that the sex and drug markets appear to be interconnected in the case of crack cocaine.

Integrated cocaine users are generally distinct from problematic and marginalised users in their patterns of cocaine use. The nine-city European study reported that most integrated cocaine users take the drug only occasionally, and one third had never used cocaine more than once a week. Furthermore, most were snorting cocaine powder rather than injecting it or smoking crack cocaine. Most site studies that target socially integrated young people in the EU focus on individuals who attend electronic dance music events. These studies consistently report much higher prevalences of cocaine use than are found in surveys of the general or school student population. In countries where surveys have been conducted in dance music settings, reported ever in lifetime prevalence of cocaine use has ranged from 10 % in Athens to over 60 % in France, Italy (Milan) and the United Kingdom. In general, last month prevalence of cocaine use is reported to be much lower (Figure 4). A 2005 survey of Amsterdam pub-goers reported that 8 % had used cocaine during the last 30 days (Nabben et al., 2006).

Prevalence of crack cocaine use is, generally, very low among individuals surveyed in dance music settings. The strong separation of the (mainstream) powder cocaine scene from the (marginalised and problematic) crack cocaine scene is supported by most studies. An illustration of this

**Figure 4:** Prevalence of ever in lifetime and last 30 days use of cocaine in selected dance music populations



NB: Estimates for selected recreational settings are based on non-probability samples using a variety of methods and sampling frames. Prevalence of drug use among the broader dance music population cannot be inferred from these samples.

Sources: Reitox national reports; Korf (2004) et al.; McCambridge et al. (2005).

is can be found in the 2004 United Kingdom clubbers' magazine survey, in which 41 % of respondents reported that they had used cocaine powder in the month before the survey, but only 3.4 % had used crack cocaine during this time. However, the extent to which this sample is representative of all club-goers is unclear and respondents probably represent a group where regular drug taking is relatively common.

With regard to the quantities of cocaine that are consumed by cocaine users, data are limited and vary between studies. A United Kingdom clubbers' magazine survey conducted in 2005 reported that nearly 90 % of cocaine users reported taking half a gram or more in one session, and nearly half of these took 1 gram or more (Mitcheson, personal communication, 2006). While the respondents to this survey are self-selected and the reliability of self-reports cannot be assured, such high levels of reported consumption might be explained by factors such as the relatively high-status image of cocaine, promoting its conspicuous consumption; long club opening times, leading to long late-night sessions; combined use of alcohol and other drugs, which serves to ameliorate the acute effects of cocaine use and encourage heavy use; and easy access to cocaine by virtue of its ready availability and also an increase in disposable incomes.

An important factor to consider in relation to cocaine use by socially integrated young people is that recreational drug use is, in general, limited to periods away from work, study and family, such as at weekends or during holiday periods or celebrations (Bellis et al., 2003). Qualitative research studies suggest that even the more problematic patterns of use may be short-lived for a proportion of individuals (Belgian national report).

Some countries reported that cocaine is more likely than ecstasy to be used in private or work settings (Belgium, Ireland, Austria, Poland, Portugal and Norway). This suggests that site surveys conducted in dance music settings in the EU may prove less useful for developing and targeting cocaine prevention initiatives than they have been for ecstasy in the past. Furthermore, the average age at first cocaine use tends to be higher than for ecstasy and the physical manifestations of cocaine use less obvious to observers than they are for ecstasy and amphetamines (Norway; McCambridge et al., 2005). Therefore, cocaine users may be more heterogeneous and hidden than ecstasy and amphetamine users and pose a greater challenge for policymakers wishing to target prevention and risk reduction initiatives.

### Trends in cocaine use in recreational settings

Data on trends from research conducted in dance music settings are rare due to the limited capacity to make comparisons between different surveys over time. However, some countries have reported trends based on information from such studies. For example, the Austrian ChEckIT studies report a significant increase in the use of cocaine; a Czech dance club survey reported a small increase in cocaine use between 2000 and 2003; and a United Kingdom club magazine survey reported an increase in last month use of cocaine from 36 % in 1999 to 41 % in 2003 (McCambridge et al., 2005). A qualitative trend-watch study in the Netherlands and a drugs-monitoring study in Amsterdam conducted since 1994 suggest that the popularity of cocaine increased over the past decade but now appears to have stabilised.

At least 10 drug helplines in Europe report increases in calls about cocaine use in 2005 and 2006. Increases in the number of calls to helplines for advice about cocaine in recent years have been more marked than for any other substance apart from cannabis, which has also been subject to a marked increase in helpline contacts (FESAT, 2005 and 2006).

## Problems related to cocaine and crack cocaine use

### Treatment demand data

After opioids and cannabis, cocaine is the drug most commonly reported as the reason for entering treatment in Europe. Cocaine accounted for about 13 % of all treatment demands across the EU in 2005, corresponding to 48 000 reported cases <sup>(22)</sup>. Cocaine is also reported as a secondary drug by around 15 % of all drug outpatient clients <sup>(23)</sup>. There is a wide variation between countries, with the Netherlands and Spain historically reporting high proportions of cocaine users among drug clients (35 % and 41 % respectively in 2005), whereas most countries report rather low rates. According to the most recent data (from 26 countries), excluding the Netherlands and Spain, more than half of the countries report that cocaine users account for less than 5 % of all drug clients and in the remaining countries they make up between 5 % and 21 % <sup>(24)</sup>.

Available European data on drug users entering treatment for primary cocaine use are mainly related to cocaine powder (84 %), with only 16 % reporting use of crack cocaine <sup>(25)</sup>.

<sup>(22)</sup> See Figure TDI-2 in the 2007 statistical bulletin.

<sup>(23)</sup> See Table TDI-22 (part i) in the 2007 statistical bulletin.

<sup>(24)</sup> See Table TDI-5 (part ii) in the 2007 statistical bulletin; for data on Spain refer to 2004.

<sup>(25)</sup> See Table TDI-115 in the 2007 statistical bulletin.

The proportion of clients entering treatment for primary cocaine use for the first time in 2005 was higher than the proportion of all cocaine clients: overall around 22 % of all new treatment demands (33 000 individuals) are reported to be cocaine related <sup>(26)</sup>. Out of 25 countries reporting data on new cocaine clients in 2005, the proportion of new cocaine clients was higher than the proportion of all cocaine clients in 15 countries, the same 6 countries and lower in 4 countries, the Netherlands being among the last group <sup>(27)</sup>.

The increasing trend in demand for cocaine treatment noted in previous years' annual reports is continuing. Between 1999 and 2005, the proportion of new clients demanding treatment for cocaine use grew from 10 % to 21 % of all new drug clients; the number of reported cases rose from 12 600 to 33 000 (based on 20 EU countries for which data were available for the time period) <sup>(28)</sup>. A similar increase was observed in the number of all reported cocaine clients (from 15 500 in 1999 to 39 500 in 2005), although, as a proportion of all drug clients, this amounts to a much smaller increase: from 9 % to 13 % <sup>(29)</sup>. Considering only those countries with at least 100 cocaine users among drug clients, between 1999 and 2005, the largest increases in new cocaine clients (proportion of all clients and absolute numbers) were reported by Italy and Spain. The rising trend in these European countries is in contrast with the trends in drug treatment demands in the United States, where rates of admission decreased by 24 % between 1992 and 2002 (DASIS, 2005).

The European increase in cocaine users entering treatment may be related to several factors, in particular increases in:

- prevalence of cocaine use and related problems, including an increase in the number of people with a long duration of cocaine use;
- referrals to treatment;
- number of polydrug users consuming several substances, including cocaine;
- treatment availability and range of treatment interventions;
- number of opioid users (including some in substitution treatment) also taking cocaine.

