Drug epidemiology in the European institutions: historical background and key indicators

R. L. HARTNOLL

European Monitoring Centre for Drugs and Drug Addiction, Lisbon

ABSTRACT

The present article traces the evolution of drug epidemiology in Europe from the 1960s to the present within the context of changing perceptions of the drug phenomenon and changing information needs of policy makers. In particular, it focuses on how epidemiological indicators developed as part of emerging European political and institutional instruments and structures for responding to illegal drugs. It also notes the importance of wider international developments in drug epidemiology and of cooperation between networks of researchers.

Interest in epidemiology at the European level was first observed in the early 1970s with the creation of the Pompidou Group. Work on a variety of drug indicators accelerated in the 1980s following the establishment of an expert epidemiology group within the Pompidou Group of the Council of Europe. This foreshadowed the founding by the European Union of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) in 1993.

During the 1990s, EMCDDA, together with the member States, further developed five key epidemiological indicators of drug prevalence and health consequences in order to improve the quality and comparability of core data needed to describe and analyse the drug phenomenon at the European level. In the early 2000s, those indicators were adopted by member States, endorsed by the European Council and incorporated into the European Union Drugs Strategy and Action Plan 2000-2004. The goal is now to ensure implementation of those key indicators in member States as the basis for a European Union epidemiological information system on drugs. It is essential that the indicators are complemented by qualitative and quantitative research and context information in order to interpret the data correctly and provide answers that are relevant to policy needs.

Keywords: epidemiology; drug monitoring systems; indicators; Europe.

Drug epidemiology in Europe: historical roots

Drug epidemiology in Europe has a mixed ancestry, incorporating influences from a range of disciplines, not only classical epidemiology and public health

surveillance, but also clinical epidemiology, sociology, social psychology, demography, anthropology, criminology and economics. The evolution of this hybrid creature has occurred at different rates and through different actors in the various countries, so it is not surprising that the term "drug epidemiology" has often been understood in different ways.

The evolution of drug epidemiology also reflects aspects of drug taking that caused concern at various points, both at the national and, from the 1970s on, at the European level. The present article traces that evolutionary process in the context of changing perceptions of the drug phenomenon and the changing information needs of policy makers. It does not describe the situation in different countries nor review the broad range of epidemiological research. Rather, it gives an overview of how epidemiology, and in particular epidemiological indicators, have developed as part of the emergence of European political and institutional instruments and structures for responding to illegal drugs.

Early examples in European countries

The domestic consumption of drugs did not become a significant topic in Europe until the 1960s, though much earlier in the century specific issues had arisen in some countries, for example about cocaine or the treatment of opiate addiction. An early example where this led to a special monitoring system comes from the United Kingdom of Great Britain and Northern Ireland where the Home Office index of notified addicts was established in the mid-1930s and continued until the 1990s.

Generally, however, interest in epidemiological studies or systems to describe or track drug taking did not arise in Europe until the emergence of youth drug scenes in the 1960s and early 1970s provoked concern and stimulated a variety of investigations, principally, though not exclusively, in northern Europe, for example in France, Germany, the Netherlands, Scandinavia and the United Kingdom. These included studies of clinical records or hospital statistics, reports based on police or forensic data, studies of small groups of drug takers and surveys of local or sometimes national samples of adolescents or students. At the time, surveys mostly concerned cannabis, though amphetamines and lysergic acid diethylamide (LSD) were included. In Norway and Sweden, regular surveys have continued to the present day.

Studies based on clinical sources reflected two different populations—an older, predominantly female group of patients dependent on barbiturates, morphine or other drugs of medical origin and a smaller but growing group of younger, often male, clients who were consuming a variety of drugs, including opiates, amphetamines and/or cannabis in more peer-oriented, non-medical contexts. In a few countries, for example Sweden and the United Kingdom, amphetamines were the focus of investigations in the 1950s or early 1960s, before cannabis became an issue.

