The challenge of developing drug information systems in Africa

M. WARNER-SMITH*

United Nations Office on Drugs and Crime, Regional Office for Southern Africa, Pretoria

ABSTRACT

Several challenges face the development of systems to collect data on drug consumption in sub-Saharan Africa. The political, cultural and economic climates generate a range of challenges, ranging from the inconvenience of a limited communications infrastructure through to more fundamental issues such as those concerning the prioritization of government health spending. In addition to the general challenges faced by any development initiative in sub-Saharan Africa, designers of drug information systems are faced with the problem of an absence of routinely collected indicator data and a shortage of individuals with the skills or qualifications necessary to oversee drug information systems. In order to obtain reliable information on drug consumption, the Global Assessment Programme on Drug Abuse of the United Nations International Drug Control Programme, alongside other regional and country-level counterparts such as the Southern African Development Community, has been supporting the development of drug information systems in the region. The present article documents some of the key challenges in developing drug information systems in the region and highlights priority development issues to improve capacity for collecting better information on patterns and trends in drug consumption in sub-Saharan Africa.

Keywords: drug monitoring systems; Africa; drug use; epidemiology; trends.

Few reliable data on the prevalence, patterns and trends of illicit drug consumption exist in most countries of the world [1]. This information deficit seriously impedes the development, implementation and evaluation of policies and programmes designed to reduce levels of drug consumption or limit the adverse health and social consequences associated with such behaviour. The paucity of good data is particularly apparent in Africa. To date, most of the information on drug epidemiology available from Africa has been in the form of rapid situation

assessments [2-4]. While rapid assessments can provide good contextual information on the type and modes of drug consumption, they are of limited use in monitoring trends in drug use. Of more utility for the ongoing surveillance of patterns and trends in drug consumption are integrated drug information systems.

Integrated drug information systems bring together routinely collected drug-related data, such as data on admissions to drug treatment centres or arrests for drug-related offences, with other, more focused epidemiological data, such as survey data and specialized studies, to provide an overview of patterns and trends in drug consumption in a particular area [5]. The triangulation of the variety of data sources used in such a system minimizes the effects of confounding factors, with the information provided becoming more robust with an increasing number of contributing data sources [6]. This approach has been used with success in a number of developed countries and regions, as exemplified by the Community Epidemiology Work Group in the United States of America [7], the European Monitoring Centre for Drugs and Drug Addiction in Western Europe [8], and the Illicit Drug Reporting System in Australia [5]. Such systems have also been established recently in a number of developing regions, such as the Caribbean and Latin America.

The development of drug information systems is also under way in subregions of Africa. Support for these systems in Southern Africa is being provided by the Southern African Development Community through its Epidemiological Network on Drug Use. In addition, the Global Assessment Programme on Drug Abuse of the United Nations International Drug Control Programme is active in Southern Africa, where it supports the Epidemiological Network on Drug Abuse, and in East Africa, where it supports the development of the East Africa Drug Information System. These programmes aim to build local capacity in order to collect better information on drug consumption through human networks and by developing sound data collection practices. This is done in part through the development of regional information systems, while at the national level the programmes assist in the development of national drug information systems and provide training and resources to meet key needs.

Sub-Saharan Africa is arguably the world's least developed region and, although the development of drug information systems there is a priority, it presents particular challenges. The area of East and Southern Africa covered by the Global Assessment Programme encompasses countries from Eritrea in the north, east to the island States in the Indian Ocean, south to South Africa and west to Angola and the Democratic Republic of the Congo.* It is estimated that over 338 million people reside in those regions, accounting for almost 6 per cent of the world's population [9]. The average gross domestic product of the two regions is US$ 2,075 per capita per annum; adult literacy is 62.7 per cent; life expectancy is

---

*The countries covered by the Global Assessment Programme are: in East Africa, Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, Uganda and the United Republic of Tanzania; and in Southern Africa, Angola, Botswana, the Democratic Republic of the Congo, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe.

