11

A Common Language for a Common Problem: The Developing Role of Drug Epidemiology in a Global Context

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1. INTRODUCTION—TOWARDS A SHARED AGENDA

Each year, at the annual meeting of the United Nations' Commission on Narcotic Drugs (CND), a report is made on the global situation based on information submitted by member states following an agreed upon reporting protocol. Many aspects of the report are derived from data supplied by drug abuse epidemiology networks—or from drug information systems that include epidemiological elements. Not all countries supply information and for those that do the quality and comparability of what is supplied vary considerably. Nonetheless, this reporting process leads to a number of conclusions that would not have been evident even as short a time as a decade ago. The first of these is that the drug problem is now global in its nature. Many countries face a social phenomenon that, in some aspects at least, cuts across both national and cultural boundaries. For both developed and developing nations drug use is now recognized as an important issue for domestic as well as international policy. Historically this was not the case, the international debate more often reflected a polarization between a group of developing countries that produced drugs and a group of develop countries in which they were consumed.

The global nature of today's drug problem is clear from data reported by the United National Office on Drugs and Crime (UNODC), (World Drug Report 2004) based in part on the annual reporting exercise mentioned above (See Figure 1). In estimates of the annual consumption of cannabis, cocaine, and heroin it can be noted that in terms of the actual numbers of individual users the estimate for cocaine is highest for North America. Although in general estimates of rates of last year prevalence for the adult population of North America and Europe still tend to be somewhat higher than elsewhere in terms of the absolute number of individuals consuming illicit drugs, most are now living in the developing or transitional world. Furthermore, for a combination of reasons including globalization, urbanization, and demographic dynamics, drug use in the future is likely to become increasingly more common in developing countries. One simple example of this can be seen in an inspection of population age distribution data. In Figure 2, population pyramids are given for the United States (USA), Pakistan, Kazakhstan, and the United Kingdom (UK). It can be noted that the total number of

Region	Heroin		Cocaine		Cannabis	
	Number in millions	% of adult population	Number in millions	% of adult population	Number in millions	% of adult population
Africa	0.8	0.17	0,94	0.21	34.60	7.7
Americas	1.42	0.26	8.70	1.57	34.9	6.3
N. America	1.24	0.45	6.38	2.30	28.5	10.3
S. America	0.18	0.07	2.32	0.84	6.5	2.4
Asia	4.13	0.17	0.15	0.01	44.7	1.9
Europe	2.75	0.51	3.34	0.62	28.8	5.3
W. Europe	1.27	0.41	3.11	1.01	20.4	6.7
E. Europe	1.48		0.23	0.10	8.4	3.6
Oceania	0.06	0.3	0.21	1.05	3.40	16.4
Global	9.16	0.23	13.34	0.34	146.3	3.7

Source: World Drug Report 2004 V1. Analysis, UNODC, 2004, United Nations Publication ISBN 92-1-148185-6

Figure 1. Global estimates of annual prevalence of Heroin, Cocaine and Cannabis.

those less than 15 years of age is similar in Pakistan and the USA, despite the fact that in overall population terms the USA is a far larger country. Drug problems tend to disproportionately impact on the urban young, and tend to be made more acute with the existence of other social difficulties and during periods of rapid social change. All these factors suggest that it is the developing, rather than the developed world that will disproportionately experience the drug epidemics of the future.

A caveat here is that this generalization ignores the fact that some developing countries had an historic concern about certain forms of domestic drug consumption. For example, a number of developing countries were active in ensuring the inclusion of cannabis in the drug control measures while the chewing of the psychoactive stimulant shoots of the Khat plant has long been a concern in Middle Eastern and some African countries and still effects migrant and refugee communities today (Griffiths et al., 1997). But historically, for most developing countries faced with a range of pressing health and social difficulties, drug use was rarely placed particularly high on their domestic agenda of concern. If it was recognized as an issue at all, the focus was more likely to be concern with the acculturated use of drugs by specific sub-cultural, indigenous, or ethnic sub-groups, rather than on the counter-culture of drug use by young people that characterized the drug problem from the 1960s onwards, in North America, Western Europe, and Australia. To a significant extent this now has changed and what was once characterized as the American disease (Musto, 1973) could perhaps now be better described as a global epidemic, or at least a social phenomenon to which few countries appear immune.