Several epidemiological studies of heroin were carried out in the late 1960s and early 1970s, in particular in the United Kingdom. A notable example was the

analysis by de Alarcón of the case-by-case spread of heroin addiction in an English town in the 1960s [1]. The first attempts to estimate prevalence also date from that period, based, for example, on nomination techniques and multipliers in the United Kingdom [2] and on case-finding and capture-recapture in Sweden [3]. There were also sociological studies describing drug taking groups or analysing the interactions between changing patterns of drug taking, societal perceptions and responses (see, for example, Plant [4] and Young [5]).

Developments in the European and international context

Changing patterns of drug use in the 1960s also stimulated interest in epidemiological research at the international level, at the United Nations and especially at the World Health Organization (WHO) (see Granier-Doyeux [6]). At the European level, the then French President Georges Pompidou made a proposal in August 1971 to strengthen European cooperation and coordination, including joint epidemiological studies. A ministerial conference of the six members of the European Economic Community (EEC) and the United Kingdom, held in Rome in October 1972, adopted a joint, multidisciplinary cooperation programme covering health, education and information, enforcement and legislation [7]. That programme, which became known as the Pompidou Group, included cooperation with interested non-EEC countries, for example Sweden. The Public Health Division of the Council of Europe also examined the need for epidemiological studies and produced a report on drug dependence in 19 European countries [8]. This was followed in 1973 by a resolution adopted by the Committee of Ministers of the Council of Europe that included a call for closer cooperation in exchanging information on drugs and related public health and social problems [9]. (Note that the Council of Europe is not the same as the European Council, which is the political decision-making body of the European Union (previously EEC); it is a longer-standing organization for European cooperation covering a larger number of European countries, East and West.)

The 1970s also saw important methodological developments in the United States of America and Canada that subsequently influenced European work on epidemiological surveys and drug indicators in the 1980s. These included reporting systems for drug-related emergencies and deaths, client-based treatment reporting systems, applications of law enforcement statistics and studies of drug market indicators, household surveys of the general population, school surveys, prevalence estimation methods, ethnographic and other qualitative approaches and statistical and dynamic models that integrated different indicators.

The Community Epidemiological Working Group (CEWG), based on regular reporting of drug trends from a network of cities, was developed as a complementary approach to national surveys and reporting systems [10]. Several European researchers attended its meetings, establishing important links that fed into the evolution of epidemiological indicators and information systems in Europe [11]. A series of epidemiological manuals produced by WHO in 1980 and 1981 also made an important contribution to the wider dissemination of these

methodologies [12-16]. There was also a study carried out for the Organisation for Economic Cooperation and Development in 1981 to examine potential epidemiological indicators in 14 countries, including Western Europe [17]. The conclusions included recommendations for developing standard instruments, but there did not appear to be any follow-up.

European developments in the 1980s

During the 1980s, the concept of drug indicators was developed and applied in Europe, both at the national level in some countries and at the European level. One national example was the Drug Indicators Project, based in London, which developed and tested a package of indicators for assessing the nature and extent of drug problems at the local level, combining indirect indicators such as treatment demand, deaths or market indicators, prevalence estimates, "snowball" sampling and ethnographic research [18, 19]. Similar ideas were being explored in other countries, such as France, Germany, Italy, the Netherlands and Sweden [20, 21]. During the 1980s, initiatives to develop indicators extended further, for example in Denmark, Greece and Ireland. Regular surveys of youth continued in Norway and Sweden and were introduced in Germany. From 1987, Spain set up a national reporting system based on three indicators to monitor heroin- and cocaine-treatment demand, non-fatal emergencies and drug-related deaths [22].

Alongside those developments, the 1980s saw a growing interest in methods for studying hidden populations and patterns of drug taking that were not reflected in health or criminal justice indicators nor adequately covered by population surveys. These included snowball studies of cocaine users or behavioural studies of risk behaviours and human immunodeficiency virus (HIV) infection among out-of-treatment drug injectors [23-27].

In some cases, the focus was on the national level, in others, local. In many cases, important elements in the process were the enthusiasm of a relatively small number of drug researchers, combined with a slowly emerging interest by national or local authorities in information on the emerging drug phenomenon. That interest arose from a growing awareness of changing patterns of drug taking in some countries, in particular heroin, and problems related to the acquired immunodeficiency syndrome (AIDS).