An increased number of cocaine clients are reported to experience physical, social and psychological problems related to cocaine use. An Irish follow-up study conducted

in local communities in 2006 reported a deterioration in the general health of clients with problematic cocaine use; an increase in financial problems and engagement in criminal activities was also described (Drugnet Ireland, 2007). Several countries also report an increase in hospital psychiatric admissions and psychiatric disorders linked to cocaine use.

Some countries report an increase in the number of referrals from the criminal justice system and from family and health and social services. In Italy, between 2000 and 2004, the proportion of referrals to drug treatment from the criminal justice system that were attributed to cocaine use increased from 6 % to 10 %. Several countries mention that an increasing number of adolescents or very young people are consuming cocaine and exhibiting a change in their behaviour as a result; this might have led families and social networks to refer users to treatment.

There is increasing concern that cocaine may be complicating the treatment of those with opioid problems, for example by destabilising the behaviour of substitution clients.

Finally, increased drug treatment availability and a wider range of treatments on offer, including programmes targeted to specific user groups, including cocaine users, may have augmented the demand for cocaine treatment.

Cocaine clients largely enter treatment in outpatient centres (94 %) <sup>(30)</sup>, but it has to be considered that the countries with the highest proportion of cocaine users in treatment (Spain, Italy and the Netherlands) do not report data on inpatient centres; furthermore, European national information systems often do not include private clinics treating cocaine users. Indeed, some studies report a tendency among problematic cocaine users to seek assistance from residential treatment rather than community-based treatment (Neale and Robertson, 2004). The following description of cocaine clients therefore refers only to outpatient treatment clients.

Cocaine clients (powder cocaine and crack cocaine clients) are reported to be the oldest drug clients after opioid users, with a mean age of 30 to 31 years. Some 64 % of cocaine clients are in the 20- to 34-year-old age group and 15 % are aged between 35 and 39 years <sup>(31)</sup>.

Gender ratios of cocaine clients are among the highest for primary users of any drug, with 4.7 males for every female among all cocaine clients and 5.8 males for every female among new clients. As for the other drugs, gender ratios vary between countries <sup>(32)</sup>.

<sup>(26)</sup> See Figure TDI-2 in the 2007 statistical bulletin.

<sup>(27)</sup> See Tables TDI-4 and TDI-5 in the 2007 statistical bulletin.

<sup>(28)</sup> See Figure TDI-1 (part i) and (part ii) in the 2007 statistical bulletin.

<sup>(29)</sup> See Figure TDI-3 (part i) and (part ii) in the 2007 statistical bulletin.

<sup>(30)</sup> See Table TDI-24 in the 2007 statistical bulletin.

<sup>(31)</sup> See Table TDI-10 in the 2007 statistical bulletin.

<sup>(32)</sup> See Table TDI-21 in the 2007 statistical bulletin.

Most cocaine users treated in outpatient settings reported first using the drug between the ages of 15 and 24 years (mean age 22 years)<sup>(33)</sup>. They mainly take the drug by snorting (46 %) or smoking (34 %), although 9 % of cocaine clients inject the drug (5 % among new clients)<sup>(34)</sup>. Half of all cocaine clients use the drug occasionally (once a week or less often) and the other half take it regularly (several times a week or daily). A higher percentage of cocaine clients new to treatment use the drug regularly. However, there are considerable differences between countries in patterns of cocaine use: in the Netherlands, 51 % of cocaine clients take the drug daily, compared with only 12 % of cocaine clients in Germany; in Italy, of the 56 % of cocaine clients who report their frequency of use, 44 % are occasional users, in contrast to 16 % in Spain<sup>(35)</sup>.

Cocaine is often used in combination with another illicit or licit subsidiary drug. The most common combinations are of two substances. Clients in treatment for cocaine as their primary drug most often report using it in combination with cannabis (28 %), alcohol (23 %) or opioids (16 %). Among clients in treatment for the primary use of another drug, cocaine is reported as a secondary drug by 22 % of opioid clients, 15 % of cannabis clients and 10 % of amphetamine or ecstasy clients<sup>(36)</sup>.

Drug users entering treatment for problems related to cocaine can be divided into three groups:

- powder cocaine users, using the drug on its own or in combination with cannabis and/or alcohol;
- crack cocaine users, often using crack cocaine in combination with other drugs including heroin;
- polydrug users, including use of powder cocaine and heroin.

The first group is represented by the drug clients who use powder cocaine alone or in combination with cannabis (38 %) and/or alcohol (28 %). They are mainly males (gender ratio 6:1)<sup>(37)</sup> and are often referred to treatment by the criminal justice system or self-refer as a result of pressure from social and family networks. This group is reported to be socially well integrated, with stable living conditions and regular employment. A Dutch analysis of treatment data reports that clients in treatment for use of powder cocaine

alone or in combination with alcohol or 'soft' drugs usually have an income from a regular job and live in their own apartment or with their family (SIVZ/IVZ, 2006).

The second group of cocaine clients is represented by those using crack cocaine, often in combination with other drugs, mainly opioids (38 %), cannabis (26 %) and alcohol (21 %)<sup>(38)</sup>. Compared with drug clients using powder cocaine, women account for a higher proportion of crack cocaine clients (male to female ratio of 2.8:1 compared with 6:1)<sup>(39)</sup>. A total of 8 000 drug clients are reported to have entered treatment for primary use of crack cocaine in 2005 in 20 European countries, representing only 2.5 % of all European drug clients<sup>(40)</sup>. However, crack cocaine users may pose particular challenges for treatment services, as they tend to have a more problematic drug history and a more marginalised social profile than users of powder cocaine. Crack cocaine clients are often homeless, many of them are unemployed or with precarious labour conditions, and some of them are engaged in sex work. A considerable proportion of drug clients entering treatment for primary crack cocaine use belong to ethnic minorities. Crack cocaine users also commonly live in large cities, often in specific neighbourhoods.

The third group of cocaine users is represented by users who consume cocaine in combination with heroin. Typically, they are either former heroin users receiving substitution treatment and now experiencing problems related to cocaine use or current heroin users, combining heroin with cocaine consumption<sup>(41)</sup>. Local studies of drug injectors suggest that, in some areas, the combination of heroin and cocaine within an injection is becoming more popular (sometimes referred to by drug injectors as 'speedballing'). European treatment demand data show that opioids are used as a subsidiary drug by 26 % of cocaine clients in France, 19.5 % in the Netherlands and 18 % in Italy; among clients reporting primary use of opioids, 53 % in the Netherlands, 37 % in Italy, 27 % in France and 21 % in Ireland report also using powder cocaine<sup>(42)</sup>. While national studies also show that cocaine and heroin users are the major group of cocaine users in treatment, this group has shown a smaller relative increase since 2000 compared with users of cocaine powder, alone or with cannabis.

<sup>(33)</sup> See Table TDI-11 (part iii) in the 2007 statistical bulletin.

<sup>(34)</sup> See Table TDI-17 (part ii) and (part vi) in the 2007 statistical bulletin.

<sup>(35)</sup> See Tables TDI-18, TDI-111 and TDI-112 in the 2007 statistical bulletin.

<sup>(36)</sup> See Tables TDI-22 and TDI-23 in the 2007 statistical bulletin.

<sup>(37)</sup> See Table TDI-120 in the 2007 statistical bulletin.

<sup>(38)</sup> See Table TDI-118 in the 2007 statistical bulletin.

<sup>(39)</sup> See Table TDI-120 in the 2007 statistical bulletin.

<sup>(40)</sup> See Tables TDI-2 and TDI-115 in the 2007 statistical bulletin.

