

*This report contains the collective views of an international group of experts and does not necessarily represent the decisions or the stated policy of the World Health Organization*

**WHO Technical Report Series**

**845**

---

# **INFORMATION SUPPORT FOR NEW PUBLIC HEALTH ACTION AT DISTRICT LEVEL**

---

Report of a  
WHO Expert Committee



---

**World Health Organization**

**Geneva 1994**

WHO Library Cataloguing in Publication Data

WHO Expert Committee on Information Support for New Public Health

Action at District Level

Information support for new public health action at district level : report of a WHO expert committee.

(WHO technical report series ; 845)

1. Information systems 2. Public health administration  
3. Community health services I. Title II. Series

ISBN 92 4 120845 7  
ISSN 0512-3054

(NLM Classification: W 26.5)

The World Health Organization welcomes requests for permission to reproduce or translate its publications, in part or in full. Applications and enquiries should be addressed to the Office of Publications, World Health Organization, Geneva, Switzerland, which will be glad to provide the latest information on any changes made to the text, plans for new editions, and reprints and translations already available.

**© World Health Organization 1994**

Publications of the World Health Organization enjoy copyright protection in accordance with the provisions of Protocol 2 of the Universal Copyright Convention. All rights reserved.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

**Printed in Switzerland**

94/10009 - Benteli - 8000

# Contents

1. Introduction	1
2. New public health action towards health for all	2
2.1 Current policy concerns	2
2.2 The role of district health systems	3
2.3 A call for new public health action	4
3. Current issues in health information	4
3.1 General issues	4
3.2 Approaches to information systems	5
3.3 The role of national health information systems	6
3.4 District health information systems	6
3.5 Common problems in information systems	7
3.6 New challenges for health information	8
4. Health information needs at district level	9
4.1 General categories	9
4.2 Emerging needs	10
5. Methods for collecting and processing information	11
5.1 Sources and methods of data collection	11
5.2 District routine information systems	13
5.3 Population-based and facility-based surveys	13
5.4 Public health and disease control programmes	14
5.5 The role of computers in processing data	15
6. Analysis, presentation and reporting of health information	16
6.1 Data analysis	16
6.2 Presenting the information	17
6.3 Reporting and communicating health information	18
7. Facilitating the use of health information	19
7.1 Using information in district planning and monitoring	19
7.2 Improving use of data	20
8. Resources and management support to district health information development	22
8.1 Supporting district health information systems	22
8.2 Training support for district health information	23
8.3 Developing basic skills	23
8.4 Availability of training courses and materials	24
8.5 Some principles for health information development	24
9. Conclusions	25
10. Recommendations	27
10.1 Recommendations to Member States	27
10.2 Recommendations to WHO	28
Acknowledgements	29
References	29

# **WHO Expert Committee on Information Support for New Public Health Action at District Level**

Geneva, 17–22 November 1993

## **Members**

- Dr N.N. Agata, Head, Disease Prevention and Health Promotion, Ministry of Health, Nairobi, Kenya
- Professor J.R. Carvalheiro, Technical Director, Institute of Health, Secretariat of Health, São Paulo, Brazil
- Dr J. Chen, Director, Department of Hospital Management, Office of International Programmes, Shanghai Medical University, Shanghai, China
- Mr Y.C. Chong, Head, Information and Documentation System Unit, Ministry of Health, Kuala Lumpur, Malaysia (*Vice-Chairman*)
- Professor D. Jakovljevic, Social and Preventive Medicine, Medical Faculty, University of Novi Sad, Novi Sad, Yugoslavia
- Dr R. Jayasuriya, Department of Public Health and Nutrition, University of Wollongong, Wollongong, New South Wales, Australia (*Chairman*)
- Mr M. Laaziri, Head, Division of Statistical and Information Planning, Ministry of Public Health, Rabat, Morocco
- Dr S. Murugasampillay, Epidemiologist, Department of Epidemiology and Disease Control, Ministry of Health, Harare, Zimbabwe
- Professor P. Vaughan, Department of Public Health and Policy, London School of Hygiene and Tropical Medicine, London, England (*Rapporteur*)

## **Representatives of other organizations**

*Aga Khan Foundation*

Dr P. Claquin, Health Programme Officer, Geneva, Switzerland

## **Secretariat**

- Dr J.-C. Alary, Chief, Strengthening of Epidemiological and Statistical Services, WHO, Geneva, Switzerland (*Secretary*)
- Dr S. Siméant, Medical Officer, Strengthening of Epidemiological and Statistical Services, WHO, Geneva, Switzerland

## 1. **Introduction**

A WHO Expert Committee on Information Support for New Public Health Action at District Level met in Geneva from 17 to 22 November 1993. The meeting was opened by Dr J.-P. Jardel, Assistant Director-General, who welcomed the participants on behalf of the Director-General. Dr Jardel emphasized that the Expert Committee had been convened to advise the Director-General on how WHO should promote and strengthen the role and use of health information in supporting new public health action at district level. A major concern of the Organization was how to accelerate implementation of strategies for health for all and primary health care at a time when public expectations were rising but resources available for health were diminishing. The aim was to achieve greater equity through social justice. In this context Dr Jardel emphasized both that investing in improved health was a necessity for socioeconomic and political development and that development itself could in turn result in improved health.

While commitment to achieving health for all has remained firm and Member States have adopted the primary health care approach, implementation has slowed down in many cases. This is due not only to economic factors but also to constraints on achieving effective participation of all related sectors, as well as to the rigidity of health systems, the weakness of infrastructure and the inadequacy of efforts to promote health and prevent disease.

As an integral part of implementing primary health care, considerable importance has been placed in recent years on health systems reform and decentralization policies, including the reorganization of ministries of health and the strengthening of district health systems (1, 2). This in turn has required greater skills in public health and increased capacity for management at intermediate levels, which implies that district health staff and management teams need to be supported by appropriate information (3).

The most important function of a district health information system is to provide data to help improve all activities, including those in sectors other than health, that will directly lead to a rise in the health status of the district's population. There is an urgent concern, therefore, to provide information that can be used to improve the implementation and acceptability of district health programme activities. This improvement has to be undertaken with scarce resources, particularly financial and human, and this raises questions of efficiency and how best to use these resources.

Population-based socioeconomic, cultural, demographic and epidemiological information is vital for choosing priority areas for action, planning public health interventions and evaluating progress. However, to improve the implementation of services and programmes, better

service-based information is required at district level. To improve health status and achieve greater equity, district health services and public health programmes need to be efficient, have high coverage and be of good quality. Only when these three requirements are fulfilled will the full potential of public health action be realized.

There is therefore an urgent need to strengthen and coordinate the development of local and national health information systems. Systems are needed to convert data into useful information for district health management teams and others who work at and from the district level.

The Expert Committee was therefore requested:

1. To discuss and define the information required to support improved management decision-making at district level in the context of a new public health action.
2. To review the methods and tools needed to collect, process, analyse, disseminate and improve the use of this information.
3. To define the resources and managerial processes needed to support health information strengthening at district level.
4. To make recommendations for strengthening health information at district level.

## 2. **New public health action towards health for all**

### 2.1 **Current policy concerns**

Health for all by the year 2000 is the universal goal that WHO Member States agreed on at the World Health Assembly in 1977 and primary health care is the strategy that was accepted at Alma-Ata in 1978 to achieve this goal. The goal of health for all and the primary health care strategy were both reaffirmed a decade later by the Riga Declaration of 1988 (4). The second evaluation of the Global Strategy for Health for All, based on an agreed set of 12 global indicators, was published in 1993. The report concluded that there are five critical challenges for the future (5):

- to sustain commitment to resolve social inequities, resolve operational difficulties and expand people's responsibilities for their own health;
- to intensify efforts to expand managerial capacities, including sound policy decision-making and focusing on priorities and targets based on valid information;
- to intensify efforts to strengthen health infrastructure based on the principles of primary health care;
- to manage all available health resources well while mobilizing additional resources;
- to provide support to the least developed countries on an unprecedented scale.