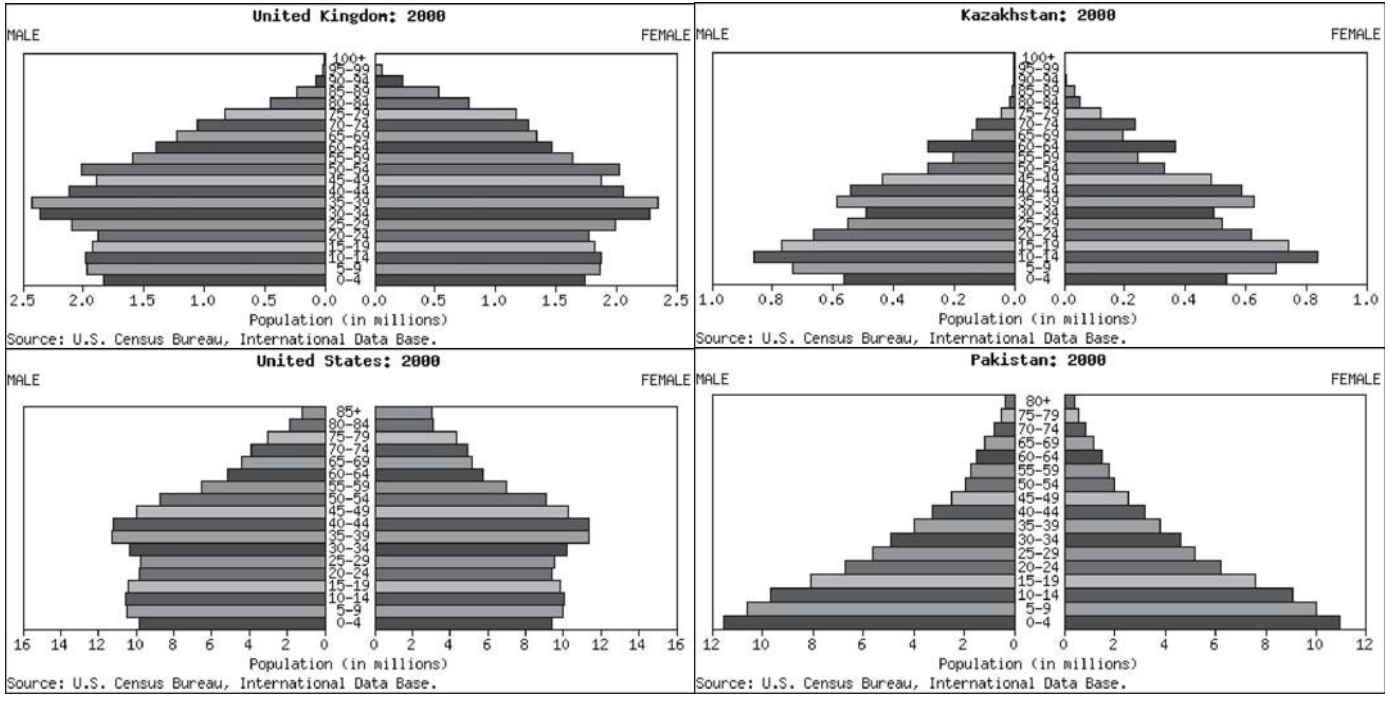


Figure 2. Differences in age distributions.