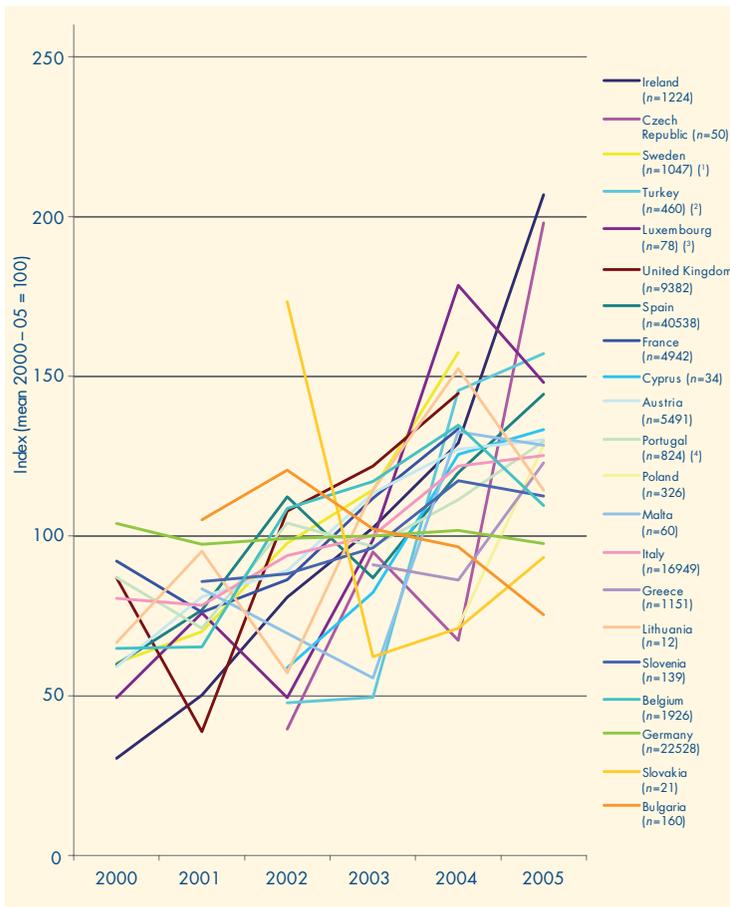
<sup>(41)</sup> See Tables TDI-22 and TDI-23 in the 2007 statistical bulletin.

<sup>(42)</sup> See Table TDI-118 in the 2007 statistical bulletin.

## Cocaine-related offences

Overall at EU level, the number of 'reports' <sup>(43)</sup> of drug law offences that involve cocaine increased by an average <sup>(44)</sup> of 62 % between 2000 and 2005. Data show increasing trends in all reporting countries except Germany, where such offences remained relatively stable, and Bulgaria, where they decreased over the period (Figure 5).

Figure 5: Cocaine-related offences in Europe, 2000–05



- (1) Persons given a summary fine by the prosecutor or sentenced by a court.  
 (2) 2002 data refer only to police data, while after-2002 data refer to all data reported by the main law enforcement authorities (police, gendarmerie and customs).  
 (3) Offences for cocaine only — this does not include offences for 'cocaine and other drug(s)'. Since the decriminalisation of drug use/possession for use in July 2001, such offences are reported through a different monitoring system; although data from the latter are taken into consideration here (from mid-2001 onwards), caution is required when comparing data from before and after 2001. (It should also be noted that the new information system on offences for drug use/possession was being tested for the first time.)  
 (4) Arrests for presumed offences against the 1973 drug law.  
 NB: Data between brackets refer to the number of reports for cocaine-related offences in 2005, except for France (2004), Sweden (2004) and the United Kingdom (2004).  
 Data were not available for Denmark, Estonia, Latvia, Hungary, the Netherlands, Romania, Finland and Norway.  
 United Kingdom: 2001 data refer only to England, Scotland and Wales. Data do not include crack cocaine.  
 See Figure DLO-4 in the 2007 statistical bulletin for further information.

Sources: Reitox national focal points.

The proportion of drug offences involving cocaine ranged in 2005 from 1 % or less in Lithuania, Poland and Slovakia to over 19 % in Spain, Italy and Luxembourg. Over the period 2000–05, this proportion increased in most reporting countries, while it remained stable in Bulgaria, Lithuania and Malta and decreased in Germany <sup>(45)</sup>.

## Seizures and market information

### Production and trafficking of cocaine

Colombia is by far the largest source of illicit coca in the world, followed by Peru and Bolivia. Following a slight decrease in 2005 (from 1 008 tonnes in 2004), potential global production of pure cocaine, estimated by UN sources, remained stable in 2006 at 984 tonnes (980 tonnes in 2005), of which Colombia contributed 62 %, Peru 28 % and Bolivia 10 % (UNODC, Government of Bolivia, Government of Colombia and Government of Peru, 2006; UNODC, 2007).

Most of the cocaine seized in Europe comes directly from South America (mainly Colombia) or via Central America and the Caribbean. In 2005, Argentina, Brazil, Venezuela, Peru, Surinam, Ecuador, the French and the Dutch Antilles and Mexico were reported as transit countries for the cocaine seized in Europe (Reitox national reports, 2006). Cocaine from South America to Europe is increasingly trans-shipped via Africa (mostly western and central Africa), in particular through countries surrounding the Gulf of Guinea (Benin, Cape Verde, Ghana, Guinea-Bissau, Nigeria and Togo) (INCB, 2007a).

The main points of entry in Europe remain Spain, Portugal and the Netherlands, and, to a lesser extent, Belgium, Germany, France and the United Kingdom. Spain and the Netherlands continue to play a major role as distribution points for the cocaine entering Europe. However, other transit countries are reported in Europe, such as France, Germany, Italy, Bulgaria and Russia (Reitox national reports, 2006).

### Seizures

Cocaine is the most trafficked drug in the world after herbal cannabis and cannabis resin. Global seizures of cocaine continued to increase in 2005, reaching 755 tonnes. The largest quantities were intercepted in South America (Colombia, Venezuela and Ecuador), followed by North America (the United States and Mexico) (UNODC, 2007).

<sup>(43)</sup> The term 'reports' for drug law offences is given in quotation marks because it describes different concepts in different countries (police reports of suspected drug law offenders, charges for drug law offences, etc.). For an exact definition for each country, refer to the methodological notes on drug law offences in the 2007 statistical bulletin.

<sup>(44)</sup> Weighted by population size. See Figure DLO-6 in the 2007 statistical bulletin.

<sup>(45)</sup> See Table DLO-8 in the 2007 statistical bulletin.

In 2005, an estimated 70 000 seizures of 107 tonnes of cocaine were made in Europe. Most seizures continue to be reported in west European countries, especially Spain, which has accounted for about half the seizures and amounts of cocaine recovered in Europe in recent years <sup>(46)</sup>. Over the period 2000–05, both the number of cocaine seizures and quantities seized increased overall at European level, with particularly marked increases in recent years in Spain and Portugal, reflecting the trafficking routes of cocaine. In 2005, Portugal, for the first time, overtook the Netherlands in intercepting the largest quantities of cocaine after Spain.

### Price and purity

In 2005, the average or typical retail price of cocaine varied widely across Europe, from EUR 45 per gram in Poland to over EUR 100 per gram in Cyprus, Romania and Norway, with most countries reporting prices between EUR 50 and EUR 80 per gram <sup>(47)</sup>. The mean prices of cocaine, corrected for inflation, showed an overall downward trend over the period 2000–05 in most reporting countries <sup>(48)</sup>.

Compared with heroin, the average or typical purity of cocaine at user level is high, varying in 2005 between 24 % and 78 % in Europe, with most countries reporting purities of between 30 % and 60 % <sup>(49)</sup>. Data available over 2000–05 indicate an overall decrease in the mean purity of cocaine in most reporting countries.