Countries have implemented the strategy of primary health care and the policy for strengthening district health systems at a time of rising expectations, diminishing resources and substantial political change. There has been a tendency to concentrate less on achieving greater equity in health status through community involvement, intrasectoral co-ordination and intersectoral action. Instead, more responsibilities have been placed on the health sector alone, through the expansion of both public and private health services and programmes.

To call attention to this situation, the Saitama Declaration was adopted at the international “Public Health Summit” held in Japan in 1991 (6). The Declaration reaffirmed broad commitment to the goal of health for all and to primary health care as the strategy for attaining it. However, the Declaration also called attention to the fact that economic development and improvements in health are mutually dependent and that there is an unacceptable gap in economic and health status between the developed and developing countries and even within countries themselves. The Summit recognized the need to sustain support for the principles of equity and social justice in the primary health care strategy, and stressed the influence that economic development and the economic environment can have on health. In order to redirect the international debate and to achieve a more long-term commitment to health for all beyond the year 2000, the Summit issued a call for new public health action.

## 2.2 The role of district health systems

A district health system here refers to a more or less self-contained segment of a national health system. The district health system comprises a well-defined population of between 50 000 and 500 000, living in a clearly defined administrative and geographical area, either rural or urban, and all institutions and sectors whose activities contribute to improved health.<sup>1</sup>

In many Member States the district is the focus of attention for health. Districts will continue to play a major role in improvement of health care, utilization of services, the organization of systems, intersectoral collaboration, community participation, and identification and correction of inequalities. District administrations are culturally and geographically close to the community, which enables them to analyse local needs and solve local problems. It is at district level that national programmes can be adapted to local conditions. Also at district level, coordination can be strengthened between sectoral administrations and institutions in the

---

<sup>1</sup> The district health system is composed of: individuals, families and communities; health centres and other frontline facilities, hospitals at first referral level, and all other facilities providing health care in the district (whether from the health or related sectors and whether governmental, social security, nongovernmental, private or traditional); and all health workers in the health and related sectors.

health sector, and between the health system and the public. The district is, therefore, the most appropriate level for implementing primary health care (7, 8).

### 2.3 **A call for new public health action**

It is at district level that new public health action should take place in the years to come. This action will derive from lessons learned over the past 30 years and from new concepts of health. What are these concepts?

First of all, there is commitment to the fact that health and economic development are closely dependent on each other. Health is not simply a fortunate consequence of economic development; it is also a factor in that development, thus justifying investment in health, as emphasized by the World Bank (9). Secondly, health for all represents a quest for social justice and equity. This implies, among other things, that social solidarity should be invoked to ensure that everyone has access to health care. Such solidarity requires that public resources be mobilized, more equitably distributed and more effectively utilized. A third concern is that of establishing the best balance between private initiatives and government intervention to provide equitable access to good quality care. Decisions on health policy must take account of the current context of unprecedented population growth, economic crisis, rapid urbanization, and the widespread change in epidemiological patterns, which in turn is influenced by environmental factors and changing lifestyles.

New public health action places much greater emphasis, therefore, on improving health through community-based approaches, more inter-sectoral activity, higher priority for environmental interventions, and greater investment in health promotion, disease prevention programmes and essential curative care. Lifestyles are widely known to affect health. In countries where the epidemiological transition has occurred, a significant gain in life expectancy and quality of life may be obtained only following changes in lifestyles to reduce violence, accidents, alcohol and drug abuse and sexually transmitted diseases, to improve diet and to increase exercise. New public health action, as a strategic response to change in the health sector and other related sectors, seeks to accelerate implementation of the primary health care strategy through decentralization, the strengthening of district health systems and increasing the availability and use of health information at national and local levels.

## 3. **Current issues in health information**

### 3.1 **General issues**

There is considerable variation in the degree to which district health systems and their information support have evolved in different

countries. Since some countries are more advanced than others in these areas, it is difficult to generalize. However, certain concerns recur. A major concern, and a very basic one, is how the information will be used, in what context, at which time and by whom. If we need more information to support management decision-making, which is commonly asserted, what form should the information take and how will it actually be used? Information comes in several forms, such as quantitative data on specific events like mortality or qualitative information on such areas as community perception of the quality of health care. What is the relative value of different types of information? Some information, such as the incidence of epidemic cases, needs to be updated frequently, whereas indicators like household water supplies or adult literacy change only slowly. Some information derives from data recorded by health services and may be collected routinely, whereas other information is available only from other sectors. Some information can be collected only by special surveys or research studies of health systems. What is the appropriate balance between the different methods for collecting information?

A number of areas have taken on new importance for information support. These areas – such as monitoring access, coverage and quality of services, equity and inequalities, and costs and efficiency – all represent challenges that will require the development of new kinds of information.

### 3.2 Approaches to information systems

It has been said that information systems often seem to become ends in themselves. Their development and management may seem “data-led”, generating data on the premise that the provision of a wide range of health information to health planners and managers is a useful and necessary activity. All data are inherently useful, particularly if they are representative of the whole country and can demonstrate trends over a period of time. National information systems are built and revised mainly by expanding the range of data collected, improving data quality, speeding up analysis and widening information dissemination. This is frequently done by increasing the collection of routine information, based largely on reporting by health services, and by carrying out large-scale population surveys. Health informatics and microcomputers are frequently seen as essential to such reforms.

The “action-led” approach, on the other hand, focuses on health information that will support management decisions that are necessary to improve services and programmes directly. Proponents of this approach believe there are often sufficient data being collected by the routine information system, by public health programmes or through special surveys, but that such data may not be analysed appropriately or be accessible at the right time and in the correct place.

Under-utilization of data often results in the data being of poor quality. Experience shows that errors and inconsistencies are quickly detected by persons using data and that this leads to rapid improvement in quality. Indeed, in action-led systems the collectors and users of the data may be the same people (10).

### 3.3 The role of national health information systems

A national health information system is important for health policy-making and for health planning, especially with regard to the allocation of health resources at country level, the monitoring of health services and programmes, and the evaluation of their impact in improving health status and achieving greater equity (11, 12). The national information system needs to provide information on the nation's demographic situation, on its health and disease profile, and on the distribution, costs and utilization of the health services and programmes, showing trends over time. National health information is also needed for the planning of special health programmes and for the monitoring and evaluation of primary health care. This information should give answers to questions on the equity, effectiveness and efficiency of the country's total investment in the health sector, since it is the national level that is accountable for the most efficient use of the nation's resources. National information is also needed on the contribution that intersectoral action can make to the improvement of health, although this is a commonly neglected area of concern (13).

The role and scope of national health information systems vary enormously from country to country and there is little agreement on the form they should take. Almost every country has its unique requirements for health information and its own national system for collecting and distributing the information. In addition, national information support to district health systems is a largely undeveloped area of activity. There is controversy concerning the value of the health information that "data-led" national information systems provide, particularly regarding its availability and usefulness for decision-making processes at local levels (14).

### 3.4 District health information systems

District health systems are concerned mainly with the day-to-day implementation and management of health services and they may play a smaller role in the choice of health priorities or the evaluation of progress towards health for all. Although it is widely agreed that more relevant and timely operational information is necessary to implement the primary health care strategy at district level, there remains a wide-ranging debate on what information is required and how it should be collected, utilized and controlled (3). It is commonly emphasized that more "action-led" management information is needed at both national and district levels (15).

A district health information system should be a part of a national health information system, but it should also be able to act on its own initiative. A national information system normally involves data being collected at the periphery of the health services and then passed to the national level. Although data may be aggregated at district level, this frequently plays little or no part in day-to-day management. The data collection is usually based on counting the number of interactions between the users and the health services, including the number of sickness episodes and preventive procedures. These contacts are usually recorded in registers, patient case notes and home-based records. Examples of data obtained in this way include the number and diagnoses for emergency outpatient attendances, the number of children given immunizations and the number of deliveries attended by trained health workers.

However, such information is not usually population-based and does not indicate what equity, coverage, quality or efficiency is being achieved by the various health services and programmes. As a result, district health information is frequently seen to be of little direct benefit to district managers. Ways need to be found, therefore, to encourage the development of new and appropriate information for use in management at district level.