2. BUILDING AN EVIDENCE-BASED RESPONSE—THE ROLE OF DRUG EPIDEMIOLOGY

This globalization of drug problems is reflected in the adoption of a set of common principles for a coordinated international community response. These principles can be summarized as: 1) support for the international drug control conventions, 2) commitment to a balanced approach that combines both demand and supply side elements, and 3) commitment to evidence-based policy making, reporting, and evaluation. The extent to which these internationally agreed-upon principles are reflected in the policies implemented by member states has varied. The drug control conventions are not without their critics and there are considerable differences evident in the way that they are interpreted within domestic policies and actions. While international agreement exists on the need for demand side measures, in practice for many countries they remain woefully underdeveloped or are even opposed. The support for evidence-based policy making while grounded on a sound understanding of the situation and using common and comparable methods is almost universally endorsed, but as some critical voices have noted (Fazey, 2002), information in this area is often highly politicized and often poorly reflects reality. In fact, the authoritative estimates given in Figure 1 are a little misleading as in some respects they are better described as "guesstimates" rather than as empirically based statistics. Nonetheless they are illustrative of a sincere attempt to quantify the drug situation even if the commitments to this endeavor of individual governments may vary. The result of this process has been that the necessary political support has been provided for the establishment and development of drug epidemiological systems around the world. Such support has sometimes faltered and at the international level it has often been a case of two-steps forward followed by one step back. However, despite this tentative movement, progress has been made and some commonalities are observable in both the activities undertaken and the structures that have been developed to support them.

3. DRUG CONTROL AND PUBLIC HEALTH: TWIN ENGINES FOR THE DEVELOPMENT OF DRUG EPIDEMIOLOGICAL ACTIVITIES

Many of today's activities with respect to the epidemiology of drug use have a strong public health perspective. However, historically an equally important, and arguably at times the predominant engine behind the development of information systems on drug use, has been the various national and international acts and agreements designed to prohibit the consumption of psychoactive substances. Indeed it was the need to monitor the impact of drug control measures in the USA that first

generated the interest for epidemiological inquiry to establish the 'true' scale of the problem (Musto and Sloboda, 2003).

Drug control policies had developed in America following concern around the health impact of the use of cocaine and opium products and a growing public recognition of the dangers of addiction and 'moral deterioration' that these products could cause. Despite some opposition from the pharmaceutical industry, the Harrison Act of 1914 placed control on the distribution of narcotics (Musto, 1973). International control policies were also developing at this time with the first international treaty to control trafficking in opiates and cocaine being formulated in The Hague in 1912. Today drug control is regulated at the global level by series of United Nations conventions and within these are obligations for assessment and reporting that provide a concrete rationale for drug epidemiological activities.

3.1. International Conventions on Narcotics Control and Global Reporting Obligations

International control of narcotic substances was first implemented through the United Nations in 1961, under the Single Convention on Narcotic Drugs (United Nations, 1961), this convention was later amended in 1971 to include psychotropic substances (e.g., amphetamine-type stimulants), and later fortified in 1988 (Bayer and Ghodse, 1999; United Nations, 1961; 1971; 1981; 1991; 1993) to include controls on precursor chemicals for synthetic drugs.

The international conventions have generated awareness on the need to understand the drug problem and have stimulated a more concerted effort to monitor trends in drug use in order to facilitate more effective drug control strategies. Although activities are driven in part by the need to monitor progress toward meeting obligations under drug control conventions, an increasingly important argument for many member states has been the need to understand and circumvent public health consequences of drug use, particularly those related to infectious diseases. These twin objectives have since been united in the 1998, UNGASS—Political Declaration of United Nations Member States (United Nations 1998) stating that drug control should reflect a balanced approach between controlling drug supply and reducing demand for illicit drugs. This declaration also recommended that responses to the drug situation be based on "*a regular assessment of the nature and magnitude of drug use and abuse and drug-related problems in the population*" and set targets for member states to work towards.

Reporting obligations to the United Nations conventions are implemented through the Annual Reports Questionnaire (ARQ) which contains three parts. Part I addresses information on the adherence to the conventions and legal measures; Part II describes the extent and nature of the problem, and Part III collects information on interdiction measures (such as drug seizures). Part II can be thought

of as basically containing epidemiological data on drug use and was recently revised to reflect a consensus on what constituted good practice in reporting this kind of information at a global level. A second global instrument is the Biennial Reports Questionnaire used to collect information relevant to the assessment of progress made in respect of the UNGASS targets.