Pompidou Group

At the European level, the main developments in epidemiology in the 1980s took place through the Pompidou Group of the Council of Europe. (Although the Pompidou Group was set up as an intergovernmental cooperation group on drugs involving EEC countries, from 1980 it became a "partial agreement" attached to the Council of Europe.)

In December 1982, the Pompidou Group organized an expert meeting in Strasbourg on the development of administrative monitoring systems for the assessment of public health and social problems related to drug abuse. This led to

an expert epidemiology group that met regularly and laid the basis for a two-track approach, one focusing on school surveys, the other on a multi-city study of drug indicators. The school survey group developed an instrument that was tested in six countries. However, the instrument itself was not applied at the European level until 1995.

The multi-city study developed a framework for using multiple indicators to describe and compare the drug situation at the city level. The emphasis was on interpreting indicators as a package within the local context so that cities could be compared on the basis of an understanding of what the indicators signified in each city. It was felt that it was much harder to achieve such an understanding at the national level, not only because the drug situation varied between different localities, but also because it was difficult to evaluate the significance of indicators at the national level. This is a fundamental, but often overlooked, point: regardless of whether indicators are standardized or not, it is only possible to make sense of them, to make comparisons and to draw conclusions if statistical data are combined with other, often more qualitative research as well as with broader information on context, including societal attitudes and responses. Initially, the study involved 7 cities [28], subsequently expanding to 13 [29] and then to over 20 [30].

Apart from regular collection and synthesis of city data from the early 1980s through to the present day [31], the main achievements of the Pompidou expert epidemiology group were a model for routine collection and analysis of multiple indicators; a standard protocol for the first treatment demand indicator; a standard instrument for school surveys; a review of methods for estimating the prevalence of problem drug use; a manual on snowball sampling methodology; and feasibility studies of indicators of drug-related deaths, non-fatal emergencies, police arrests, heroin seizures, price-purity of illicit drugs and general population surveys. A Pompidou Group training programme in drug epidemiology in the early 1990s helped disseminate the methodology to countries of Central and Eastern Europe and subsequently led to extension of the multi-city network [32], including a city network in the Russian Federation.

As at the national level, the vector for many of these developments was a relatively small group of drug researchers from various European countries and links with North American researchers, in particular from the National Institute on Drug Abuse (NIDA) and CEWG. The work in the Pompidou Group also foreshadowed the creation of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA).

The European Monitoring Centre for Drugs and Drug Addiction

EMCDDA was formally established as an agency of the European Community in February 1993 through the adoption of Council regulation (EEC) No. 302/93 [33]. The founding regulation came into force on 30 October 1993, following a European Council decision that the agency should be based in Lisbon and the Centre became fully operational in 1995.

The emergence of the Centre

The concept of a European drug monitoring centre arose out of growing recognition of the European dimensions of the drug phenomenon and of the need to improve not only cooperation between member States, but also coordination of actions at the European level. This implied developing institutional instruments and competencies of the European Community. Although the Pompidou Group already existed as an intergovernmental cooperation group, it had no competencies under the Treaty of Rome.

During the first half of the 1980s, the European Parliament took the initiative at the political level, culminating in the first report to address the drug issue in the European Community, based on a 1985 commission of inquiry [34]. Among other things, the report identified the need for comparable data and coordinated research at the European level as a basis for effective and coordinated actions.

From about 1984, the European Commission took several steps concerning drugs, in particular identifying addiction as a priority and proposing Community action on prevention and health. Over the second half of the 1980s, the topic started to receive attention at the highest political level of successive European Councils.

During the 1980s, a number of activities supported by the European Commission started in the area of epidemiology. One was a concerted research action between member States on the standardization of epidemiological surveillance of illicit drugs (the EUROSID project) funded by the Committee on Medical and Public Health Research of the Directorate-General for Science, Research and Development. The Directorate for Public Health also supported various activities, including a steering group on cocaine and other drugs, which organized scientific projects and meetings on topics such as snowball sampling, indirect indicators or cocaine epidemiology. However, at that time there was no institutional framework that could enable such scientific activities to be transposed into European instruments.