### 3.5 **Common problems in information systems**

Problems that are commonly seen in routine health information systems are listed below.

#### ***Data collection and reporting***

- Health service staff are required to do excessive data recording and reporting.
- Many of the data recorded and reported by health service staff are not needed for the tasks the staff perform.
- Data routinely reported by health service staff are frequently considered of dubious validity and not reliable.
- There is inconsistent recording of diseases because case definitions are not clear and procedures are not standardized.
- Many countries continue to tolerate incomplete registration and certification of deaths.

#### ***Data analysis, presentation and communication***

- Health information systems do not provide reliable information about people who have no access to health services or about those who use the private sector.
- When information is needed for planning and monitoring purposes, considerable efforts are needed to extract the precise information required.

- There is a growing tendency for aid agencies to ask for information geared specifically to their own purposes, which can place an extra burden on the job of data analysis.
- Increasing use of general and special-purpose surveys to capture data that should be part of routine reporting serves to lessen reliance on routine data.
- Despite considerable investment in computers and data processing, little use is being made of informatics to analyse data in routine service reports.
- Little attention is given to improving the presentation and dissemination of the information once it has been processed.

### ***Using health information***

- Data may accumulate at higher levels of the system, particularly at the central (ministry or national headquarters) level, but little is analysed and fed back to districts.
- Little attempt is made to present the information in the form of comparisons that are readily understood at district and sub-district levels.
- Insufficient effort is made to formulate new indicators for use specifically at district level.
- Considerable staff time is spent at the different levels of the health system handling data and reports, yet few apparent improvements are seen in services and programmes.
- There is frequently poor dissemination and use of the information among community groups and the general public.
- At district level there is insufficient training and development of skills in data analysis, presentation and use.
- Efforts to strengthen national health information systems have often produced little improvement and have sometimes made the problems worse.

### **3.6 New challenges for health information**

Many information specialists and managers tend to see district health profiles, indicators and reports as the final products of the information system. However, for the health system as a whole these are only intermediate steps that are meaningless if they are not communicated to and used by decision-makers. If information systems do not contribute to health improvements, it is hard to justify their expense. Information should be the basis for improving the administration of health resources, as quickly and effectively as possible, in the pursuit of national and district health priorities.

In their call for new public health action, experienced policy-makers, administrators and health specialists meeting in Saitama, Japan, identified new priorities and concerns (6), particularly in relation to equity, quality and efficiency of health services. How can these concepts be put into practice in order to improve district health systems?

## 4. Health information needs at district level

### 4.1 General categories

The information required to plan and manage the district health system ranges from the broad and qualitative, which is often in the realm of general knowledge, to specific demographic, epidemiological and administrative data. A knowledge of the general socioeconomic characteristics, geography and climate of the district provides essential background information. Of prime importance are demographic data on the total population and relevant subgroups, as well as on trends in their health status. A further category of necessary information concerns access, utilization and coverage of health services and public health programmes. Information is also needed on the distribution of resources and the financing of services. A category of information that is often not included relates to management of the health system itself.

A national health system using such a range of categories of information in health planning, monitoring and evaluation has been described for the Philippines (16). However, different countries will define their own categories of health information, depending on district and country priorities. Although countries with more developed district health systems can afford to be more comprehensive, it is important that priority be given to developing a minimal set of information rather than a comprehensive one. In that respect, some indicators of the burden of disease, such as disability adjusted life years (DALY), at present are too complex to calculate and use at district level in most countries, even though they may be considered at national level.

The district health information system needs to provide, therefore, at least some information in each of the following categories:

- *General socioeconomic and environmental information*
  - physical characteristics and climate of the district;
  - community organization, economic development, occupations and daily activities;
  - organization of local government and administration;
- *Demographic information*
  - district population size, age and sex structure, urban-rural balance and geographical distribution;
  - vital statistics, migration patterns and population growth rate;
  - family structure and composition;
- *Health status patterns and trends*
  - frequency of common lifestyle risk factors for communicable and noncommunicable diseases, such as AIDS, tuberculosis, cancer and diabetes, as well as patterns in diet, smoking, and use of legal and illegal substances;
  - common causes of morbidity, disability, mortality and locally epidemic diseases;

- important underlying health problems associated with education, food availability, housing, water supply and excreta disposal;
- *Access, utilization, coverage and quality of health care*
  - pregnancy (fertility control, antenatal, delivery and postnatal care);
  - nutrition (breast-feeding, growth monitoring, malnutrition);
  - immunization;
  - environmental health (water supplies, excreta disposal, household hygiene, house construction);
  - control of communicable and noncommunicable diseases (risk factors, cases diagnosed, control activities implemented);
  - utilization of outpatient and inpatient health care facilities for acute and chronic diseases;
- *Resource mobilization, allocation and utilization*
  - number, capacity and distribution of governmental, nongovernmental and private facilities, personnel and programmes;
  - sources and flows of health finances, budget allocations and expenditures;
  - function, training and distribution of categories of health staff;
  - availability and performance of management support, transport, logistics and supplies;
- *District health system management process*
  - planning (national and provincial policies, strategies, plans, technical guidance for preparation of district operational plan);
  - coordination (cooperation within the health sector, intersectoral health and development activities, the role of community groups and the private sector);
  - monitoring and evaluation (the extent to which the indicators decided by the district health system are used).

## 4.2 Emerging needs

In the context of new public health action, it is increasingly important to develop capacity to collect, analyse and present information related to equity, quality of health care, efficiency of health services, lifestyles and the environment. This information is needed to assess these factors accurately and thus help policy-makers, health managers and politicians to define the priority elements of new public health action. The information is also needed to monitor the impact of measures to influence these factors.

The issue of equity has been much debated in recent years and is likely to become more important in view of the processes for greater democratization and decentralization that are under way in many countries (17-20). Equity is not easy to measure, especially as it carries moral and political connotations, which is why few indicators to measure equity have been unanimously agreed upon. However, at district level it seems both possible and desirable for local health managers to collect and analyse information to demonstrate aspects of equity. Such information would include data on the following:

- distribution of health resources between different health facilities;
- accessibility of health services to the population groups defined by age, sex, socioeconomic level and geographical location;
- use of health services by different segments of the population in order to identify non-users (and the reasons for non-use);
- differentials in mortality, morbidity, disability and nutritional status according to demographic, socioeconomic and geographical characteristics.

The quality of personal health care and public health programmes has likewise become of growing concern to the public, as a result of higher levels of education and awareness. Quality, like equity, is difficult to define. It ranges from the intrinsic technical quality of health care to the human quality of the relationship between providers and consumers. At district level it seems appropriate to recommend that more attention be given to assessing user satisfaction and that more efforts be made to monitor the quality of health care in all institutions. This may include, for example, auditing maternal or infant deaths in hospitals, supervising staff in primary health care facilities or analysing drug supplies and consumption patterns.

Efficient use of health resources at district level should be a managerial priority. Productivity of human resources, use of hospital beds and operating rooms, and the unit costs of the main health facilities can be monitored at district level. The district also has a role to play in assessing the need for new technologies. Concerns about environmental effects on health will probably require active intersectoral collaboration; in many cases district administrators can facilitate such collaboration more easily than those at national level. Depending on the country and the prevailing pattern of morbidity, additional information may be needed on such factors as air pollution, drinking-water quality, transmission of waterborne diseases, housing and food hygiene.

## 5. **Methods for collecting and processing information**

### 5.1 **Sources and methods of data collection**

Data<sup>1</sup> collection at district level is generally organized as a component of the national health information system, which in many countries is the only system that attempts to provide a comprehensive set of data. The national headquarters usually obtains its information from the routine data reported by the health facilities and field personnel and from special

---

<sup>1</sup> Data are uninterpreted raw statements or observations of the facts. Information consists of data recorded, classified, organized, related or interpreted within context to convey meaning. An information system is a system for accepting data as raw material and, through one or more transmutation processes, generating information as a product. Collection, recording, storage, retrieval, processing, transmission, presentation and decision-making (in relation to its own existence) are among the functions performed by an information system.

surveys. The districts, although they are responsible for collecting and reporting the original data, commonly play a marginal role in data analysis or use.