3.2. Elements of Drug Monitoring—Indicators and Methods

As the initial development of drug abuse epidemiology was driven by the need to monitor the impact of control activities, prevalence was clearly a key question. Indeed the drug debate has always been characterized by arguments about the scale of the problem. In the USA inflated estimates of the number of drug abusers were made by proponents of the Harrison Act to circumvent amendments to the legislation designed to allow opioid maintenance therapy. Similarly, evidence exists to suggest that later American estimates appear to reflect political concerns or needs rather than directly representing the scale of the problem. In response to this problem, and following the dramatic rise in drug use in the 1960s, the Comprehensive Drug Abuse and Control Act of 1970 included the commissioning of an informed and independent evaluation of the drug problem through the 'National Commission on Marihuana and Drug Abuse'. The lack of reliable existing estimates of drug use lead to the development of population surveys to monitor drug use, the first of these occurring in 1974, closely followed by comparable surveys among school students in 1975 (Musto and Sloboda, 2002). Repeating these surveys on a periodic basis allowed monitoring of the prevalence of drug use among the general population and among school students and represented the first use of large-scale population surveys to monitor the drug situation. Thirty years on these surveys have provided a valuable indication of shifts in the number of people using drugs over time, and have also been used to estimate trends in the number of new drugs. General population surveys of drug use are now an internationally recognized tool for assessing drug use but credible national level exercises of this sort remain restricted, with notable exceptions, to the developed world. The limitation of the use of surveys is in part because they are expensive, methodologically demanding, and often perform poorly in respect to the assessment of levels of chronic drug use. Also for countries with poor instructional record keeping and/or public distrust of the authorities, they are difficult to do at all. Although some of these limitations also apply to school surveys, this method has been more widely adopted internationally. Today school survey data provide the most comprehensive global data set for looking at patterns of drug use across countries and regions. The European School Project on Alcohol and Drugs (ESPAD) now embraces over 30 countries (Hibell et al., 1999), the Organization of American States (OAS/CICAD) has been supporting school survey work across the Americas and the Caribbean. School surveys are also being administered in an increasing number of Asian and African

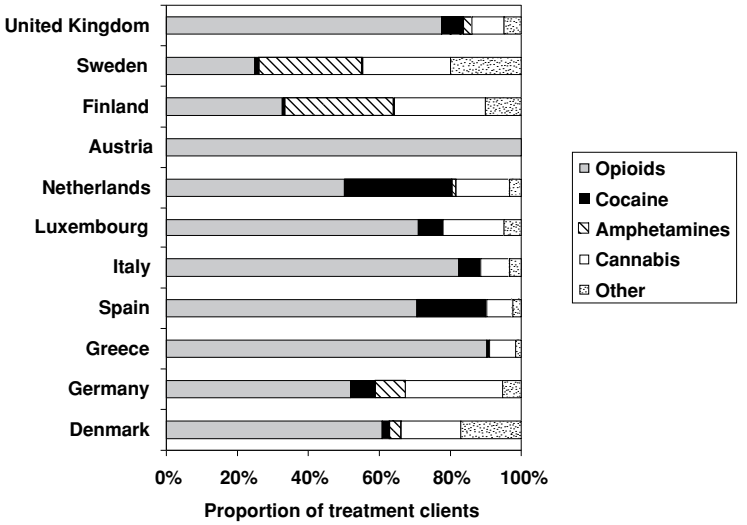
countries, and are found in virtually all developed countries (Douglas and Hillebrand, 2003).