In 1989, French President François Mitterand proposed to the member States and the Commission an action plan on drugs based on an instrument of political coordination involving member States and the European Community. A drug monitoring centre was a key element of the concept.

Following President Mitterand's initiative, an ad hoc political group, the European Committee to Combat Drugs, was set up in December 1989, composed of national drug coordinators. The Committee drew up the first European plan on drugs, adopted by the Council of Ministers in December 1990. Successive European Councils added momentum to those initiatives, including a decision in June 1991 to establish a European drug monitoring centre. The early 1990s also saw the first and second reports on drug demand reduction in the European Community and increasing political commitment to health indicators and networks to provide comparable and reliable information for public health policies and responses [35].

In 1993, the Maastricht Treaty on European Union came into force and established for the first time a clear institutional competence in the field of drugs,

especially in public health [36]. This was further strengthened by the Treaty of Amsterdam, which came into force in 1999.

Objectives of the European Monitoring Centre for Drugs and Drug Addiction and the need for key indicators

EMCDDA thus reflects both the evolution of the European political and institutional context and the development of scientific methodologies and networks, especially in the field of epidemiology. This can be seen in the objective set out in the Centre's founding regulation:

> "To provide objective, reliable and comparable information at European level concerning drugs, drug addiction and their consequences [in order to] help provide the Community and the Member States with an overall view of the drug and drug addiction situation when, in their respective areas of competence, they take measures or decide on action."

The first task of the Centre is to collect and analyse existing data and ensure wide dissemination, including a yearly report on the state of the drug problem in the European Union [37]. However, achieving a reliable overview at the European level meant improving the comparability and quality of data across 15 member States (now 16 countries, since Norway joined EMCDDA in 2001, and soon to rise to 28, as European Union accession countries can join the Centre from the beginning of 2003). This is the second central task of EMCDDA. Thus the founding regulation requires the Centre:

> "To ensure improved comparability, objectivity and reliability of data at European level by establishing indicators and common criteria of a non-binding nature, compliance with which may be recommended by the Centre, with a view to greater uniformity of the measurement methods used by the Member States and the Community."

Under the same heading of improving data comparison methods, the Centre is called on to facilitate and structure exchange of information, in terms of both quality and quantity (databases).

Behind this formal, institutional requirement to develop indicators at the European level lies the need for good quality, consistent and comparable data as raw material for an evidence-based public health approach to describing, analysing and responding to drug-related problems. While the process of developing and implementing indicators involves time-consuming technical, administrative and institutional elements at the national and the European levels, the fundamental purpose is to provide data to compare between and within countries, to track trends consistently over time and, above all, to help analyse and understand the drug phenomenon and the possible impact of policies and responses. Epidemiology is an applied public health science, even when embedded in a political and institutional framework.

Key epidemiological indicators

Development of five key epidemiological indicators

Since the Centre became operational in 1995, it has collected existing core data from the member States using standard statistical tables covering prevalence, health, law enforcement and market indicators. The data are collected through the Reitox network of national focal points. Each member State nominates one centre to act as the Centre's key partner for collecting and reporting the best available national data to the Centre. National focal points are also responsible for ensuring data quality and for assisting EMCDDA by facilitating the implementation of European Union standards for data collection and reporting in each member State.

It quickly became apparent that, not only did data availability vary between countries, but that major differences existed in definitions, methods, sources, coverage and quality. This made comparison and analysis very difficult. It was not practical to work on the whole range of indicators at once, so five areas covering prevalence and health consequences were selected as priorities for harmonization and improvement in data quality. These five areas, the so-called five key epidemiological indicators [38], are:

1. Extent and patterns of drug use in the general population (household surveys of the general population aged 15-64 years).
2. Prevalence and patterns of problem drug use (statistical estimates of prevalence and incidence in population aged 15-64 years).
3. Demand for treatment by drug users (statistics from anonymous, case-based reporting systems on number and profile of clients starting treatment at drug treatment centres).
4. Drug-related deaths and mortality of drug users (statistics on acute or drug-induced deaths from general population mortality registers and special registers; all-cause mortality among cohorts of drug users).
5. Drug-related infectious diseases (prevalence and incidence rates of HIV and hepatitis B and C in injecting drug users).