Public health programmes can be another source of data at district level, even though such data are sometimes collected directly nationally or regionally. Public health programmes commonly have their own separate data collection systems that are frequently more action-oriented, timely and user-friendly than the routine system. Such programmes also give high priority to supporting and training district staff, even though such assistance may be specific to the programme concerned.

Other approaches could be more widely used for the formal collection of health information. One is the use of standardized and simplified surveys, such as those which depend on cluster sampling of households, with validated data collection techniques and simple sampling procedures. Another approach uses methods developed by the social sciences to collect more qualitative information on factors such as beliefs, practices, satisfaction and perceptions. Recently new methods have been used to identify inequities and inequalities in population groups that live in poverty.<sup>1</sup> These techniques include the use of key informants, nominal groups, in-depth interviews and focus group discussions. Of rapidly growing importance is the need to use the techniques of economics to assess direct and indirect costs of services and facilities and the distribution of human and financial resources. This information is needed for management purposes and for assessing efficiency.

One under-utilized source of secondary health information is material reported in publications of the central or regional government departments by research agencies and by sectors such as education and agriculture that are closely related to health.

Apart from these sources, formal health information may also be obtained from information systems based on death registration and certification, general surveillance and sentinel sites (21, 22), lay and community-based reporting (23), laboratory reports and outbreak investigations. These sources of information are valuable when organized within a national system of surveillance.

Supervision is particularly important in maintaining the quality of a service, as well as for improving staff morale, knowledge and skills through on-the-job training. Informal collection of health information is an integral part of any supervision activities undertaken by the senior district health staff. A first-hand knowledge of the district health services and their staff is essential for interpreting the health information that is available and for making good managerial decisions. The value of these informal means of collecting information needs to be stressed, since health information without local knowledge will probably be of little value.

---

<sup>1</sup> Castellanos PL. Health situation analysis and inequities in health. Working paper prepared for the 120th annual meeting of the American Public Health Association, November 1992.

## 5.2 District routine information systems

The district routine information system is usually an essential component of the national health information system and supplies data to the central level. Each country has its own system of collecting data, though standard definitions and methods of classification, such as those in the International Classification of Diseases (10th revision), will be used.

Unfortunately the district routine systems often have many of the problems outlined in section 3.5 above, with many staff untrained in data analysis and information use. A common finding is that the resulting health information is of little or no interest to district health workers (14). District staff are often unconvinced that they have a right and duty to analyse this information for their own use, and frequently they are not encouraged to do so.

Although such routine systems may have problems and may be criticized, they can provide a reasonable estimate of the number of activities carried out by the services or programmes and these totals can be used to form the numerator data required to make estimates of coverage indicators. This is well illustrated by the coverage information that can be provided by immunization programmes.

## 5.3 Population-based and facility-based surveys

The use of cross-sectional sample surveys of households or health facilities has been widely promoted. Such surveys can provide reasonably accurate data on such characteristics as the use of safe water, incidence of diseases, health beliefs and previous use of health services (24). They are particularly useful for the measurement of frequent events but are not recommended for those that do not happen often. Surveys can also be useful for evaluating the impact of health services and programmes on health status (25). Such surveys are prone to sampling errors and there may be bias in the collection of the data. For these reasons it is recommended that these surveys be carried out either by district staff with experienced support or as part of a larger investigation (26). However, a number of survey methods are of proven value and instruction manuals are available (27).

There is a well-tested cluster survey method that was originally developed by WHO for use in its Expanded Programme on Immunization (28, 29). This method could be more widely used by district health staff, particularly for estimating provision and coverage of district services. Similar cross-sectional surveys are promoted for the evaluation of activities, procedures and equipment of health facilities and of community-based health services. These surveys have been used to estimate aspects of the quality of services and programmes and have included day censuses to derive descriptive information on such aspects as the availability of essential drugs, utilization of outpatient services,

bed occupancy and the workload of health staff (30). For instance, such facility surveys, as they are commonly called, are being promoted by WHO for estimating the quality of care provided by health facilities for the control of diarrhoeal diseases and acute respiratory infections and for maternal and child health (31, 32).

The methods and techniques for such local surveys are now much more widely available and it is surprising that districts do not use them more frequently, either on their own initiative or at least as part of a wider national effort. More international and national support could be given for increased use of these approaches.

#### 5.4 **Public health and disease control programmes**

The programme approach to organizing health interventions for the control of diseases such as yellow fever and cholera has a long history. In recent years the approach has been increasingly used for preventive activities as well. Preventive programmes usually develop their own action-led information system to monitor how well programme activities are being implemented. There is thus a close link between staff who organize the activities and those who collect programme data, which promotes concern about the quality of the data and how the information should be used.

In addition, such programmes usually identify their target “at risk” groups in the general population and base their activities on a limited number of process, or coverage, indicators. Achieving a high coverage of the population at risk with good quality services then becomes the management focus for all programme staff. This is why such programmes usually develop their own health information systems.

However, programmes of disease control and prevention tend to emphasize the advantages of a “vertical” approach (with narrowly focused directions passed from the top of the hierarchy downwards) rather than a “horizontal” approach (which stresses integration of the kind that is needed at district level). Several such programmes may also compete for the same scarce human and financial resources in the health sector at national and local levels. For instance, districts commonly have problems balancing demands on the district routine information system when different programmes request collection of data for their specific needs. The district-level information system can easily become severely overloaded. Significant efforts are currently being made by some programmes to integrate data collection for their own purposes into the routine system and they are developing instruments in support of this integration. An example of this is the integrated household survey on diarrhoeal diseases, acute respiratory infections and breast-feeding promoted by WHO in Member States.

There are many lessons to be learned from such “vertical” approaches.

The health information they produce tends to be of better quality than that of the horizontal approach. The information is both action-oriented and timely, and it is usually available locally and presented in a form that is easy to understand. The same information, when analysed at national level, can be used to show how well different districts are performing. If managers at district level had access to more health information of this nature, they would be more likely to use it.

## 5.5 The role of computers in processing data

Microcomputers and associated technologies are spreading rapidly in almost all countries and computers are commonly seen as an essential component in the development of information systems, particularly those supported by external aid agencies. There is a considerable amount of practical experience of the advantages of using microcomputers in information and management in both developed and developing countries (33). The handling and processing of large volumes of data collected by the routine health information system are made more manageable, as is the transfer of both raw and analysed data between national and district levels. Improving this transfer is often given high priority by central epidemiology and statistics units but, although they may speed up data processing and transfer, this alone does not overcome defects in the original system. The decision to use more computerization provides an excellent opportunity to review and overhaul the whole information system.

A common objective of installing computers in district offices has been to analyse some of the basic data locally and to have the information more readily accessible for use at district level. In this way a health profile of the district can be maintained and updated as necessary, monthly disease incidence and service activity totals can be made available and “at risk” denominator populations can be calculated. This can lead to improved monitoring of coverage achieved by health programmes and the attainment of annual targets can be kept more closely under review.

Experience has shown, however, that the use of microcomputers also has disadvantages and that expectations have probably been too high. Besides the initial capital costs, which are frequently paid by international donor agencies, recurrent and replacement costs are high and problems may arise concerning choice, standardization and maintenance of the equipment. Adapting software packages to the local situation requires effort and time. Staff need training and, once they are trained, it may be hard to retain them in the health sector as they are in great demand by other organizations. All this means that the necessary time, financial resources and sustained effort are largely underestimated, which can result in some disillusionment in central government departments.

It is commonly said that it takes up to five years and a lot of effort to have a computerized system running well. At district level, it is important that the computerized information system be both robust and flexible, and that it be maintained as far as possible with local resources. For these reasons, the use of personal microcomputers and existing software is recommended as preferable to using mainframe computers and the development of dedicated software.

Ministries of health and international agencies may need to adopt a cautious approach, learning from experience of using computers in national information systems before expanding their role into district systems. The decision to adopt more computerization means long-term support will be required.