In addition to the use of population surveys a range of other methodological approaches has developed to understand the nature and scale of illicit drug use. These include sociological surveys of drug-using populations, clinical/psychiatric research on treatment populations or other institutional populations, criminological studies on incarcerated drug users, and the use of law enforcement data. Many of these methods are discussed elsewhere in this book. In terms of the international development of epidemiological monitoring systems it is worth making a special note of the importance of treatment-based monitoring systems which form the mainstay of many contemporary drug information systems. The success of treatment reporting as a data collection option rests on a number of factors including the fact that this is a relatively easy and low cost method for reporting on the most chronic forms of drug problems, appropriate to any country that has some form of drug treatment, and that the relevance of this kind of information is easily understood by clinicians, policy makers and the general public.

Early treatment data collection systems developed in the late 1960s to early 1970s notably including the *Home Office Addict Notification Index* in the United Kingdom (Mott, 1994), where doctors reported on the number of patients presenting with opiate drug problems. Registers of drug-related presentations to mental health facilities are also common such as in Indonesia and Japan as is the collection of admission and discharge data from federally funded treatment programs such as in the United States of America (for a review see Stauffacher, 2002). Contemporary development of treatment demand data has seen improvements in comparability and coverage. In Europe the standardized collection of treatment demands has been a key part of the development of a European reporting system. From 1991, the Pompidou Group of the Council of Europe began developing and piloting a standardized protocol for collecting core items of treatment data which could be used by professionals and researchers across Europe. This Treatment Demand Protocol was finalized in 1994. Since 2000 treatment demand data have been collected across the European Union and in many Central and Eastern European countries under the joint protocol of the Pompidou Group and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). Comparable collections of treatment data across Europe has provided an indicator of regional trends in treatment demand and has also allowed for cross-country comparisons. In Figure 3 examples of data from treatment reporting systems can be found. This information facilitates the understanding of the differing nature of the drug problem between and across different countries and regions; for example the growing opiate problem in Central Asia and the importance of amphetamine related problems in Scandinavian countries.

In some countries, treatment demand data are combined with information on drug users from other sources, notably arrest data, to develop a register of all

A). Main drug problem among treatment clients by country, 2001 (Source EMCDDA 2003)



B). Central Asian Republics: Drug Users Registered per 100,000 population (cumulative). (Source UNODP, Niaz 2001)

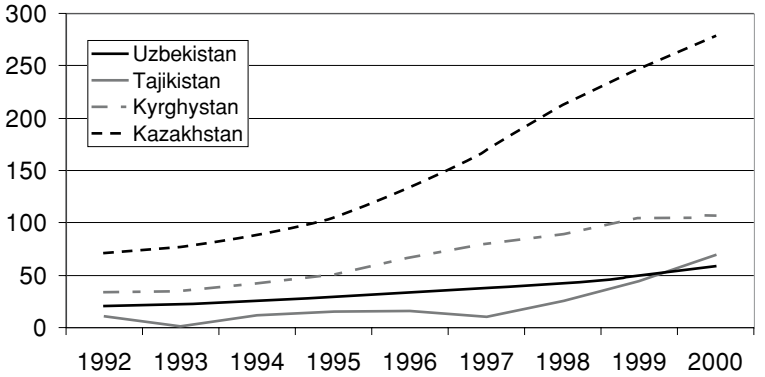


Figure 3. Examples of data from treatment reporting systems.

'known' drug users. It is important to note that such systems only represent drug users who come into contact with participating agencies, and therefore cannot provide incidence or prevalence data but, as with other routine indicators, these registries can provide information on drug trends. A good example of such a registry is the Central Registry of Drug Abuse in the special administrative region of

C). Percentage of newly reported individuals to the Central Registry of Drug Abuse in Hong Kong SAR for heroin, methamphetamine, ecstasy and ketamine, 1992–2000