### Deaths related to cocaine

Cocaine deaths are more difficult to define and identify than deaths due to opioid overdose. Cocaine-related fatalities are multifactorial, and often the exact cause is difficult to determine. Deaths from purely pharmacological overdose seem to be infrequent, except in the case of massive exposure (e.g. in drug couriers carrying cocaine internally), with most cocaine deaths being the result of chronic toxicity leading to cardiovascular (such as arrhythmias, myocardial ischaemia and infarction) and neurological complications (such as haemorrhagic or ischaemic stroke) (Ghuran and Nolan, 2000; Kaye and Darke, 2004; Steven and Karch, 1999; Vasica and Tenant, 2002).

Deaths related to cocaine are not dose specific, and although some deaths have been reported after a single dose of a few

hundred milligrams, there are cases in which a dose of several grams has not proved fatal. In addition, deaths can occur regardless of route of administration; although the risk is higher when the drug level increases rapidly in the brain (e.g. injection), deaths occur also with non-injecting routes of use.

Many cocaine deaths resulting from cardiovascular complications occur in people with pre-existing risk factors or conditions induced by chronic cocaine use, such as left ventricular hypertrophy, coronary atherosclerosis or vascular malformations in the brain, whose rupture can be caused by drug-induced hypertension (see below). For instance, an Australian study found high levels of cardiovascular and cerebrovascular pathology in the pathological examination of cocaine deaths (Darke et al., 2005).

Depending on how those deaths are investigated and recorded, they may not be identified as cocaine-induced deaths. It is necessary to improve investigation of deaths and health problems that could be related to cocaine use (e.g. younger people presenting at emergency medical services with cardiovascular pathology). Furthermore, it would be of great value to assess the true overall and cause-specific mortality among cocaine users, for instance through mortality follow-up studies.

Cocaine overdose victims often recover spontaneously, as the effects of cocaine are brief because of the short half-life of the drug. In fatal cases, cocaine overdoses are characterised by acute physical and psychological symptoms with an accelerated onset and progression (frequently in a few minutes), manifesting in three phases: a first phase with early stimulation of the central nervous system (CNS) and high blood pressure and heart rate; a second phase with advanced CNS stimulation that may include malignant encephalopathy and generalised seizures, hypertension and cardiac arrhythmias; and a third phase leading to coma and loss of vital functions. Excited delirium is a common presentation of cocaine overdoses leading to death (about 10 %) (Sztajnkrycer and Baez, 2005), although this condition can occur also with other stimulants, in schizophrenic patients and in patients taking neuroleptic medication.

The risk of cocaine toxicity seems to be influenced by concomitant use of other substances, in particular alcohol

<sup>(46)</sup> This should be checked against missing 2005 data when available. See Tables SZR-9 and SZR-10 in the 2007 statistical bulletin. For estimating purposes, 2005 missing data were replaced by 2004 data.

<sup>(47)</sup> See Table PPP-3 in the 2007 statistical bulletin.

<sup>(48)</sup> Cocaine price trends over the period 2000–05 were available in 19 European countries (data available for at least three consecutive years).

<sup>(49)</sup> See Table PPP-7 in the 2007 statistical bulletin.

and heroin (see boxes 'Cocaine and alcohol' and 'Cocaine and heroin'). This is a general phenomenon in overdose deaths, where polydrug use seem to increase the risk.

In Europe, generally, overdose deaths involving both opioids and cocaine (and generally other substances) are considered as opioid deaths, as deaths caused by the use of illicit substances in the absence of opioids are relatively infrequent. It has been suggested that cocaine may increase the risk of overdose death among opioid users, as cocaine

### Cocaine and alcohol

The combination of alcohol and cocaine is popular among drug users, perhaps because of the more intense feelings of 'high' achieved, beyond that perceived with either drug alone. In addition, cocaine makes the effect of alcohol inebriation less intense and alcohol tempers the discomfort felt when coming down from a cocaine 'high' (Pennings et al., 2002). Some users take cocaine at the same time as alcohol to enable them to drink for longer, which may also have the effect of increasing the amount of cocaine consumed (Gossop et al., 2006).

Prospective studies show that simultaneous consumption of cocaine and alcohol increases heart rate with a greater than additive effect, as well as increasing systolic blood pressure and impairment of cognitive and motor functions (Pennings et al., 2002). Furthermore, compared with cocaine alone, concomitant consumption of cocaine and alcohol increases blood levels of cocaine by up to 30 % (Farré et al., 1993; Gossop et al., 2006; McCance-Katz et al., 1993; Perez-Reyes and Jeffcoat, 1992). However, retrospective studies suggest that combined use does not cause more cardiovascular problems than expected from the additive effects of each drug (Pennings et al., 2002).

Importantly, the concomitant use of alcohol and cocaine results in the formation of a new substance, cocaethylene (Rafla and Epstein, 1979), a pharmacologically active metabolite synthesised in the liver (Brzezinski et al., 1994). There is some controversy as to whether cocaethylene or alcohol-induced increases in cocaine levels are responsible for the increased heart rate, and presumed increased cardiotoxicity, arising from alcohol and cocaine combinations. Because of its pharmacological properties, such as slower clearance, longer elimination half-life and larger volume of distribution, cocaethylene persists longer in body fluids and tissues, and thus high blood levels are present in post-mortem studies. This has led previous researchers to conclude that it has higher toxic potency than cocaine (Lepere and Charbit, 2002). Cocaethylene produces cocaine-like cardiovascular and subjective effects, but discrimination of its effects from the direct synergistic effects of the cocaine-alcohol combination is difficult. Cocaethylene, however, appears to be less potent than an equivalent dose of cocaine (Hart et al., 2000; McCance et al., 1995; McCance-Katz et al., 1993).

also induces respiratory depression (Jaffe, 1990; Platt, 1997; Tseng et al., 1991). In Europe, cocaine is often found together with heroin in overdose deaths (EMCDDA, 2006a), which may reflect the high level of polydrug use among problematic drug users.

In both 2005 and 2006, the 2006 Reitox national reports identified over 400 deaths as cocaine related. However, in many cases it was difficult to ascertain whether the death was due primarily to cocaine poisoning, or whether it was due to a combination of substances or the result of a pre-existing health problem precipitated by cocaine use. Following a field trial to improve information on substances involved in drug deaths, several countries have improved their reporting, but further work is still necessary.

It remains unclear how cocaine deaths are identified and classified in Europe. In particular, it is possible that deaths occurring shortly after, and induced by, cocaine use, but which are not poisonings in the strict sense (e.g. deaths due to acute myocardial infarctions, arrhythmias or stroke), are not identified as induced by cocaine, and therefore are not reported.

### Medical problems related to cocaine use

Cocaine use has been associated with a variety of medical complications, which may involve all major organs or systems. Such complications can be associated with acute and chronic cocaine use and may differ according to the route of administration. Polydrug use, involving mainly heroin, alcohol and cannabis, is the predominant pattern of cocaine use in Europe. This, together with the various impurities and cutting agents often found in 'street' cocaine, may increase the adverse health effects (see boxes 'Cocaine and alcohol' and 'Cocaine and heroin').

Acute and chronic cocaine use can cause:

- cardiovascular disorders;
- cerebrovascular disorders and neurological impairment;
- respiratory disorders, either acute (pulmonary oedema, pulmonary infarction, haemoptysis) or chronic (e.g. pulmonary hypertension);
- genitourinary and obstetric disorders, either acute (acute renal failure, mediated by rhabdomyolysis<sup>(50)</sup> or direct toxicity, testicular infarction, placental abruption, spontaneous abortion) or chronic (premature birth, growth retardation);
- gastrointestinal complications (mesenteric ischaemia or infarction);

<sup>(50)</sup> Rhabdomyolysis is the breakdown of muscle fibres resulting in the release of muscle fibre contents into the circulation.