## 6. **Analysis, presentation and reporting of health information**

### 6.1 **Data analysis**

Although many districts could have, and perhaps should have, a greater role in data analysis, they often do not analyse more than a fraction of the data collected by the routine system. This means that most analysis is carried out by a central unit, such as a national epidemiology and statistics unit or a bureau of statistics. The districts need two main types of data from which to derive information. The first is the total number of outpatient and inpatient attendances, including the number of new cases of those diseases that are under surveillance. Many of these data may be presented monthly. These figures give an indication of the case workload and the incidence of the more important diseases.

The second type of data needed is the total number of health promotion and disease prevention activities – such as deliveries, family planning, growth monitoring and immunizations – completed in the same month. Another set may include community-based data on lifestyles – such as prevalence of smoking, alcohol or drug abuse, or violence – or data relating to environmental sanitation or pollution, or to housing and other living conditions.

The figures demonstrate the workload undertaken and a comparison of the totals with the number of people at risk enables indicators – such as the percentage coverage being obtained – to be calculated. If monthly totals are accumulated, an indication can be obtained as to whether an annual target is likely to be achieved. For management purposes it is preferable to have regular and reliable information on a few key indicators, rather than wait a long time for a longer list.

Coverage indicators are useful for focusing management decisions. The indicators provide the basis for comparing the actual or observed

situation with that which is desired or expected. Coverage estimates reveal how well or badly the district is performing, especially when they are compared to national figures. Such comparisons can help the district decide its programme priorities and the management steps required to implement the current programmes, including setting targets for the following year.

For many district management purposes only a few important indicators are required. Achieving high coverage and high quality in population-based public health programmes is essential if the interventions are to have maximum impact in improving the health status of the district population.

It seems preferable, therefore, to produce a minimum set of basic indicators on a regular basis. Each country needs to define what its most relevant basic indicators are. The following list of basic coverage indicators is given as an example:

- *Pregnancy*: contraceptive prevalence by methods, antenatal clinic attendance by trimester, delivery by trained personnel and facility, postnatal clinic attendance.
- *Nutrition*: low birth weight, breast-feeding prevalence at six months, malnutrition prevalence at 12 months.
- *Immunization*: schedule completed for recommended vaccines.
- *Environmental health*: households with safe water supply, excreta disposal and vector control, overcrowding, house construction.
- *Communicable diseases control*: percentage of people with malaria or measles, episodes of diarrhoea and acute respiratory infections receiving treatment, prevalence of human immunodeficiency virus (HIV) infection, tuberculosis and leprosy cases under treatment, important epidemic diseases.
- *Noncommunicable diseases*: prevalence of smoking, alcohol and other drugs consumed, hypertension and diabetes cases under treatment.

To provide information on special or underprivileged population groups, the indicators can also be presented by access to services and by such parameters as age group, sex and geographical area.

## 6.2 Presenting the information

There is little doubt that health information would be more widely used if it were presented more clearly and comprehensibly. For instance, visual displays of data in charts, histograms and graphs are more easily understandable than tables and can easily be drawn by hand or produced by microcomputer software packages such as EPI-INFO (a software for processing, analysing and presenting epidemiological data). A helpful comparison is one that shows the performance of different districts in relation to the national average. Other techniques such as the use of

standard age groups, time trends and cumulative totals are also helpful. Whole numbers, totals and percentages are frequently more readily understood and more useful than rates or ratios, particularly when information is based on small population groups.

District and country maps can show in an appealing way the distribution of the population, socioeconomic conditions, prevalence of diseases and location of health facilities. Modern geographical information systems (GIS) can be useful, although their application in health information systems and at district level is still experimental (34). A map with pins is an effective alternative that could be used more frequently.

A great deal of national health information is expressed and presented in the form of demographic and epidemiological rates. It is important to remember that these rely on abstract concepts and require considerable training to interpret and use. It is probably better to use whole numbers and percentages when communicating information to primary health care workers, communities and the public.

Epidemiology and statistics units commonly give insufficient thought to user perceptions of the information being presented and often make too many assumptions about the level of skill required to interpret health information. This problem is often neglected in national health information systems.

### **6.3 Reporting and communicating health information**

Health information must be communicated to decision-makers, the general public and local organizations if it is to be more widely used. Findings that are not shared, or are shared too late, are unlikely to prove useful. Timely dissemination through appropriate channels is essential. For instance, national capacity to control epidemics in the early stages may well depend on the use of rapid communication methods. Undue delays in reporting epidemiological observations, and hence delays in initiating appropriate responses, are frequently due to lack of appropriate channels, inadequacy of procedures or poor briefing of staff. In addition, a clear definition of what should be reported, in which form and through which channels is commonly neglected in information systems development.

As important information needs to be stored, analysed, retrieved and communicated, it is recommended that each district should have one main centre or office with this responsibility.

It is also important to remember that electronic data processing and modern reproduction techniques can make situations worse. Photocopying, electronic access to distant databases and instantaneous transfer of data through telephone lines or via satellites can easily result in an excessive number of forms and reports. It is important to be highly selective with regard to the amount of health information communicated, particularly to policy-makers who are pressed for time.

There is growing public interest in many countries in being well informed on personal health matters and public health issues, as evidenced by controversies on the benefits of cardiac surgery or on the spread of HIV infection. The media play a very important part in this process and health information is increasingly disseminated through radio, television and newspapers. The work that can be done by health professionals with communication skills is becoming of great importance.

## 7. **Facilitating the use of health information**

### 7.1 **Using information in district planning and monitoring**

Since information is commonly under-utilized at district level, it is important to develop new ways of encouraging its use. There are several factors that may account for under-utilization, such as:

- *Data of insufficient quality*: data may also be incomplete, inappropriate, untimely or inaccurate.
- *Insufficient decentralization of authority*: information is meant to influence decisions, but decision-making must be sufficiently delegated to those who are willing to use the information.
- *Lack of managerial initiative*: at district level, management often has a short-term outlook and even when information is available, many managers are reticent about using it.
- *Lack of resources*: managers are not convinced that decisions on the mobilization of resources (allocation, use or redistribution) can be effective in contexts where health resources are limited.
- *Lack of skills and support*: there is often a lack of the necessary skills, equipment and trained personnel, combined with a lack of support from the central level.

District planning usually starts with analysis of the current situation, often called situational analysis. To do this, district managers need a comprehensive and integrated view of the health needs of the whole district population. A district health profile containing a range of essential indicators would be very useful for this purpose (35). In addition, such indicators can be useful in choosing district priorities and in agreeing future programme objectives and targets. They are also useful in monitoring progress in programme activities and in managing scarce health resources. Coverage indicators are oriented to process and action and, therefore, can be very useful at district level. Low coverage by essential public health programmes requires action to improve the situation. This is generally accepted in programmes for the immunization of children, but is much less generally accepted for activities such as those related to antenatal care, control of tuberculosis or availability of safe water.

The setting of goals, objectives and targets at district level is important in developing district plans which in turn stimulate a further need for

information. District health profiles may be updated annually, with the central level giving support on procedures. Without central guidance, districts may well experience difficulties in arriving at a minimal listing of indicators as they often tend to request a long list.

If the district had such health information more widely available, it is likely that district managers would recognize it as useful, relevant and timely. When district managers appreciate the value of information, they become more concerned for data quality, identifying defects and helping improve the whole district information system.

## **7.2 Improving use of data**

Countries will have different reasons for insufficient use of data. However, delegation of managerial functions to district level has led to increased local planning, for which information is necessary. And the growing movement towards improvement of the quality of public services has also prompted a number of initiatives that offer some hope for improving data management and information use in districts.

### ***Database management***

Perhaps the technique of greatest potential that is least appropriately utilized is computer database management. Designing and maintaining modest, programme-specific databases at the Ministry of Health can help ensure that routine reports being submitted by health service facilities are checked, analysed and incorporated in national situation summaries and monitoring reports. National databases make it possible to provide useful feedback to the reporting units at district level which should gradually improve the completeness and quality of the data. Various types of reports can then be generated from the data. This one activity can repay the extensive investment in computers made by ministries of health, much of which is under-utilized. However, the reservations expressed about computer use in section 5.5 should not be overlooked.