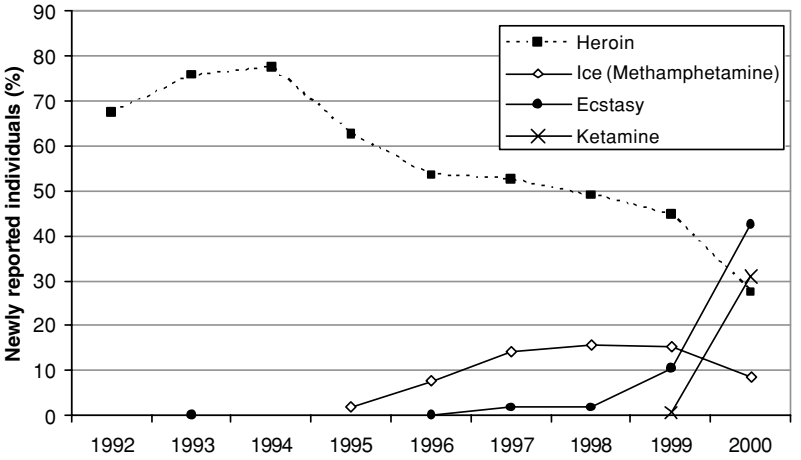


Figure 3. *Continued.*

Hong Kong. This system has been maintaining information reported from treatment, law enforcement, and welfare agencies since 1976 (Stauffacher, 2002). Data from this registry have been important in documenting the rise in synthetic drugs (i.e., ecstasy, methamphetamine and ketamine) over the past decade, which in many nearby countries can only be noted from anecdotal evidence (UNODC, 2004).

In addition to treatment and law enforcement data, a range of other drug-related routine data sources have been used to monitor the drug situation, alongside surveys and other more specialized research efforts. Some of these data were established as early warning systems to detect emergent drug trends. For example the use of drug mentions among emergency attendances in cities throughout the United States (DAWN) to detect new trends was established in the 1970s and is still operating today. Law enforcement data on drug offences and drug seizures were another frequently used information source to track trends in drug use, and was particularly useful in settings where the opportunity to use health-related data on drug use was limited. In Japan, for example, arrest data date back to 1970 and can be used in conjunction with data from psychiatric registers to monitor trends in methamphetamine use, the country's dominant drug problem (UNODC, 2004). These types of routine data sources provide information on trends that could complement information from population surveys, the findings of sociological research on drug use patterns and other qualitative and clinical research.

3.3. Networks, Multi-Indicator Models and Drug Information Systems

It became increasingly recognized that a single data source alone does not sufficiently capture the dynamic nature of drug use trends and often only provides a partial picture of the overall drug situation (Hartnoll, 2003). A strong argument therefore existed for a more integrated approach that combined data from different sources to gain a holistic view of the overall drug situation. This has prompted the creation of expert networks that have to a large extent shaped the international development of drug epidemiological systems. As well as having the benefit of bringing together experts with data from a range of sources, networking provides opportunities to gather information from different geographical areas thus contributing to a better national, regional, or even global picture.

An influential example of this multi-disciplinary approach is the Community Epidemiology Working Group in the United States of America (CEWG) (Sloboda and Kozel, 2003) that was established in the 1970s and was followed some time later by the Epidemiological network of the Pompidou Group (PG) of the Council of Europe, established in 1982 (Bless, 2003). Although these systems evolved separately, with the initial work of the PG influenced by European researchers attending CEWG meetings, there are strong parallels in their structure. Both systems are based on a network of interested experts and are relatively independent of local authorities and government structures. Both incorporate epidemiological data from sources thought to be core to monitoring drug trends (e.g., treatment data, arrest data). And finally, both incorporate expert opinion from people familiar with the local drug situation who are involved with obtaining the epidemiological data for inclusion in monitoring. Local knowledge facilitated accurate interpretation of indicator data by providing information on factors that influence the data (e.g., changes in provision of drug treatment) and also explained typical patterns of drug use and the situations in which drug use occurred, thereby providing an interpretive context for trend data.

During the 1970s systems to monitor drugs were predominantly the domain of Western Europe and North America. However, the following decades saw drug use becoming a global issue marked by the spread of injecting drug use to affect over 130 countries worldwide (Dehne et al., 2002). The spread of injecting drug use to become a worldwide epidemic together with the growing global epidemic of the Human Immunodeficiency Virus (HIV) presented a potentially devastating public health problem that required urgent preventative action. Prevention strategies necessarily required an understanding of where injecting drug use was prevalent, how large was the potential pool of injectors who might become infected with the virus, the extent of HIV infection among injecting drug users, and an understanding of related risk factors. These information needs were associated with the growth of several drug research methodologies, including sociological and ethnographic research on 'hidden' populations of drug users to understand HIV risk behavior,

epidemiological methods to monitor the prevalence and incidence of blood borne viruses among injecting drug use, and indirect prevalence estimation methods to estimate the size of injecting drug use populations.