Drug use among the school age population (school surveys) was not included since the Pompidou Group had developed a standard instrument that was implemented through the European School Survey Project on Alcohol and Other Drugs, coordinated by the Swedish Council for Information on Alcohol and Other Drugs in 26 European countries in 1995 [39] and in 30 countries in 1999 [40]. (The next survey is planned for 2003.)

Non-fatal drug-related emergencies were not included in pilot studies, as the Pompidou Group suggested that this was not feasible in many countries. In addition to the school survey instrument, two of the EMCDDA key indicators drew extensively on work in the Pompidou Group—the treatment demand indicator, which is a joint EMCDDA-Pompidou Group protocol [41], and the prevalence of problem drug use indicator, which developed from a joint EMCDDA-Pompidou Group seminar and publication [42].

From 1995 to 2001, priority was given to methodological development, piloting and field testing of instruments and guidelines for the five key indicators. This built on work in the Pompidou Group and national examples of good practice, taking account of existing protocols (for example, the Statistical Office of the European Union (Eurostat), WHO and NIDA). Initially, work was carried out with contractors and scientific experts from countries with experience of particular indicators. This was then extended to involve all member States and work to facilitate the development and implementation of the five key indicators at the national level became a contractual core task for national focal points in October 1998.

To support the process of harmonization and to ensure coherence in implementation between different member States, European Union expert groups involving all national focal points were established for each key indicator. These groups hold annual meetings and in most cases have a small steering group that helps prepare the annual meetings. In parallel to these European Union-level groups, national focal points are responsible for establishing national work groups of key actors and experts for each key indicator to ensure coordination of efforts in each member State.

Role of key indicators in European Union policy

In 2000, the results of the pilot studies and expert groups were put together into a set of draft technical tools and guidelines for each indicator. These give definitions, recommended core data sets and methodological guidelines for data collection and reporting. They were approved by the EMCDDA Scientific Committee and presented to the Management Board of the Centre in January 2001. In September 2001, the technical tools and guidelines were adopted unanimously by the Board, which includes all 15 member States, the European Commission and the European Parliament, as formal, though legally non-binding, recommendations to the member States for harmonized data collection and reporting.

Development of the five key indicators by EMCDDA took place against the wider political context of adoption by the European Union in December 1999 of a European Union Drugs Strategy for 2000-2004. This established a general framework covering principles, objectives and main lines of action and set out six broad targets, including reducing prevalence and incidence, reducing drug-related health damage (deaths and infectious diseases) and increasing successful treatment. It underlined that the strategy had to be based on a regular assessment of the nature and magnitude of the drug phenomenon and its consequences [43].

The Drugs Strategy was followed by the European Union Action Plan on Drugs 2000-2004 [44], adopted by heads of State at the European Council in Santa Maria da Feira, Portugal, in June 2000. The conclusions of the European Council stressed [45]:

> "The European Council . . . endorses the EU Action Plan on Drugs as a crucial instrument for transposing the EU Drugs Strategy into concrete actions . . . Member States, in cooperation with the EMCDDA, are urged to

enhance their efforts to provide reliable and comparable information on the key epidemiological indicators in order to better evaluate the impact of drug-related issues."

Under the Action Plan, EMCDDA defines the indicators, collects and analyses the information at the European level and reports annually to the Horizontal Working Group on Drugs in the Council on convergence, progress and problems. The role of member States is, according to technical tools and guidelines provided by EMCDDA, to give reliable information on the five key epidemiological indicators in a comparable form drawn up by EMCDDA and adopted by the Council.