### ***Rapid evaluation of selected services***

There has been widespread and successful use of cluster (village) sample surveys to confirm coverage being achieved with immunization, use of oral rehydration therapy and certain maternal and child health and family planning services. As a result, increasing use is being made of facility-based surveys to assess performance. Methods have been devised to facilitate rapid health service evaluations aimed at exploring issues of local concern. The most common data collection methods are staff interviews, task observations, reviews of records, checklists of facilities, supplies and equipment, client exit interviews, and village focus group discussions (36). Such assessments of quality of care and client satisfaction can point to services that require in-depth attention and improvement. Moreover, the involvement of district health teams in these

rapid evaluation efforts has been shown to increase the likelihood that data collected will be used in district management and planning.

### ***Review and revision of health service procedures and treatment guidelines***

Another step is to examine the procedures in use and see how they may be improved. This should include review of the adequacy and use of data recording, particularly for case management. Efforts should be made to devise guidelines for improved case management procedures, including identification of which data to record, standard nomenclature, criteria for referral, and so on. Efforts are being made by WHO, for example, to foster standard procedures for the integrated management of childhood illness. In addition to standardization of data recording, these guidelines bring other benefits such as improvement in the use of essential drugs.

### ***Revising morbidity reporting***

Once standard case definitions have been established it becomes possible to standardize case reporting across the various levels of the health service. This implies that the same general morbidity categories will be used by all health facilities, even though more detailed coding could occur in some parts of the health services. In hospitals ICD-10<sup>1</sup> codes would probably be used. This standardized morbidity reporting can also entail sentinel site reporting for specific conditions and diseases.

### ***District team problem-solving***

Establishing in health service staff a “data mentality”, so that they realize the importance of using health data, also requires practical learning activities. One promising approach is called “district team problem-solving”. Teams of district staff are assigned a specific health problem of current concern to tackle and improve through locally devised interventions. The teams are given support in defining the problem, designing and conducting simple surveys, analysing and presenting the information, and designing and carrying out feasible interventions. The teams then evaluate the results. This process takes the staff teams through all phases of management and greatly enhances their use of available data. Innovations produced by such teams can warrant national replication.

---

<sup>1</sup> *International Statistical Classification of Diseases and Related Health Problems, tenth revision. Volume 1.* Geneva, World Health Organization, 1992.

## 8. **Resources and management support to district health information development**

### 8.1 **Supporting district health information systems**

Although good quality and useful national health information is regarded as essential for country-level policy-making and planning, it is not always recognized that similar health information is just as necessary at district level. Experience shows that district health information systems are more likely to develop if decision-making is decentralized sufficiently that districts are responsible for setting priorities, allocating resources and making personnel decisions. In such a situation, district managers realize the value of health information and are prepared to release resources to strengthen the district health information system. In addition, decentralization leads to more requests from districts to the national health information system, which in turn commonly stimulates national systems to present information in a format that is most useful to districts.

However, all health information systems require resources and adequate long-term funding for such necessities as trained staff, computers, supplies, communication equipment, systems and staff development, reports and communication costs. The same is true of district systems, which are often initially developed with considerable support from international agencies. If these systems are to remain active, local long-term funding will become necessary and district managers will have to be convinced of the need to continue to support them.

Although central government information systems can be a source of valuable health information for districts, it is surprising how few central systems provide districts with a “health profile” describing the known situation or comparing different districts in ranked order (16). In addition, ministries of health have access to a wide variety of census and survey reports which could provide valuable information to districts if the findings were presented in more usable ways. For instance, over the past two decades many large demographic and health sample surveys, such as the World Fertility Survey and Demographic and Health Surveys, have provided data on a large number of countries.

National epidemiology and statistics units are well placed to provide comparative information by individual district, with summaries of essential national health information – particularly that which needs updating only every few years. In addition, such units are in a very good position to supply information that is specific to a particular district, such as population estimates by age group, sex, or the number of newborn infants expected in the district during the coming year. Charts and graphs showing access and coverage achieved by each district for a range of essential programmes would enable district managers to assess their own performance in the light of the overall national situation. Considerably

more thought needs to be given to devising ways in which central government agencies can support public health action in individual districts rather than simply instructing the districts about what they should do for the central level.

## **8.2 Training support for district health information**

During the last decade or so, many countries and agencies, including WHO, have stressed decentralization and the other policies that support the concept of district health systems. In particular, national governments have organized training in district planning and district management (7, 8). These initiatives, many of which have depended on external support from international aid agencies, have focused mainly on management concerns such as teamwork, staff training, essential drug supplies and the organization of community-based services. The improvement of district health information systems and the use of health data at district level have been widely neglected.

Many of the most successful district-level initiatives have been pursued by special public health programmes which regard relevant information as crucial to carrying out their activities and thus achieving higher coverage. Public health programmes that are action-oriented and have a vertical structure, such as those on family planning, immunization and the control of diarrhoeal diseases, commonly place high priority on the development of training and learning materials.

A real challenge faces all proponents of the district health system. How can the advantages of the training approaches developed by special public health programmes be combined with those of national health information systems in order to strengthen information systems at district level?

## **8.3 Developing basic skills**

Basic skills in epidemiology, statistics and computing are essential if district planning and management are to be successfully focused on population needs.

The necessary skills of descriptive epidemiology include understanding the structure of the district population, particularly by age, sex and “at risk” groups; understanding and using health status indicators; using disease incidence and prevalence figures in a variety of ways; and using the activity information recorded by the health services. Personnel at all levels of the health care system should be encouraged to use statistical data and health indicators in their work.

Epidemiology is generally used for research purposes and great attention is given to deriving the most reliable proportions and rates. This is an important priority for national health information units in ministries of

health but is not so appropriate for districts. At local level, attention and support should be given to adapting and simplifying procedures for epidemiological research so that training in these skills becomes more meaningful to primary health care workers (37). How can the principles and skills of epidemiology be used to improve the availability of district health information? What are the best ways of using this information to improve training courses and workshops in district health planning and management?

#### **8.4 Availability of training courses and materials**

While there are plenty of manuals and training materials on how to carry out large-scale household surveys and other epidemiological research activities, few are suitable for use in health planning in developing countries. WHO has recognized this deficit and has supported publications in this area (e.g. 36). Even so, only a few have been written specially for district health staff and they are not usually directed at specific countries.

Special public health programmes have produced a number of training materials and even implemented worldwide training schemes. These programmes have usually incorporated the collection and use of health information into their training schemes as one of the basic components or modules. These training materials have been widely used in workshops at national, regional and district levels in many developing countries. The scale of the training achieved has been impressive. In addition, many international bilateral and nongovernmental aid agencies have also supported a variety of training courses specifically for districts. Some of these courses have been evaluated (37). Since it is difficult to evaluate such general training, it is not clear what the benefits have been to the countries concerned. What is clear is that the fragmented nature of these two separate approaches to training has left health information poorly integrated at district level.

The challenge is to use the most effective training approaches for the benefit of all district health activities – particularly linking basic epidemiology with statistical and computing skills, management and decision-making.

#### **8.5 Some principles for health information development**

Development of health information systems should be an integral part of efforts to strengthen the whole health system. The collection of information cannot be carried out in isolation or without reference to the way it will be used by health managers in decision-making. In particular, requests from external agencies for extra information should be resisted unless they can be justified as a means of improving management. The following principles are suggested:

- All information has a cost and should therefore be fully utilized.
- Improvements in data collection and use should be seen as improvements in services and/or programme activities, and not as requirements in their own right.
- Any data to be recorded at a particular level of the health service should have a use for management at that level.
- Changes to data being collected should be made only if they lead to improvements in the provision of care for patients or for the community, and particularly for those groups most in need.
- Great care should be taken before changing any components of the health information system that are working well.
- Before the information base is expanded, there should be efforts to make better use of existing data through practical analysis and improved presentation.
- Modest use of informatics and microcomputers should be encouraged, together with training in skills for database maintenance and the presentation of reports.