47.3 years; and infant mortality is 99 deaths per thousand live births (see table). The prevalence of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) across the two regions is estimated to be 11 per cent of the adult (14-49 years) population [10], ranging from less than 1 per cent of the adult population in the Indian Ocean island States to approximately 35 per cent in Botswana. However, as the range around each of these indicators suggests (see table), there is great intraregional variation in the development status of member States. While 50 per cent of the countries in the two regions are ranked among the 30 least developed countries of the world in the United Nations Development Programme Human Development Index [9], the regions also include several middle-income countries.

Development indicators: East and Southern Africa and the world as a whole		
Indicator	*East and Southern Africa*	*World*
Population	338.4 million (0.1 million-59.6 million)	5 862.7 million
GDP per capita	US$2 075 (US$480-10 600)	US$6 980
Life expectancy at birth	47.3 years (40.3-71.6 years)	66.7 years
Infant mortality	99 per thousand (14-172 per thousand)	56 per thousand
HIV/AIDS prevalence	11.1 per cent (0.1-35.8 per cent)	1.1 per cent
Adult literacy	62.7 per cent (42.0-93.8 per cent)	72.9 per cent

Challenges in establishing drug information systems

Many of the challenges facing those attempting to establish drug information systems in Africa are not unique to either drug epidemiology or Africa, but are problems encountered when attempts are made to establish any new processes or programmes in developing countries. The basic infrastructure that is taken for granted in developed countries, such as efficient postal and telecommunication services, is often lacking. Thus, the logistics of any project being implemented in the developing world is inevitably more complicated than similar projects undertaken in developed countries. Over and above the challenges posed by poor infrastructure, however, are a set of challenges brought about by economics, culture and politics.

Economics

Resource limitations underlie both the deficit of consumption data in Africa and the difficulties inherent in rectifying that deficit. While the effects of resource

limitations are felt in all countries, they are particularly pronounced in sub-Saharan Africa. Lack of resources limits government capacity to collect drug data through the health and law enforcement sectors, while limited educational opportunities result in a small pool of people with the expertise necessary for data collation and reporting. Similarly, resource limitations restrict service provision, resulting in fewer potential data sources than are available to drug information systems in more developed countries. Finally, data collection itself is hampered by poor communications infrastructure, lack of funding and limited computer facilities.

Human resources

Drug information systems require, at a minimum, an individual or organization to oversee the collation and reporting of existing data. In sub-Saharan Africa, limited budgets prevent Governments from employing an individual specifically for this role or from subcontracting the activities to non-governmental agencies. Civil servants have been charged with this responsibility over and above their regular duties, which has resulted in their having to determine where those activities lie among their priorities and having to find time to complete them in addition to their regular workload. In many cases that has been difficult. Consequently, many of the activities required for the development of sustainable drug information systems have been considerably delayed. Such delays cause problems for epidemiologists attempting to build capacity to monitor drug use, in that the sustainability of the resulting drug information systems depends on Governments finding the human resources necessary to collate and report drug data.

Health services

Drug information systems also require basic indicator data. While some form of law enforcement data is available in all countries in the region, many of the other data sources that are fundamental to drug information systems in developed countries are simply non-existent. This is primarily due to the extremely limited health services that are available in most African countries, relative to the more developed nations. Mortality registers, for example, exist in very few African countries. Thus drug-related deaths, a key indicator of trends in the consumption of opiates, are simply not recorded. Similarly, specialized treatment for drug and alcohol dependency is not available in the majority of countries in East and Southern Africa. Where such treatment is available, the coverage of the service is limited and the capacity is small. For example, in Uganda, a specialized drug treatment centre has recently opened; it has a capacity of less than 20 patients and offers the only treatment for drug dependency available in a country with a population of over 20 million. In the majority of cases, treatment for drug- or alcohol-related problems is usually provided by psychiatric hospitals. On a per capita basis, such treatment is extremely limited, with many countries only having a single psychiatric hospital. The caseload of such hospitals, combined with a lack of computerization in

record-keeping, makes it very difficult to separate drug-related case records from those of the general psychiatric population. Many of the drug information systems being developed, therefore, are overly reliant on law enforcement data. In addition to the dearth of basic indicator data sources, more specialized drug research, such as school surveys, is conducted rarely and is often limited in scope, owing to a lack of both the financial resources to undertake such research and researchers with adequate skills.