- psychiatric disorders (euphoria, dysphoria, agitation, anxiety, suicidal thoughts, paranoid psychosis, depression); and
- musculoskeletal and dermatological disorders.

The most common adverse health consequences are cardiovascular disorders, cerebrovascular disorders and neurological impairments, which may be associated with both acute and chronic cocaine use (Egred and Davis, 2005). For this reason, the focus will be placed on these health problems, as an exhaustive review of all health consequences is not possible in this selected issue.

### Cardiovascular disorders

The most common cardiovascular disorders related to cocaine are ischaemia and acute coronary syndrome, which can occur with all routes of cocaine intake. Other cardiac problems include arrhythmias, myocarditis and cardiomyopathy (Egred and Davis, 2005).

Chest pain is the most common symptom in cocaine users; however, only a small proportion (6 %) of cocaine-associated chest pain is attributable to myocardial ischaemia or myocardial infarction (Egred and Davis, 2005; Pozner et al., 2005).

#### Cocaine and heroin

An increasing number of drug users in Europe report dual dependence on cocaine and heroin (EMCDDA, 2006a). Opioid users who also use cocaine may take the drugs simultaneously or separately. Among drug users, the simultaneous injection of heroin and cocaine is often referred to as 'speedballing'. In this case, the cocaine is either injected in a mixture with heroin or is injected immediately before or after the heroin, sometimes without removal of the syringe. Heroin users often report co-use of cocaine in a sequential manner either to enhance euphoria or to reduce the withdrawal symptoms commonly experienced during a typical day or when attempting self-detoxification from opioid drugs. As with alcohol (see box 'Cocaine and alcohol'), heroin changes the pattern of cocaine use and the frequency of injection may increase because of cocaine's short half-life. Consequently, the health risks related to injecting, such as contracting human immunodeficiency virus (HIV) or other blood-borne infectious diseases, increase (Leri et al., 2003).

The cardiovascular effects of cocaine are amplified when it is co-administered with opioids. Studies on laboratory animals indicate that morphine may enhance the toxic potential of cocaine and that cocaine, like morphine, induces respiratory depression (Hardman et al., 1996), possibly contributing to the ultimate mechanism of death in narcotic overdose cases (Poletini et al., 2005; Tseng et al., 1991).

al., 2005). Cocaine users who present with acute chest pain may actually have acute myocarditis, rather than acute myocardial infarction. Myocarditis induced by cocaine may be either a toxic myocarditis, which is dose-dependent, or hypersensitivity myocarditis, which is not related to dose. In the event that the chest pain is non-ischaemic, many cases may result from an extracardiac cause such as barotraumas (e.g. pneumothorax and pneumoperitoneum) related to cocaine smoking or inhalation (Pozner et al., 2005).

Although most cases of cocaine-associated chest pain are non-ischaemic, myocardial infarction remains the single most frequently reported cardiac complication of cocaine use. Acute cocaine use, but also occasional use and long-term use, have been implicated as a trigger of acute myocardial infarction in patients free from coronary artery disease (Mouhaffel et al., 1995) and more frequently in patients with underlying coronary atherosclerosis, where the risk of myocardial infarction may be increased by as much as 24 times over baseline in the first hour after cocaine administration, but it could still be high as late as a few days afterwards (Mittleman et al., 1999). There is no clear relation between the dose of cocaine and the occurrence of an acute coronary event.

Cardiac arrhythmia may be life threatening and requires prompt treatment. A wide range of arrhythmias have been reported to be associated with cocaine use. These conditions are usually transient and resolve when cocaine is metabolised.

Endocarditis, or inflammation of the internal lining of the heart chambers and heart valves (endocardium), has been associated with intravenous injection of many illicit drugs, including cocaine (Chambers et al., 1987). However, cocaine use seems to be a greater independent risk factor for developing endocarditis than the use of other drugs. Furthermore, intravenous injection of cocaine may present an additional, independent risk for the development of endocarditis. It is presumed that the increases in heart rate and blood pressure that result from cocaine use may lead to valvular and vascular injury that predisposes to bacterial invasion, and the immunosuppressive effects of cocaine may also increase the risk of infection (Egred and Davis, 2005; Pozner et al., 2005).

Aortic dissection is a potentially life-threatening condition in which there is bleeding into and along the wall of the aorta, the major artery leaving the heart. Cocaine use can cause both acute and chronic dissection of the aorta (Brownlow and Pappachan, 2002). The use of cocaine can lead to acute aortic dissection, probably resulting from the severe transient increase in systemic arterial pressure caused by cocaine.

Atherosclerosis (accumulation of fatty materials along the walls of arteries which may eventually block the arteries) has been linked to chronic cocaine use. Cocaine directly induces

structural defects in the vascular endothelial cell barrier, which subsequently increases permeability to peroxidase and low-density lipoproteins (Brownlow and Pappachan, 2002).

### Neurological complications

Acute and chronic cocaine use may cause either ischaemic or haemorrhagic stroke (cerebrovascular accident) — an acute neurological condition in which the blood supply to a part of the brain, commonly arterial, but possibly venous, is interrupted.

Cocaine-related seizures (temporary abnormal electrophysiological phenomena of the brain, resulting in abnormal synchronisation of electrical neuronal activity) occur most often after chronic use, but also may occur after the initial use of cocaine via any route of administration. Most cocaine-related seizures occur within minutes of drug use, and almost always within 90 minutes (peak concentration) (Boghdadi and Henning, 1997). Cocaine-induced seizures are usually single, generalised, tonic-clonic seizures. However, multiple seizures and even status epilepticus can occur after cocaine use.

Cocaine-induced seizures can occur in patients with or without a history of seizure disorder. The prevalence of cocaine-induced seizures is twice as high in subjects with a history of non-cocaine-related seizures than in those without a history of seizure disorder. Seizures caused by cocaine may be lethal, primarily because of associated cocaine-induced hyperthermia, systemic acidosis, cardiac dysrhythmias and cardiac arrest.

## Responses to and interventions in cocaine and crack cocaine use

### Cocaine treatment and harm reduction

The provision of specialised and tailored treatment, as well as harm-reduction programmes, for problematic cocaine and crack cocaine users in Europe is limited. Several countries, where the prevalence of powder cocaine use is high, are increasingly acknowledging the importance of providing adequate and evidence-based services for problematic cocaine and crack cocaine users and commissioning new research into the development of effective treatments for cocaine dependence (Germany, Ireland, Spain, Italy, the Netherlands and the United Kingdom). In contrast, in countries where the prevalence of cocaine or crack cocaine use is relatively low and thus there is little treatment demand,

national reports indicate that specific cocaine treatment services do not constitute a policy priority (Estonia, Greece, Slovakia, Finland and Norway). Moreover, Europe faces the challenge of providing adequate services to a broad spectrum of users seeking treatment: socially integrated powder cocaine users, who are usually characterised by a more recreational consumption pattern; problem cocaine users with a history of concomitant heroin use or in substitution treatment; and highly marginalised crack cocaine users. In addition, cocaine- and crack-dependent users rarely use only cocaine and, rather, show a problematic use of several substances, mainly alcohol, cannabis and opioids. These factors have an important impact on overall treatment outcomes. The diverse nature of cocaine problems underlines the need to provide professionals working in this area with both a better understanding of the evidence base for interventions and training on how to better respond to cocaine problems and problems caused by the use of cocaine in combination with other drugs.

### Cocaine (and crack cocaine): a difficult drug to treat

There is an overall consensus in the literature that the treatment of cocaine and crack cocaine dependence is associated with high attrition and relapse rates (e.g. NTA, 2007; Sayre et al., 2002) <sup>(51)</sup>. One reason for this might be that no viable effective pharmacological therapeutic agent is available to help clients to manage cocaine abstinence and reduce the strong cravings experienced during this period. As is the case for opioid treatment, effective pharmacological agents integrated within a psychosocial and supportive treatment programme would be most beneficial for treatment compliance and maintaining abstinence.