In choosing health indicators for use in district level management, it may be useful to ask the following questions:

- Will the indicators be useful to the staff recording the original data?
- Do the indicators demonstrate short-term changes?
- Are the indicators easy to calculate from data already available through routine health service activities?
- Is it clear to all health staff what the indicators are intended to measure?
- Are the indicators representative of the population concerned?
- Are the indicators useful for measuring progress towards national objectives and targets?
- Can the indicators be used to draw comparisons between districts and between facilities within districts?

## 9. **Conclusions**

In recent years many countries have significantly developed national health information systems that are now able to supply a range of essential health information for national policy-making and health planning. However, these information systems face a number of challenges. One major challenge is how to continue supporting district-level managers in implementing primary health care. Another challenge is to decide what new information will be required at local level – particularly for monitoring the equity, coverage, quality and efficiency of health interventions – as a country undergoes major health system reforms.

Health information systems suffer from a number of well known problems. Further improvements are still required in data collection

processes, methods of analysis, use of microcomputers and informatics, and presentation and communication of the health information. These new challenges emphasize the critical need that all countries have for reliable, relevant, timely and useful health information.

A wide range of information is required for the planning and management of district health systems. It includes the socioeconomic and demographic characteristics of the population, the extent of access and utilization of health services, and the coverage and quality achieved by public health programmes. Information needs depend on district and country priorities. In the context of new public health action there is a particular need to collect, analyse and present information related to equity, quality of health care, efficiency of health services, lifestyles and the environment.

The district level of the national health system is closely involved in data collection and reporting. District management should also be able to analyse and use far more of these data for its own purposes, rather than relying on health information passed down from the national level. The collection of health data could be improved by greater use of approaches such as standardized case definitions, simplified survey methods, qualitative and rapid assessment, and cost analysis. Methods for population-based and facility-based surveys are widely available and their use should be encouraged. The data collection approaches used by vertical programmes have much to commend them since the information they provide tends to be action-oriented, timely and of good quality. Supervision of programmes provides an important opportunity to acquire information and improve data collection.

Greater use of computers has many advantages in terms of data storage, retrieval and analysis as well as in the presentation of health information at district level. However, experience has shown that there may be considerable problems before these advantages can be realized.

More data analysis should be carried out at the level at which data collection takes place. Greater use should be made of information that compares the achievements of different districts and of all the facilities within a district. Coverage indicators are a useful basis for comparing achievements with aims. They are also helpful for setting programme priorities and targets.

The national level of the health system has a very important role in assisting districts in developing their information systems. Districts could be provided, for instance, with such things as basic information on denominators, sets of health indicators and simplified methods for data analysis.

Interpretation and presentation of information are crucial, so district staff must be trained to do this. While information must be presented in a summarized and structured form, it is important that the raw data be

easily available for those who wish to check information or analyse it further. Ability to communicate and interpret health information to district health workers, local policy-makers and the general public is another important skill that needs more development.

Use of information at district level could be enhanced by better quality of data, more local resources and equipment, stronger district management and increased district-level responsibility for planning and monitoring. Greater use could be made of situation analysis, district profiles, and a minimal listing of indicators of health status and programme coverage.

National health system support to district health information systems includes making available the necessary resources, such as trained staff, supplies and equipment. The national level is a main source of support for the training of staff and the supply of suitable training materials. Training approaches developed by special public health programmes could be more widely utilized.

Improving the use of health information in district management is a high priority in many countries. Yet development of district health information systems probably needs to proceed as an integral part of efforts to strengthen the entire national health system and not independently. There need to be good reasons before independent district health information systems are developed.

## 10. **Recommendations**

### 10.1 **Recommendations to Member States**

In their efforts to accelerate progress towards health for all, Member States need to strengthen community-based approaches, incorporate interventions protective of the environment into intersectoral actions, and increase investment in health promotion and disease prevention programmes. Member States should also foster equity in primary health care, particularly in relation to access, utilization, efficiency and quality of health services and programmes.

The critical role played by district health systems must be recognized, especially where decentralization policies have placed additional responsibilities at district level. Health information is not only an essential resource for the development of district health systems, but also an integral component of that development.

Since health information at district level is of crucial importance for implementing new public health action, Member States need to review and adapt their district health information systems in the light of emerging trends in new public health action, health systems reform and greater decentralization.

### ***What needs to be done***

1. Existing information systems must be strengthened and improved at district and national levels to provide information which can be used to reflect the specific needs and priorities of both district and country and to address the corresponding problems.
2. Through cooperation between central and district authorities, essential data needed to address the health concerns of the district must be identified, particularly as regards the problems of equity, efficiency and quality of care. Systems must be developed to facilitate the collection of such data at the level of the community and health facilities in order to support decision-making at local community level.
3. Through joint activity at central and district levels, analytical tools, methods and mechanisms must be developed and strengthened to facilitate analysis and use of information at the level of data collection, so that district staff are enabled to assess district health status and health services performance and monitor health progress.
4. Similarly, the use of improved methods for presenting health information and communicating it to all levels of the health services, other sectors and political authorities must be developed and encouraged.

### ***How Member States can do it***

1. Member States should develop and update plans and programmes for health information systems at district level in response to issues in new public health action.
2. Member States should give priority to human and financial resources needed at both national and district level to support health information systems, in particular ensuring that staff training at all levels includes encouraging the use of information as a basis for decision-making.
3. Member States should make available the necessary supplies and equipment (including data processing equipment where appropriate), simplified tools for data analysis, and standards and guidelines for the collection, analysis and use of information at district level.
4. Member States should establish mechanisms for the coordination of programme-based information systems at district level, and of inputs both within the health system and outside it, in order to strengthen health information produced at national and district levels.

## **10.2 Recommendations to WHO**

1. WHO should take a more proactive approach in supporting the development of health information systems in Member States and coordinating its programmes of work with these systems.
2. WHO should support Member States in critically reviewing national health information systems and their components, especially in the context of implementing district health information systems.

3. WHO should support the development of institutional capacity through training of cadres in information-related disciplines such as epidemiology, compilation and analysis of health statistics, information system management and health record-keeping.
4. WHO should promote the development and dissemination of training materials and operational research methods in the context of improving health information systems.
5. WHO should support countries in producing tools for disseminating information, such as health profiles, health situation analyses, and epidemiological and statistical bulletins.
6. WHO should help countries in their efforts to coordinate support from donor agencies for developing health information systems.

## Acknowledgements

The Expert Committee wishes to thank the following for their valuable contribution to the meeting: Dr J. Catrayé, Regional Director, Ouagadougou, Burkina Faso, Epidemiological Surveillance Support Project of the Centre for International Cooperation in Health and Development, Quebec, Canada (representing the Canadian International Development Agency); Dr H.R. Hapsara, Director, Epidemiological Surveillance and Health Situation and Trend Assessment, WHO, Geneva, Switzerland; Dr A. Nanda, Regional Adviser, Epidemiology, Statistics and Research, WHO Regional Office for Europe, Copenhagen, Denmark; Dr B.K. Nguyen, Regional Adviser, Epidemiological Surveillance and Health Situation and Trend Assessment, WHO Regional Office for Africa, Brazzaville, Congo; Mr M. Ouakrim, Regional Adviser, Epidemiological Surveillance and Health Situation and Trend Assessment, WHO Regional Office for the Eastern Mediterranean, Alexandria, Egypt; Dr I. Tabibzadeh, Chief, District Health Systems, WHO, Geneva, Switzerland; and Dr J.R. Teruel, Director, Health and Development, Pan American Sanitary Bureau/WHO Regional Office for the Americas, Washington, DC, USA.

## References

1. *Strengthening district health systems based on primary health care*. Geneva, World Health Organization, 1988 (unpublished document WHO/SHS/DHS/88.2; available on request from Division of Strengthening of Health Services, World Health Organization, 1211 Geneva 27, Switzerland).
2. Mills A et al. *Health system decentralization: concepts, issues and country experience*. Geneva, World Health Organization, 1990.
3. *Strengthening information support for management of district health systems: report of an interregional meeting, Surabaya, Indonesia, 30 October -3 November, 1989*. Geneva, World Health Organization, 1990 (unpublished document WHO/SHS/DHS/90; available on request from Division of Strengthening of Health Services, World Health Organization, 1211 Geneva 27, Switzerland).
4. *From Alma-Ata to the year 2000; reflections at the midpoint*. Geneva, World Health Organization, 1988.