Professional education

The limited number of opportunities for higher education available in Africa means that only a small proportion of the population is able to attain tertiary training in specialized fields such as drug epidemiology. Of the 26 people who serve as focal points for the Global Assessment Programme on Drug Abuse, for example, only one has received formal training in epidemiology and only two are medical doctors. The remainder are civil servants from the law enforcement or health sectors such as detectives and pharmacists with an interest in illicit drug issues. While such individuals may be highly competent, without appropriate training in drug epidemiology they cannot be expected to produce valid or reliable research in that field. The major challenges in the region, therefore, are how to address the problem of the lack of basic indicator data and how to train staff to the standard required to undertake primary data collection. One of the key tasks for the development of sound data collection practices is to build human resource capacity through the provision of training and training materials.

In an environment where such specialized knowledge is lacking, it becomes necessary to consider the validity and reliability of such data as do exist, since they may have been collected without consideration being given to potential confounders and biases. Similarly, a lack of awareness of the need for such data and the purposes for which they are collected often results in the collection of poor quality data. For example, in certain countries, police arrest data do not differentiate between arrests for possession and arrests for trafficking; in psychiatric hospital records, although codes from the Diagnostic and Statistical Manual of Mental Disorders or the International Classification of Diseases are used, all drug-related diagnoses are often grouped together under a general code such as "drug abuse" or "drug-induced psychosis", with no indication of the type of drugs involved; and data from specialized treatment centres are used to draw inferences about trends in drug use despite very small sample sizes. The drug-related data that are available have to be treated with a degree of scepticism. The challenge, therefore, is how to maintain sufficiently rigorous standards of data quality in the context of limited data.

Setting priorities

Another challenge for illicit drug epidemiology in Africa is how to ensure that it is given sufficient priority. As mentioned earlier, resources in Africa, in particular

health resources, are extremely limited. The question is how to determine where drug epidemiology should rank among the health priorities of countries suffering high levels of poverty and unemployment and an HIV/AIDS pandemic. It could be argued that the relatively modest investment required to monitor patterns and trends in drug consumption might be offset by the potential savings that such monitoring could generate by, for example, targeting early intervention to reorient health services to treat emerging drugs and possibly limit the spread of the use of such drugs, or by providing services to minimize the adverse health and social consequences of such drugs. However, it may be difficult to convince Governments or individuals to invest in drug epidemiology when resources could be used to address more immediate health concerns, such as the provision of clean water or vaccination services. It is clear that systems must be low-cost to justify investment and ensure sustainability.

Communication

Perhaps the most obvious of the problems that arise when communication is attempted with different cultures is that of language. The predominant official languages of sub-Saharan Africa are English, French and Portuguese. As interpretation is often required, this impedes both the quality and efficiency of communication. Even when interpretation is not required, intraregional differences in accent and technical vocabularies can impede effective verbal communication. Compounding these difficulties is the fact that the official national language of most countries in the region is the second or third language of the majority of the population. It is consequently crucial for information to be communicated clearly and concisely and for mutual comprehension to be verified.

Cultural differences other than language, while seldom immediately apparent, also affect development work, including epidemiology. For example, in some cultures it is considered inappropriate to say no or admit to experiencing difficulties, which results in problems being masked by overwhelmingly positive feedback. Cultural differences in communication can easily compound the difficulties imposed by language barriers, in that one may not realize that what is being said is not being understood or that what is being asked is, in fact, not feasible. Major problems can result if such subtle cultural differences are not recognized and measures are not taken to ensure that they do not negatively affect the work being done. The potential pitfalls of such cultural barriers to communication highlight the value of working closely with and actively involving local counterparts in projects to develop drug information systems.

Politics

The objective of the Global Assessment Programme on Drug Abuse is to build capacity for data collection through collaboration with national counterparts. These are usually selected with the support and approval of Governments and the delegated counterpart is therefore often a government department or individual

civil servant. This institutionalizes the system, which improves sustainability, but also exposes projects to the foibles of politics. The effects of this can be felt at the level of individuals, of parties and, indeed, of entire nations. For example, each Government in East and Southern Africa is requested to nominate a focal point for the project. For political reasons, the national focal point appointed by a Government may not always be the most suitable individual; this obviously impedes the development of drug information systems and poses problems for the external epidemiologist, who has no choice but to work with the nominated individual. Upon occasion, when a suitable individual has been appointed as the project focal point, he or she has unexpectedly been removed for political reasons, thus disrupting the continuity of the project. When this happens in the developmental stage of a project, the skills acquired by the focal point can be lost before the project has developed to the point at which they can be passed on to untrained colleagues.