Ensuring adequate provision of cocaine treatment must take into account the fact that cocaine and crack cocaine users constitute a heterogeneous population with different needs. Primary cocaine users and recreational powder cocaine users are usually socially integrated, with stable living conditions and a regular income (see 'Treatment demand data'). In Europe, due to the lack of established cocaine treatment programmes, cocaine treatment usually takes place in traditional outpatient settings tailored for opioid users. Recreational users and primary cocaine users seeking treatment might therefore be reluctant to initiate or continue treatment as they do not identify themselves with the opioid clients in treatment in these settings. A recent Irish pilot project on cocaine treatment found that outpatient facilities could circumvent cocaine users' reluctance to attend the more opioid-oriented day programmes by providing access to cocaine users during evenings. Furthermore, outreach work

<sup>(51)</sup> An in-depth literature review on the treatment of problem cocaine use is available at <http://www.emcdda.europa.eu/?nnodeid=18945>

was conducted immediately before and after the weekend as these times correspond to periods of increased cocaine use (NACD, 2007). Such interventions are thought to increase the attractiveness of existing treatment services for a larger number of problematic powder cocaine users.

A substantial number of cocaine-dependent users are also heroin users or in substitution treatment, with treatment usually focusing mainly on the opioid problem (Gossop et al., 2002; Molinaro et al., 2006; Prinzleve et al., 2004; Puigdollers et al., 2004; SIVZ/IVZ, 2006). Thus, continued cocaine use by clients in substitution treatment may interfere with the treatment programme and subsequently jeopardise the overall treatment outcome (DeMaria et al., 2000; Rowan-Szal et al., 2000). Similarly, the co-use of alcohol and co-morbid psychiatric and personality disorders (e.g. aggression, acute psychosis and paranoid behaviour), often observed in cocaine-dependent users, also constitute major problems for staff and clinicians trying to address clients' cocaine dependence (EMCDDA, 2007).

Finally, use of crack cocaine is more prevalent among more marginalised and deprived populations (e.g. the homeless and sex workers), who are more difficult to reach and who might seek treatment only at a much later stage of their dependence when they may be more difficult to treat. However, as noted above, crack cocaine problems are relatively rare in Europe. Some countries report that crack cocaine use may cause particular problems among some specific ethnic populations; in such cases, culturally sensitive interventions will be needed.

All the abovementioned factors (heterogeneity of the cocaine population, polydrug use, cultural diversity) require flexible and attractive treatment services, as well as adequate staff training and expertise in cocaine treatment, and this is even more so for treatment of multiple substance use. Recent experimental trials have shown promising results for some pharmacological therapeutic agents (e.g. Topiramate and cocaine vaccine), with psychosocial interventions being the most effective responses to problem cocaine use with associated mental health problems. These evidence-based interventions are mainly based on cognitive behavioural approaches, such as cognitive behavioural therapy (CBT), motivational interviewing and a community reinforcement approach combined with contingency management (e.g. voucher-based incentives).

### Pharmacological treatment

In the absence of pharmacological options for assisting the user to maintain abstinence or reduce cocaine use, most prescribing is aimed at providing symptomatic relief. Cocaine and crack cocaine users who are undergoing treatment are often treated with medications, such as antidepressants,

benzodiazepines and antipsychotics, primarily to reduce the negative symptoms associated with cocaine abstinence or withdrawal, such as depression and anxiety. The development of agents that may actively assist the user to achieve or maintain abstinence is still at the experimental stage and work in this area is largely based on the dopamine hypothesis of cocaine's action (Dackis and O'Brien, 2001). Essentially, molecules are considered potential therapeutic agents when they either increase dopamine release, thus reducing withdrawal symptoms and cocaine craving (e.g. dopamine agonists, substitution treatment), or decrease dopaminergic activity (dopamine antagonists, gamma-aminobutyric acid-(GABA)ergic enhancers). Inhibiting dopaminergic activity when using cocaine should theoretically be associated with a reduction in the positive subjective effects of cocaine and thereby decrease the pleasure experienced when consuming the drug. Thus, baclofen, tiagabine and Topiramate have shown to mediate dopaminergic activity by increasing GABAergic transmission, which, through inhibitory mechanisms, results in a decrease in dopamine release. These three drugs have shown promising therapeutic potential in preclinical and controlled clinical trials.

Similarly, Modafinil, a medication that blunts cocaine euphoria under controlled conditions, has been reported to significantly reduce cocaine use compared to placebo controls in a double-blind controlled clinical trial in conjunction with CBT (Dackis et al., 2005). Some studies have also suggested that disulfiram, also known as Antabuse and well known for its therapeutic effects in alcoholism, may have positive effects in the treatment of cocaine dependence, especially in cocaine-dependent users with co-morbid alcohol problems.

A novel approach to cocaine treatment currently being tested uses the body's own immune system. A cocaine vaccine (TA-CD) is administered to cocaine users wanting to remain abstinent, which in simple terms can block the action of the drug. The immunotherapy is designed for the use of patients who are already dependent rather than as a prophylactic immunisation, which would aim to prevent dependency occurring by immunising the individual before they were exposed to the drug. Once administered, the TA-CD cocaine vaccine induces the production of cocaine antibodies, which bind to cocaine molecules in the bloodstream and thereby allow naturally occurring enzymes to convert the cocaine molecules into inactive molecules (Martell et al., 2005). By preventing cocaine molecules from reaching the brain, the vaccine blocks the euphoric effects of cocaine and thereby reduces its reinforcing properties and, theoretically, its continued use. The results of the initial clinical trials are encouraging when compared with other pharmacological strategies, and further studies are required to test the viability of the cocaine vaccine as a pharmacotherapy for cocaine dependence. This type of approach is unlikely to provide

a 'magic bullet' for treating cocaine problems but does appear to have promise and may provide a useful addition to the clinical options available in the future. Furthermore, although the development of effective pharmacological agents in this area is urgently required, a general lesson from the experience of treating other types of drug problem is that they are likely to be most effective if accompanied by appropriate psychosocial interventions and support.

### Psychosocial treatment

Cocaine is a potent reinforcing drug, and dependent cocaine users are characterised by a loss of control over their consumption, with damaging physical, mental and social consequences (Dackis and O'Brien, 2001). Therefore, the aim of psychosocial treatments is to support individuals in making changes in their substance-using behaviours and to address the individual's mental health problems. To date, among the interventions that have shown the most promising results in addressing these two issues in relation to cocaine dependence, and which will be the main focus of this section, are cognitive behavioural interventions that focus on the identification of cognitive and environmental factors controlling problem behaviour, and the development or rehearsal of skills required to achieve changes in that behaviour (Wanigaratne et al., 2005).

### Psychosocial cocaine treatment in Europe

Cognitive behavioural interventions were identified in a recent EMCDDA literature review of the treatment of cocaine dependence as having the most robust evidence base as an effective way of reducing and preventing future cocaine use (EMCDDA, 2007). However, it was also noted that most evaluations in this area have been conducted in the USA and research on this topic in Europe remains scarce; therefore, the extent to which these findings are directly transferable to the European treatment context is questionable. Nonetheless, CBT or similar cognitive behavioural approaches are widely offered in Europe, although professionals are usually not specifically trained to treat cocaine dependence (EMCDDA, 2007). CBT is based upon social learning principles and aims at helping patients to develop alternative behaviours at the expense of behaviours associated with cocaine use. Briefly, CBT consists in enhancing the patient's motivation to stop cocaine use; teaching skills to cope with high-risk situations in which patients are most likely to use cocaine; identifying and reducing habits associated with cocaine use and replacing them with longer-lasting rewarding activities; teaching users how to manage painful effects (e.g. cravings, depression); and helping patients to improve interpersonal functioning and enhance social supports (Rounsaville and Carroll, 1992). It is argued that an important advantage of CBT compared with other approaches, such as the

12-step programme or psychoanalytical therapy, is that it combines interventions on substance-related behaviours with interventions aimed at addressing associated mental health problems (e.g. depression, anxiety), which are often observed in cocaine and crack cocaine users undergoing treatment (Carroll et al., 1995).