In December 2001, the Council adopted a resolution on implementation of the five key indicators, urging member States to give priority to producing comparable data and ensuring support for national focal points. It also invited member States and the European Commission to examine the best ways and means, especially financial, to support implementation of the five key indicators within the framework of European Union public health indicators and to take appropriate steps [46].

EMCDDA is now discussing this with the Commission, in particular the services responsible for the Public Health Programme (Sanco) and the Statistical Office of the European Communities (Eurostat). The goal is to ensure that the varied and specific information needs of bodies responsible for drug issues at the European and national levels are met, while ensuring that simpler, more aggregated data are available for global European health and statistical indicators.

Current status and perspectives

Although the legal status of the five key indicators is still under discussion, it is clear that not only is there broad consensus on their relevance at the scientific and technical level, but also a strong mandate at the political and institutional level for implementing them as the basis of a European Union epidemiological information system on drugs. Furthermore, despite obstacles, many member States have taken important steps towards implementing the recommended guidelines.

Compared with 1995, when the Centre opened, the number of countries which can deliver data mostly or fully complying with EMCDDA guidelines has increased substantially. In 1995, only seven countries could provide national data on lifetime prevalence in the general population and only five for last 12 months' prevalence. By 2002, 12 countries could provide both. Similarly, countries with national prevalence estimates for problem drug use increased from 5 in 1995 to 14 in 2002. While all countries could provide national data on drug-related deaths in 1995, major differences existed in definitions and methodology. By 2002, although problems of comparability remained, 11 countries could provide data on acute (drug-induced) deaths according to the guidelines and others were expected to be able to do so in the near future. Progress is slower in establishing compatible treatment

reporting systems, in part because responsibility for treatment is often local rather than national. However, clear advances have been made and nine countries now have largely compatible reporting systems for the treatment demand indicator. Similarly, there is progress in obtaining national data on HIV and hepatitis C infection in injecting drug users, though this, too, is slower because good quality data are usually available through local studies rather than national surveillance systems.

There are, of course, important challenges ahead. One is to ensure long-term stability of data collection and reporting mechanisms by institutionalizing the indicators in all member States and subsequently all candidate countries. Even in countries that currently meet EMCDDA guidelines, the future is not always assured. Problems arise from uncertainty over political and administrative commitment by the competent authorities, especially when financial investment is needed to establish or fundamentally change national information systems. This may be compounded by a lack of coordination between ministries responsible for drug matters and those responsible for the information systems concerned. As noted above, decentralization is an important factor in some countries, not only because there may be conflicts between central and local authorities over who pays, but also because local actors may not see the point of collecting data for purposes of international comparison. Motivating local actors is essential for establishing national information systems and dissemination and feedback of information are vital. Finally, data protection is becoming increasingly important in many European countries. Active efforts must be made to implement information systems that are seen to be justified in terms of value for public health and trustworthy in terms of fully respecting privacy and human rights.

The role of the national focal points is to facilitate the implementation of the indicators by other national agencies. Since they do not usually have the legal or administrative competence themselves, they must rely on support not only from national authorities responsible for drug matters, but also from other departments and institutions. This places a high responsibility on national focal points to engage and motivate a broad range of partners and to ensure feedback and dissemination through a diversity of national networks. The European Union Drugs Strategy, the Action Plan, the European Council and the Council resolution all urge member States to give adequate political and financial support to their national focal points.

At EMCDDA, implementation of the key indicators means improving systems for electronic data transmission from all member States and candidate countries and establishing more powerful data management tools and relational databases for handling, analysing and disseminating substantial amounts of data. Linked to this is the question of data quality. This must be approached both collectively, by ensuring consistency in how indicators are implemented and reported by member States, and bilaterally, by identifying particular problems and seeking solutions. Now that the indicators have been agreed upon and adopted, a high priority is to establish concrete and viable quality criteria and quality assurance mechanisms in the member States.

Limitations of indicators: the importance of interpretation

Routine, harmonized indicators are useful for making basic comparisons between countries or other geographical units and for tracking broad trends over time. They also provide standardized data that are valuable for other purposes, for example estimating incidence, social costs or burden of health or analysing socio-demographic distribution or patterns of diffusion. However, they also have limitations.