Political activity can not only disrupt the smooth development of projects, but can also jeopardize their feasibility. For example, in one country a disputed general election left the country without a legitimate Government for an extended period. As a result, the activities of the Global Assessment Programme in that country were indefinitely suspended, pending a resolution of the political stalemate. In a number of countries in the region, such political instability is endemic: civil conflicts frequently occur and some continue for many years. Others are of relatively short duration, but their effects can be devastating to both the population and the infrastructure of the country (for example, the genocide that took place in Rwanda in 1994). It is inevitable that such conflicts adversely affect development work of any kind. They have been identified as being owing to, and a cause of, poverty in the region [11] in an environment of pre-existing resource limitation. Thus, not only does conflict restrict the feasibility of drug epidemiology, it also diminishes a nation's ability to conduct drug epidemiology in the future by further draining already scarce resources. However, it is also important to note that the instability and deterioration of civil infrastructure associated with these conflicts may increase the vulnerability of the countries involved to drug problems.

Recommendations

There is clearly a need for drug information systems in Africa and the many difficulties preventing their development have to be overcome. Indications of the possible emergence of heroin use in the region, particularly in South Africa [12] for example, highlight the need for drug surveillance even where drug abuse is not yet perceived to be particularly prevalent or problematic. The ability of these systems to highlight new drug trends proves that they are operationally feasible and a worthwhile investment.

Collaborating with Governments at the highest level possible can mitigate the impediments of politics and resource limitations. When senior government officials are well briefed on the need for drug epidemiology and the purpose of drug

information systems, political support and resource allocation for drug informa-
tion systems are procured more readily and drug epidemiology is given the priority
it deserves. Such support is more easily won when the drug information system
being proposed can be shown to be efficient and cost-effective. When the system
is in place and information has been gathered, it should be clearly and concisely
packaged and reported in order to ensure relevance to policy formulation and
assessment and to demand-reduction activities. Maximizing the utility of the
system in this way may ensure the continuation of government support.

Innovative approaches are required to respond to the lack of routinely col-
lected indicator data in many countries, such as the use of key informant net-
works. In the Comoros, for example, psychiatric nurses are being trained in illicit
drug issues before being posted to work in primary health care centres; once there,
they will be able to provide expert opinion on the drug use situation in the
country, even in the complete absence of any other health sector data. Where
traditional data sources do exist, but are unable to be utilized, the provision of
training to workers in the field and modest investments in the development of
such data sources may allow these sources to contribute to the system in the
future. In these ways, existing resources may be maximally utilized.

Priority issues for the region

The challenges encountered while developing drug information systems in East
and Southern Africa have enabled the clear identification of the priority issues that
need to be addressed to strengthen drug epidemiology in the region. The three
greatest of these are training, infrastructure and technical support.

At the grass-roots level, training in basic data entry and data analysis and
reporting is needed to gain the maximum benefit from the data that are currently
collected but not reported. Such training should encompass both computerized
data management, which is being provided by the Global Assessment Programme
on Drug Abuse, and, where the sustainability of computer facilities is in doubt,
non-computerized methods. At an institutional level, the inclusion of epidemio-
logy, and in particular drug epidemiology, into the curricula of courses on health
sciences at the tertiary level would greatly improve the ability of future health pro-
fessionals to contribute to the ongoing monitoring of patterns and trends in drug
consumption. Similarly, the development of continuing education courses in basic
drug epidemiology for health professionals in the field would greatly increase their
capacity to identify potential sources of data and streamline the collection and
reporting of those data into developing drug information systems.