Member States where prevalence levels of cocaine use are high are now working towards the development of effective interventions. This requires the development of programmes based on the existing evidence base and commissioning studies to evaluate their effectiveness. In addition, work is required to identify the needs of those with cocaine problems and ensure that services meet quality management standards. In Denmark, for example, the Copenhagen municipality has allocated funds to the development of a high-quality treatment programme that will implement a treatment model for substance dependence, including cocaine dependence, based on cognitive behavioural approaches (cognitive group and individual therapy and motivational interviewing). The project will be evaluated against specific quality targets. In addition, a series of pilot projects were recently conducted in Ireland to train professional counsellors working with cocaine users to deliver intensive CBT-based interventions (NACD, 2007).

In Germany, a series of services with specialised outpatient services, such as KOKON or the Seehaus-Projekt, offer interventions to problematic cocaine users within a two-phase approach, with the initial phase focusing on treating cocaine-related problems with a cognitive behavioural approach, while the second phase consists of a non-substance-specific phase of further consolidation through CBT. In Spain, where cocaine treatment demand is the highest in Europe, clinicians most frequently adopt a CBT-based approach, usually a relapse prevention model based on the work of Marlatt and Gordon, which involves cognitive restructuring, increasing the client's self-efficacy and learning problem-resolution skills. Prochaska and DiClemente's change process model, another CBT-based approach frequently used in Spain, matches treatment strategies with the patient's stage of motivation and readiness for change (Pedrero Pérez and Puerta Garcia, 2001). In Italy, a non-comparative study based on an outpatient cocaine treatment programme named 'Programma Conoscenza' involved a first phase of short motivational interviews, which was followed by a longer CBT-based intervention for an average of 9 to 14 months (Leopardi et al., 2006). Out of the initial 96 patients taking part in 'Programma Conoscenza', 68 adhered to the treatment, 6 were transferred to another service and 22 patients dropped out. Some 77 % of patients' urine samples were cocaine free at the end of the programme and 60 % of patients reported having significantly improved their cocaine problem.

Another form of behavioural intervention that has shown some evidence of effectiveness, in US studies, for cocaine dependence is the community reinforcement approach (CRA). CRA is a multifaceted behavioural treatment that includes a range of interventions, including family counselling, stress management, social skills training and job counselling (Peele and DeGrandpre, 1998). These specific types of counselling and skills training are tailored to the treatment goals of the client, with individuals having their own positive reinforcers in the community (e.g. social or family activities), which maintain their abstinent behaviour (NTA, 2002). In the Netherlands, a controlled trial of CRA for cocaine users (with or without heroin addiction and in or out of methadone maintenance treatment) is reported to be in its final phase. The study is currently testing the applicability and effectiveness of CRA combined with voucher incentives in the Dutch situation. The CRA is often, but not always, combined with contingency management (CM), an incentive-based approach (e.g. Higgins et al., 2003). Rewards are offered to patients contingent on cocaine-free urine samples or positive treatment behaviours (e.g. attendance) and relatively promising results have been reported from the USA, concerning both retention and abstinence rates (Higgins et al., 1993, 2003; Lewis and Petry, 2005). Rewards can be, for example, vouchers for acupuncture sessions or financial incentives. For example, Higgins et al. (1993, 2003) found an increased retention rate for combined therapy, compared with vouchers-only therapy and 12-step counselling in cocaine-dependent users. Moreover, incentives could be particularly relevant for more deprived substance-abusing populations such as crack cocaine users or opioid users co-abusing cocaine. Henskens (2004) conducted a randomised controlled trial of the effectiveness of a novel outreach treatment programme for severe crack cocaine users in the Netherlands and found that incentives (acupuncture sessions and walk-in services) and a positive relationship with care providers were directly associated with treatment retention.

### **Treatment of severe cocaine or crack cocaine dependence in marginalised populations**

The effectiveness of cognitive behavioural approaches in the treatment of drug dependence requires a certain degree of normal cognitive functioning and the willingness and ability to make drastic changes in one's lifestyle. This raises the question of how appropriate such approaches will be in addressing the needs of those with cocaine or crack cocaine problems who have a highly marginalised lifestyle, often with severe health, psychological and criminal problems. Henskens (2004) evaluated a novel crack cocaine outreach programme that was community based and consisted of assertive outreach and case management while putting

strong emphasis on the client–therapist relationship. Patients in the treatment group reported elevated levels of satisfaction with their treatment and showed significant improvements in physical health, general living conditions and psychiatric status compared with clients who received standard treatment.

In the United Kingdom, guidelines issued to professionals working with severe cocaine and crack cocaine users suggested that long-stay residential care (three months or more) would be appropriate for particularly needy clients, such as homeless crack cocaine users (NTA, 2002). The benefits of residential care for marginalised crack cocaine and cocaine users may lie in the temporary detachment from the highly detrimental environment that is often associated with crack cocaine use (e.g. violence and lack of healthcare). Thus, a recent evaluation of four UK specialist crack cocaine and stimulant drug treatment services revealed that crack cocaine clients in residential service complied with the treatment regime, reported benefits in terms of their self-rated health and motivation, and achieved abstinence during their admission (NTA, 2007). However, the same study also observed that drop-out rates were extremely high across all services (residential and outpatient), referral sources such as other drug services or criminal justice were negatively associated with treatment retention, and women could be put off engaging in treatment due to the lack of childcare within treatment settings and fear of retaliation from exploitative or coercive male partners.

In summary, despite the increasing number of cocaine treatment demands, specialised cocaine treatment provision remains scarce and many dependent cocaine users are being treated within outpatient facilities, which may be more focused on responding to the needs of clients with opioid problems. This situation may be beginning to change, particularly in those countries with significant cocaine-using populations. Although the evidence in this area is largely based on the US experience, EU Member States are gradually acknowledging the importance of conducting national and local research studies and evaluations. There is also a growing recognition of the need to develop treatment provision for the needs of a heterogeneous cocaine-using population. A consensus is growing that recognises the value of cognitive behavioural approaches for treating cocaine problems generally in outpatient settings with services that are attractive to their target population. There is also acknowledgement that, beyond this, the needs of chronic and marginalised cocaine users may differ, and this group may be particularly challenging for treatment services to engage with and require more intensive interventions, possibly including the option of residential care.

## Harm reduction

Cocaine and crack cocaine use is associated with a variety of high-risk behaviours with harmful consequences which differ according to the pattern of use, route of administration and social circumstances of the user. For example, recreational use of cocaine, which frequently occurs in nightlife settings, is associated with increased health risks such as acute physical problems (see 'Medical problems related to cocaine use', above), chronic psychological distress (e.g. depression, anger and impulsiveness) and infections through sharing of snorting equipment (snorting straws and banknotes) — although such risks are thought to be relatively low (Galperim et al., 2004; McMahon et al., 2004). Excessive cocaine use has also been reported to be indirectly associated with high-risk sexual behaviour (e.g. higher likelihood of unprotected sex, especially in combination with excessive alcohol consumption) (e.g. Castilla et al., 1999). In most European countries, advice and harm-reduction services offer information on the risks associated with drug use in general, usually including material on the risks associated with acute and chronic cocaine consumption. Advice may be offered through a number of different media, allowing users to understand the dangers of different behaviours and promoting strategies that would allow them to reduce the risks they face. For example, the European Foundation of Drug Helplines, which offers advice and information to drug users, reports an increase in the number of calls related to cocaine during recent years<sup>(52)</sup>. The Belgian Flemish telephone helpline DrugLijn reported that 17 % of contacts in 2004 concerned cocaine, compared with only 10 % in 2000, and 27 % of these contacts originated from users, 30 % from parents and the remainder from friends, partners, family members and others. Furthermore, compared with the total group of contacts, questions about cocaine originated more often from 25- to 35-year-olds (Evenepoel, 2005).