All indicators described above are time-lagged, that is, they reflect the drug situation as it was two years earlier. One reason is the process—it takes time to collect, validate, analyse and report data, especially at the national level. Some indicators, such as treatment demand, are inherently lagged, since clients go for treatment only some time after they started taking drugs. Nor are national indicators sensitive to new or changing patterns of drug use that commonly emerge at the local level. Further, indicators from health or criminal justice sources reflect the priorities and responses of medical or law enforcement agencies, as well as drug trends.

Interpreting indicators must take account of these constraints and bring in information from other complementary approaches. These include "early warning" systems to identify and track emerging phenomena, "triangulation" techniques to cross-check consistency between different indicators, dynamic models to help analyse processes or simulate scenarios and more targeted research studies, qualitative as well as quantitative, to analyse and understand specific questions in more depth. It is vital to interpret indicators in the wider social context, including cultural differences, societal attitudes to drugs and legal and other responses.

A set of indicators can be seen as providing a framework that enables a bare skeleton of the drug phenomenon to be reconstructed, compared and tracked. Questions of "Why?" and "How?" and what data mean for policy can only be answered through careful interpretation and by fleshing out the skeleton with scientific research and contextual information.

Finally, drug phenomena, policy environments, information needs, scientific methods and information technologies constantly change. Implementing information systems and carrying forward research thus involve a continual process of development and innovation. This, in turn, requires long-term commitment to a coherent framework both for funding and for facilitating continuity of institutions, individuals and networks.

The broader context: research and international cooperation

Qualitative and quantitative research

In parallel to indicators, multidisciplinary epidemiological research, both qualitative and quantitative, is vital. In the area of qualitative research, EMCDDA has organized conferences, thematic work groups and literature reviews that resulted in several publications [47-49] and a web site, Qualitative European Drug

Research, giving access to databases on qualitative research projects, researchers and publications [50]. Apart from the instrumental utility of tools for information collection and exchange, a key goal is to raise awareness of the value of qualitative research, for example in making sense of statistics or providing insight into "Why?" and "How?"

Reviews and conferences have also examined the potential utility of statistical and dynamic modelling [51, 52] and EMCDDA has promoted, with funding from the European Commission Research Directorate under the Targeted Socio-economic Research programme, a European network of modellers to develop policy-relevant models and socio-economic analyses, including incidence and time trends, applications of geographical information systems (GIS) and analysis of social costs and cost-effectiveness, in particular concerning hepatitis C [53]. An important limitation at present is data availability and quality, especially for models requiring consistent time series or more disaggregated data. As data improve, modelling should offer exciting possibilities for simulating and analysing different policy scenarios.

More limited attention has been paid to the supply side and to criminal justice system indicators, though existing data have been collected since the Centre began. Work has recently started to review available research and develop indicators of drug-related crime, availability of drugs and drug-related social exclusion. Preliminary work has also begun both at the Centre and in some member States to describe and estimate the characteristics and dimensions of drug markets and drug flows, with a view to assessing their impact and the potential effect of interventions [54, 55].

The final area concerns emerging trends and "early warning". Initially, the focus was synthetic drugs, notably methylenedioxymethamphetamine (MDMA, or Ecstasy), which became popular throughout the European Union in the 1990s [56]. A variety of studies and conferences on the techno scene and nightlife have taken place [57]. A specific legal instrument, a Joint Action on information exchange, risk assessment and control of new synthetic drugs, was adopted by the Council of the European Union in 1997 and four substances have been assessed under the auspices of the EMCDDA Scientific Committee—*N*-methyl-1-(1.3-benzodioxol-5-yl)-2-butamine (MBDB), 4-methylthioamphetamine(4-MTA), ketamine and gamma-hydroxybutyric acid (GHB) [58]. From an epidemiological perspective, attention at EMCDDA has been directed towards developing a broader model for understanding and, if possible, forecasting changing patterns of drug consumption within the wider context of social and cultural trends in youth based, for example, on analysis of youth media or perceptions of drugs and risks among young people [59].