The lack of basic infrastructure to collate and report drug data is a second
need that requires addressing. The Global Assessment Programme on Drug Abuse
is providing computing equipment and software to national focal points. However,
it is important to be mindful of the issue of sustainability. There is a risk that
donated equipment may not be maintained owing to a lack of funds or technical
expertise, or that those with the skills to use the relevant software are unable to
disseminate their skills effectively and thus take their skills with them when

they retire or transfer to other positions. Nonetheless, addressing deficits in infrastructure in the short term can be done at relatively little expense, greatly improving the capacity of government agencies to collate and analyse drug-related data.

Finally, there is a need to have more intensive support available at the local level to provide assistance in the utilization of existing data, in overcoming communication barriers, in providing technical guidance in the development of local training programmes, in the collation of indicator data and in the development and implementation of primary data collection activities such as school surveys.

Conclusion

Epidemiologists in Africa, and indeed any professionals in the field of human development, are faced with a number of challenges when developing drug information systems. The very need for development impedes development activities. For the benefits of development to be sustained, national capacity must be enhanced. However, the extreme resource shortages faced by Governments in the region limit the availability of human resources, the level of professional skills and the infrastructure available for development activities. The challenge for the development of drug information systems in this context, therefore, is how best to work within these constraints and utilize existing resources to monitor drug use cost-effectively and how to build national capacity by resolving some of these difficulties, such as through the provision of training or through grants for the improvement of infrastructure. Training, technical support and infrastructure for drug information systems is being provided in East and Southern Africa by both the Global Assessment Programme and the Southern African Development Community Epidemiological Network on Drug Use and the progress of these systems shows that minimal investment can pay considerable dividends in improving the information available on drug consumption in the region. However, such programmes can only dent the surface in the development of drug information systems in Africa. Sustainable development of these systems is only possible through the engagement of local people, the institutionalization of data collection activities across all sectors and at all levels and an appreciation of the utility of these systems to assist with formulating policies and strategies to reduce the burden of drug use in these societies.

References

1. "World situation with regard to drug use, in particular the spread of human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) through drug injection: report of the Secretariat" (E/CN.7/2002/2 and Corr.1, 10 January 2002).
2. S. Selassie and A. Gebre, "Rapid assessment of drug abuse in Ethiopia", *Bulletin on Narcotics* (United Nations publication), vol. XLVIII, Nos. 1 and 2 (1996).

3. H. A. Mwenesi, "Rapid assessment of drug abuse in Kenya", *Bulletin on Narcotics* (United Nations publication), vol. XLVIII, Nos. 1 and 2 (1996).

4. G. P. Kilonzo and others, "Rapid situational assessment for drug demand reduction in Tanzania", Department of Psychiatry, College of Health Sciences, Muhimbili University, Dar es Salaam, 2002, unpublished.

5. J. Hando and others*, The Illicit Drug Reporting System (IDRS) Trial: Final Report* (Sydney, University of New South Wales, 1997).

6. P. Griffiths and others, "Drug information systems, early warning and new drug trends: can monitoring systems become more sensitive to emerging trends in drug consumption?", *Substance Use and Misuse*, vol. 35, Nos. 6-8 (2000), pp. 811-844.

7. Z. Sloboda and N. J. Kozel, "Frontline surveillance: Community Epidemiology Work Group for Drug Abuse", *Drug Abuse: Etiology and Interventions*, M. D. Glantz and C. Hartel, eds. (Washington, D.C., American Psychological Association Press, 1999), pp. 47-62.

8. European Monitoring Centre for Drugs and Drug Addiction, *Annual Report on the State of the Drugs Problem in the European Union 2001* (Lisbon, European Monitoring Centre for Drugs and Drug Addiction, 2001).

9. United Nations Development Programme, *Human Development Report 2001: Making New Technologies Work for Human Development* (New York, Oxford University Press, 2001).

10. Joint United Nations Programme on HIV/AIDS and World Health Organization, *AIDS Epidemic Update: December 2001* (Geneva, 2001).

11. F. Stewart, "Root causes of violent conflict in developing countries", *British Medical Journal*, vol. 324, 9 February 2002, pp. 342-345.

12. C. D. H. Parry and A. Plüddeman, *Southern African Development Community Epidemiology Network on Drug Use Report: July-December 2001* (Cape Town, 2002).