Studies have shown that high-risk sex behaviours that may lead to transmission of infectious diseases are often more common among severely dependent crack cocaine-using women. This group is highly marginalised and members may be engaging in sex work to pay for their compulsive and costly drug habit. The group has been targeted by outreach and harm-reduction services. For example, in the Netherlands, municipal health services have implemented special health programmes targeting crack cocaine-using sex workers, while in France, the association Espoir Goutte d'Or, which focuses on risk prevention and harm reduction for crack cocaine users, organises voluntary counselling on a weekly basis and rapid testing for HIV and hepatitis. It also

distributes condoms and disposable crack cocaine pipes, and provides information on safer drug use.

Furthermore, although injecting has become less popular among the drug-using population, a non-negligible proportion of cocaine users (nearly 10 % of clients in treatment<sup>(53)</sup>; De la Fuente et al., 2006) still choose this route of administration for their cocaine consumption, often in combination with heroin ('speedballing'). Consequently, most Member States provide cocaine-injecting users with the same services and facilities as those provided to opioid users, such as safe use recommendations, safe injecting training and needle exchange programmes. Cocaine users can also use supervised consumption rooms in Germany, Spain, Luxembourg and the Netherlands, but not in Norway. Furthermore, in the German cities of Hamburg and Frankfurt, inhalation rooms for crack cocaine smokers have been implemented to reduce the risks associated with consumption through inhalation. Finally, as mentioned earlier, severe cocaine and crack cocaine dependence is characterised by exaggerated compulsive consumption behaviour, and users continuously suffer from restlessness, extreme tension, paranoia and physical exhaustion. In response, the Ganslwirt outpatient service in Vienna provides a resting room where cocaine and crack cocaine users can relax in a calm environment, although they may not consume. The same service also provides safe use recommendations and can serve as a starting point for further interventions. Similar 'chill-out' rooms or daytime resting rooms are also provided in Barcelona, Hamburg and Frankfurt. For example, in Frankfurt and in Hamburg, special resting rooms with day-sleeping beds primarily for crack cocaine users are integrated within a low-threshold drug help centre, which also provides counselling, medical and psychiatric help, a consumption room and a shelter.

## Policies and strategies in response to cocaine use

Strategies and action plans targeting a specific substance are rare in the EU, where comprehensive approaches, sometimes covering both licit and illicit substances, are common. However, when a certain level of problems is observed or perceived, substance-specific strategies or plans can be developed, usually for a limited time. An example of such is the national crack plan (2002) in England (Home Office, 2002), which was followed a few years later by a crack cocaine strategy (2005–08) for London (GLADA, 2004). Both are responses to an increase in use and problems related to this substance and include extended measures to reduce crack cocaine trafficking and to help those who are using this drug.

<sup>(52)</sup> <http://www.fesat.org>

<sup>(53)</sup> See Table TDI-17 (part ii) and (part vi) in the 2007 statistical bulletin.

Another example is Ireland, where a report on cocaine use published by the National Advisory Committee on Drugs (2003) was followed by a set of specific recommendations and funding proposals developed by the Irish national drugs strategy team. More recently, an intersectoral crack cocaine strategy group is looking at ways to respond to crack cocaine-related problems in Dublin.

The Dutch action plan for drug trafficking at Schiphol airport, which was started in 2002, was developed to combat cocaine smuggling into the Netherlands and the EU. The two main elements of this plan are an intensification of passenger controls and a better implementation of judicial measures.

### Law enforcement activities targeting cocaine trafficking in Europe

At European level, Project COLA, run by Europol, targets Latin American and associated criminal groups operating towards and within the EU and engaged primarily in the trafficking of cocaine. It provides operational support to live investigations in participating Member States and enhances the strategic intelligence picture. It is complemented by the Europol Cocaine Logo System, which collates modus operandi, photographic and other information on cocaine seizures and on logos/markings on the drugs and their packaging, in order to identify matches between seizures and promote international law enforcement cooperation and information exchange (Europol, 2006).

At national level, it seems that most European countries have set up supply reduction activities that target illicit drugs in general, and specific measures against cocaine trafficking are therefore rare.

In Ireland, Operation Plaza was set up in 2006 by the Garda National Drugs Unit to respond to the sale and supply of cocaine and crack cocaine in inner-city Dublin; it enabled identification of the main players in both the Irish and immigrant communities involved in this criminality.

Portugal, which is one of the main entry points for cocaine coming into Europe, has been running widespread network investigations, notably by using key informants in strategic countries such as Brazil and Cape Verde; this has been complemented by seizures of assets (money and property) linked to cocaine trafficking.

As part of the 2002 action plan for drug trafficking at Schiphol airport, the Netherlands has set up 100 % control on flights from high-risk countries for cocaine importation, such as the Netherlands Antilles, Aruba, Suriname, Venezuela and the Dominican Republic. As a result, an average of 175 couriers were arrested each month in 2005 and 16 cases of organised crime were investigated at the airport during 2005 to mid-2006. A body scan is used to detect swallowed drugs. In addition, a special law court with prison facilities has been set up at the airport. Cocaine couriers who are caught but not prosecuted are named on a 'black list', which is then circulated to other countries and airlines, in particular through the Schengen information system, to stop them re-entering the Netherlands. In addition, preventative measures (controls, radar, body scans) have been implemented in departing countries. It seems likely that relaxation of 100 % control and the overseas controls at the Antilles would result in an increase in the inflow of couriers.

In the United Kingdom, as part of the national crack plan (2002), toolkits have been developed to enable the disruption of crack cocaine markets and distributed to the police, crime and disorder reduction partnerships, drug and alcohol action teams and other law enforcement agencies. In addition, Operation Crackdown, launched in 2005, targeted local class-A drug markets: during the three-month operation, police forces closed 170 crack houses, disrupted local drug markets, seized illegal firearms, charged drug suppliers and seized several million euros in cash assets.

### International action against the trafficking of potassium permanganate

The prevention of the diversion of potassium permanganate<sup>(54)</sup> from licit trade for use in the illicit manufacture of cocaine is now covered by the international 'Operation Cohesion'. Between November 2005 and October 2006, 20 exporting countries/territories provided 966 pre-export notifications to 113 importing countries/territories, involving 19 151 tonnes of potassium permanganate. In 2005, global potassium permanganate seizures were the largest ever reported to the International Narcotics Control Board (INCB), with 16 countries intercepting 183 tonnes. Of the 1.6 tonnes of permanganate potassium seized in Europe, Russia once more accounted for the highest quantity, followed by Romania and Bulgaria (INCB, 2007b).

<sup>(54)</sup> A precursor used in the manufacture of cocaine and scheduled under Table I of the 1988 convention.

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European Monitoring Centre for Drugs and Drug Addiction

**EMCDDA 2007 selected issue — Cocaine and crack cocaine: a growing public health issue**

Luxembourg: Office for Official Publications of the European Communities

2007 — 30 pp. — 21 x 29.7 cm

ISBN 978-92-9168-309-3



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