5. *Implementation of the Global Strategy for Health for All by the Year 2000: second evaluation. Eighth report on the world health situation. Vol. 1, Global review.* Geneva, World Health Organization, 1993.
6. *The Saitama declaration: a call for new public health action.* Geneva, World Health Organization, 1991 (unpublished document WHO/HRH/91.12; available on request from Division of Development of Human Resources for Health, World Health Organization, 1211 Geneva 27, Switzerland).
7. **Tarimo E.** *Towards a healthy district: organizing and managing district health systems based on primary health care.* Geneva, World Health Organization, 1991.
8. **Cassels A, Janovsky K.** *Strengthening health management in districts and provinces: a handbook for facilitators.* Geneva, World Health Organization, 1991 (unpublished document WHO/SHS/DHS/91.3).
9. *World Development Report 1993: investing in health.* Washington, DC, World Bank, 1993.
10. **Henderson D.** Surveillance of smallpox. *International journal of epidemiology*, 1978, 5:19.
11. **Taylor CE.** Surveillance for equity in primary health care: policy implications from international experience. *International journal of epidemiology*, 1992, 21: 1043-1049.
12. **de Kadt E, Tasca R.** *Promoting equity: a new approach from the health sector.* Washington, DC, Pan American Health Organization, 1993.
13. **de Kadt E.** Making health policy management intersectoral: issues of information analysis and use in less developed countries. *Social science and medicine*, 1989, 29:503-514.
14. **Opit LJ.** How should information on health care be generated and used? Round table discussion. *World health forum*, 1987, 8:409-438.
15. **Sandiford P, Annett H, Cibulskis R.** What can information systems do for primary health care? An international perspective. *Social science and medicine*, 1992, 34:1077-1087.
16. **Robey JM, Sun Hee Lee.** Information system development in support of national health programme monitoring and evaluation: the case of the Philippines. *World health statistics quarterly*, 1990, 43:37-46.
17. **Musgrove P.** Measurement of equity in health. *World health statistics quarterly*, 1986, 39:325-335.
18. **Mooney G.** What does equity in health mean? *World health statistics quarterly*, 1987, 40:296-303.
19. Surveillance of living conditions and the health situation. *Epidemiological bulletin*, 1991, 12:7-10.
20. Methodology for the study of inequities in health conditions. *Epidemiological bulletin*, 1993, 14:5-8.
21. **Kirsch T.** Local area monitoring (LAM). *World health statistics quarterly*, 1988, 41:19-25.
22. **Woodall JP.** Epidemiological approaches to health planning, management and evaluation. *World health statistics quarterly*, 1988, 41:2-10.

23. Scott W. Community based health reporting. *World health statistics quarterly*, 1988, 41:26-31.
24. Kroeger A. Health interview surveys in developing countries: a review of the methods and results. *International journal of epidemiology*, 1983, 12:465-481.
25. Hill A, Dollimore N. Assessing the impact of health programmes using household surveys in Mali. *Health policy and planning*, 1991, 6:336-347.
26. Ross D, Vaughan JP. Cross-sectional interview surveys in developing countries: a methodological review with implications for future surveys. *Studies in family planning*, 1986, 17:78-94.
27. Lutz W et al. *Health and community surveys: practical manuals for health and community workers*. Vol. 1 & 2. London, Macmillan Press, 1992.
28. Henderson RH, Sundaresan T. Cluster sampling to assess immunization coverage: review of experience with a simplified sampling method. *Bulletin of the World Health Organization*, 1982, 60:253-260.
29. Bennett S et al. A simplified general method for cluster-sample surveys of health in developing countries. *World health statistics quarterly*, 1991, 44:98-106.
30. Garner P, Thomason J, Donaldson D. Quality assessment of health facilities in rural Papua New Guinea. *Health policy and planning*, 1989, 5:49-59.
31. *Health facility survey manual: diarrhoea case management*. Geneva, World Health Organization, 1990 (unpublished document CDD/SER/90.1; available on request from Diarrhoeal Disease Control, World Health Organization, 1211 Geneva 27, Switzerland).
32. Anker M et al. Rapid evaluation methods (REM) of health services performance: methodological observations. *Bulletin of the World Health Organization*, 1993, 71(1):15-21.
33. Campos-Oucalt D. Microcomputers and health information in Papua New Guinea: a two year follow-up evaluation. *Health policy and planning*, 1991, 6:348-353.
34. Scholten HJ, de Lepper JC. The benefits of the application of geographical information systems in public and environmental health. *World health statistics quarterly*, 1991, 44:160-170.
35. *Development of indicators for monitoring progress towards Health for All by the Year 2000*. Geneva, World Health Organization, 1981 ("Health for All" series, No. 4).
36. Vaughan JP, Morrow RH. *Manual of epidemiology for district health management*. World Health Organization, Geneva, 1989.
37. Shoo R, Msuya C. Developing training materials for team work training in primary health care: preliminary results from Tanzania. *Health policy and planning*, 1990, 5:194-198.

## World Health Organization Technical Report Series

### *Recent reports:*

No.		Sw.fr.*
825	(1992) <b>The use of essential drugs</b> Fifth report of the WHO Expert Committee (79 pages)	10.–
826	(1992) <b>Recent advances in oral health</b> Report of a WHO Expert Committee (42 pages)	7.–
827	(1992) <b>The role of health centres in the development of urban health systems</b> Report of a WHO Study Group on Primary Health Care in Urban Areas (42 pages)	7.–
828	(1992) <b>Evaluation of certain food additives and naturally occurring toxicants</b> Thirty-ninth report of the Joint FAO/WHO Expert Committee on Food Additives (57 pages)	9.–
829	(1993) <b>Evaluation of recent changes in the financing of health services</b> Report of a WHO Study Group (79 pages)	10.–
830	(1993) <b>The control of schistosomiasis</b> Second report of the WHO Expert Committee (93 pages)	12.–
831	(1993) <b>Rehabilitation after cardiovascular diseases, with special emphasis on developing countries</b> Report of a WHO Expert Committee (130 pages)	17.–
832	(1993) <b>Evaluation of certain veterinary drug residues in food</b> Fortieth report of the Joint FAO/WHO Expert Committee on Food Additives (68 pages)	10.–
833	(1993) <b>Health promotion in the workplace: alcohol and drug abuse</b> Report of a WHO Expert Committee (39 pages)	7.–
834	(1993) <b>WHO Expert Committee on Specifications for Pharmaceutical Preparations</b> Thirty-third report (35 pages)	7.–
835	(1993) <b>Aging and working capacity</b> Report of a WHO Study Group (55 pages)	10.–
836	(1993) <b>WHO Expert Committee on Drug Dependence</b> Twenty-eighth report (50 pages)	10.–
837	(1993) <b>Evaluation of certain food additives and contaminants</b> Forty-first report of the Joint FAO/WHO Expert Committee on Food Additives (61 pages)	10.–
838	(1993) <b>Increasing the relevance of education for health professionals</b> Report of a WHO Study Group on Problem-Solving Education for the Health Professions (33 pages)	8.–
839	(1993) <b>Implementation of the Global Malaria Control Strategy</b> Report of a WHO Study Group on the Implementation of the Global Plan of Action for Malaria Control 1993–2000 (62 pages)	10.–
840	(1994) <b>WHO Expert Committee on Biological Standardization</b> Forty-third report (223 pages)	31.–
841	(1994) <b>Cardiovascular disease risk factors: new areas for research</b> Report of a WHO Scientific Group (59 pages)	10.–
842	(1994) <b>Nursing beyond the year 2000</b> Report of a WHO Study Group (25 pages)	6.–
843	(1994) <b>Assessment of fracture risk and its application to screening for postmenopausal osteoporosis</b> Report of a WHO Study Group (134 pages)	22.–
844	(1994) <b>Prevention of diabetes mellitus</b> Report of a WHO Study Group (108 pages)	15.–

\* Prices in developing countries are 70% of those listed here.