3.4. HIV and the Need for Information for Action—The Role of Rapid Assessment

The urgency of responding to the problem of injecting drug use in resource-poor settings was a key factor in the development of the 'rapid assessment' approach in the 1990s. The principle behind rapid assessment techniques was to draw from a variety of social science methodologies to undertake a quick and pragmatic assessment of the drug situation and risk factors for transmission of HIV. Information from the rapid assessment could then be used to design appropriate interventions to prevent the spread of HIV among the injecting population. Most rapid assessment studies rely on a mixture of survey methods and ethnographic research and the collection of biological data (i.e., HIV status) where relevant. Rapid assessment studies have now been undertaken in at least 70 countries (Fitch et al., 2002) and the methodology has been popularized to serve a broad range of objectives and encompass an array of social science methods.

4. GLOBAL PLAYERS—INTERNATIONAL ORGANIZATIONS, REGIONAL COOPERATION INITIATIVES AND TECHNICAL NETWORKS

Today, greater international trade, communication, and migration means patterns of drug use can rapidly transcend national borders and countries' drug problems can impact regional economic and political stability. In this context the monitoring of regional drug trends has become a more important policy issue. This has meant in practice that there has been a gradual movement away from loosely structured networks of experts to more institutional bodies that develop regional information systems. That said, the global picture remains somewhat heterogeneous and at regional levels, expert technical networks sometimes exist in tandem with more institutional bodies or have become integrated with them.

Of the main international bodies supporting drug epidemiological work, the three most prominent are The World Health Organization (WHO), that recently published an excellent drug epidemiological sourcebook (WHO 2000), UNAIDS with interests mainly focused on drug injecting, and UNODC that developed the Global Assessment Programme (GAP) supporting the development of regional epidemiological systems using an epidemiological toolkit specifically designed for data collection in developing countries (http://www.unodc.org/unodc/en/drug_demand_gap_m-toolkit.html).

At the regional level a number of key bodies can be identified. In the Americas a number of strong nation systems work with the OAS evaluation mechanism that includes a number of epidemiological elements (although the specific case of USA is somewhat different because of the considerable extent of national activities). Currently plans also exist for a monitoring center to be established for the Southern and Central American Countries. In Europe, the Pompidou Group remains active in methodological development but routine monitoring is now the responsibility of the European Monitoring Centre on Drugs and Drug Addiction (EMCDDA). This agency, based in Lisbon, Portugal, is one of the decentralized technical agencies of the European Commission. Around thirty countries are participating in the EMCDDA reporting system (European Union member states, applicant countries, and those joining by special arrangement). In Africa, a strong national system in South Africa has been used as a model for a regional initiative (Parry et al., 2003) and limited activities exist elsewhere with UNODCP supported networks in Central and Northern regions. The long established Asian multi-city study is still active but has been joined by a number of new regional activities, prompted in part by the methamphetamine epidemic affecting this area.

4.1. Guiding Principles of Data Collection—The Lisbon Consensus*

Integral to efforts to improve international data on drug consumption is the harmonization of data collection methods and activities. An important first step in achieving this objective was taken in January 2000 with a joint meeting of representatives from international bodies, regional drug information networks, and other relevant technical experts. Particular consideration was given by the international expert panel to the development of a set of core epidemiological demand indicators for assessing drug consumption at a global level. A consensus statement was issued and subsequently positively noted by the Commission on Narcotics Drugs (United Nations, 2000). This consensus statement identified a number of core indicators of drug demand. These were: drug consumption among the general population, drug consumption among the youth population, high-risk drug abuse, service utilization for drug problems, drug related morbidity, and drug related mortality. These indicators were chosen as they address areas in which routine data collection was considered possible at least for some countries although they are not intended to represent a comprehensive information base required to address all needs at a regional or national level.