European research and networks

Various reviews of epidemiological research on drugs in Europe were conducted in the 1980s and 1990s [60-64]. In addition to the EMCDDA annual reports, several reports cover data collection and drug trends in Europe, for example, by those

of the WHO Regional Office for Europe [65, 66], updates of the Pompidou Group multi-city study mentioned earlier, or the report based on the COST-A6 project on Evaluation of Action Against Drugs in Europe, funded by the European Commission Research Directorate [67]. Other research networks that also cover drug epidemiology include the European Society for Social Research on Drugs [68], the Kettil Bruun Society for Social and Epidemiological Research on Alcohol [69] and IREFREA [70].

At the European Commission, the 5th Framework Programme (1998-2002) of the General Directorate for Research for the first time included specific references to drugs under public health, but it was not easy to link research needs identified by EMCDDA and its partners to the process of application and selection of projects. The 6th Framework Programme (2002–2006) seeks to consolidate European research in priority areas through support for research networks and major research programmes, but the challenge remains to link research agendas in the drug field to decision-making processes on research funding in the Commission.

A final comment on research: research on illegal drugs has often been carried out separately from research on alcohol, tobacco or psychoactive medicines. In several member States, there are clear moves towards integrating all substances under one policy umbrella. If this trend continues and extends to the European level, then it is likely that information needs at the national and European levels will broaden too.

International connections

The development of drug epidemiology and drug indicators in Europe over the past 20 years has taken place in the context of increasing cooperation between regional and international organizations. As noted earlier, long-standing links between individuals made important contributions to this process. These international connections have been facilitated by the International Epidemiology Work Group, which has been an especially valuable mechanism for information exchange between researchers, international organizations and regional or subregional drug epidemiological networks. For example, a meeting of key international organizations and regional epidemiology networks held at EMCDDA and supported by the United Nations International Drug Control Programme in January 2000 led to the consensus reached by technical experts at a meeting held in Lisbon in January 2000 [71], which gives a framework for improving the comparability and value of indicators at the international level.

More specific examples of cooperation include the revision of the annual reports questionnaire [72] by the United Nations International Drug Control Programme, in close collaboration with EMCDDA and the Inter-American Drug Abuse Control Commission (CICAD), or cooperation between EMCDDA and WHO on drug-related deaths and guidelines for the tenth revision of the International Classification of Diseases (ICD–10) (together with Eurostat). In the field of AIDS and other infectious diseases, EMCDDA is an active participant in the Global Research Network on HIV Prevention in Drug-Using Populations, as well as

contributing to international harm reduction conferences and international AIDS conferences. Cooperation between EMCDDA and the Pompidou Group continues, especially on the treatment demand indicator.

While the focus of the present article is on Europe, and mainly Western Europe, the evolution of drug epidemiology in Europe is part of wider developments occurring in the international arena. Cooperation and information exchange may be time-consuming, but they are essential for cross-fertilization of ideas and stimulation of innovation.

Conclusions

Substantial developments in drug epidemiology have taken place over the past 20 years in Europe, especially in terms of indicators, methodology, comparability, implementation in member States and synthesis and analysis at the European level. Six major factors can be described that have influenced that process.

One factor was the evolution within the European Union of competencies in the field of drugs, together with a second factor, the rising political priority of drugs across the areas of public health, public security (justice and home affairs) and external relations. A third element, following from the first two, was a clear demand from the various European institutions, as well as member States, for information and evidence for policy-making and decisions. A fourth factor was the creation of instruments such as the Pompidou Group and then EMCDDA and its national counterparts to meet those information needs. A fifth factor was the existence, alongside the institutional developments, of long-standing and interlinked human networks of drug researchers and the possibilities to channel that scientific knowledge into the institutional process. The final factor was the wider influence of international connections and the exchange of knowledge and experience.

The progress achieved over the past 20 years in drug epidemiology in Europe does not mean that all the problems of distance between science and policy have been solved. But it is at least a start.

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