In addition to consensus on the core indicators of drug consumption, there was agreement on the principles that were needed to support data collection activities.

* This section of this paper is an abridged version of the paper 'Developing a global perspective on drug consumption patterns and trends—the challenge for drug epidemiology—*Bulletin on Narcotics*, 55(1 and 2), pp. 83–94.

The following 10 broad principles were noted: 1) data should be timely and relevant to the needs of policy makers and service providers, 2) while not sufficient in themselves for a comprehensive understanding of patterns of drug consumption, efforts to improve the comparability and quality of data at the international level should focus on a limited number of indicators and a manageable priority core data set, 3) simple indicators of drug consumption must be subject to appropriate analysis before strategic conclusions can be drawn using both qualitative and quantitative research and with broader information on context, 4) multi-method and multi-source approaches are of particular benefit in the collection and analysis of data on drug consumption and its consequences, 5) data should be collected in accordance with sound scientific methodological principles to ensure reliability and validity, 6) methods need to be adaptable and sensitive to the different cultures and contexts in which they are to be employed, 7) data collection, analysis, and reporting should be as consistent and comparable as possible in order to facilitate meaningful discussions of changes, similarities and differences in the drug phenomenon, 8) methods and sources of information should be clearly stated and open to review, 9) data collection and reporting should be in accordance with recognized standards of research ethics, and 10) data collection should be feasible and cost-effective in the terms of the national context where it occurs.

The consensus statement also noted that the identification of good methods alone is not sufficient for improving data collection capacity as it is also necessary to develop appropriate networks and organizational structures to provide the infrastructure necessary to support data collection. There is a need for improved capacity to analyze and interpret information on drug consumption applying good methods, well-trained and competent researchers, and appropriate resources. This in turn requires training and technical support, ongoing political support, and long-term and stable investment in this area to ensure sustainability and success of data collection systems. While expenditure on data collection has to be cost effective given the resources available within a country, the investment in data collection activities must be seen as both necessary and resource efficient in that it improves the development, targeting, and evaluation of other demand reduction investments.

5. CONCLUDING REMARKS

At the international level, drug policy remains a politically charged issue and one that is entwined with sensitive policy issues including money laundering, crime, terrorism, and security. Member states have their own internal and external political agendas and considerable debate exists between those who call for either the liberalization of policy options and those who see a need for caution and renewed efforts at control. Against this complex realpolitk agenda stands the simple tenet that drug policies, whatever their nature, should be evidence-based. For drug

epidemiologists working at the international level this means that they must strive to maintain sound scientific principles, knowing that the data they produce will be interpreted without regard to the careful caveats they put on it, and knowing that they will be criticized by those who feel that the available evidence does not support their chosen view. It has been argued that these political tensions mean that data produced at the international level is so tainted that it is of little worth. Certainly there are examples of the misuse of information and of the misinterpretation of data, without regard to scientific principles (Rossi, 2002). Nonetheless, there has been much progress toward improving data collection not only in terms of the coverage of data collection activities but also in terms of the quality of data collected and its utility in formulating policy. The use of drug information networks has played a key role in this developmental process, providing an opportunity for dialogue across different sectors of the community and between different countries and regions. Progress toward improving coverage of specific core indicators of drug use has been achieved in developing regions through the adaptation of cost-effective data collection methods. In this regard, epidemiological networks have been crucial in encouraging the systematic collection and interpretation of data from drug treatment services and other data on drug-related events. Challenges to further improve the coverage of these data collection activities and to expand drug information systems to foster the development of drug-related data collection activities remain. In the quicksand of policy debate and opinion the role of drug abuse epidemiologists can only be to provide a bedrock understanding of what is known and what is not known about the drug situation. It is the responsibility of others to ensure that this translates into better policies and actions.

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