



*In the Name of God, the Compassionate, the Merciful*

**Address by**

**DR HUSSEIN A. GEZAIRY**

**REGIONAL DIRECTOR**

**WHO EASTERN MEDITERRANEAN REGION**

**to the**

**IMPROVING PUBLIC HEALTH SURVEILLANCE THROUGH INVESTING  
IN INFORMATION TECHNOLOGY**

**Dubai, United Arab Emirates, 27–31 January 2008**

Your Excellencies

Ladies and Gentlemen,

Dear Colleagues,

It gives me great pleasure to address this forum, which comes after three successful conferences that have covered a wide range of issues related to utilization of information and communication technology, in support of health and medical services. My address today has a different perspective. A lot that has been said and presented in conferences relates to the use of information and communication technology (ICT) in medical care and provision of medical services, i.e. the curative and treatment aspect of health services. This is not to say this aspect is not important or should be avoided. However, health services are not limited to the curative, clinical and treatment interventions. The public health concept is based on prevention of disease, and making sure that the health of the individual is protected through population-based interventions. We in WHO view ICT support to health services as vital to the functioning, cost-effectiveness and efficiency of the health system. We recognize that the health care sector is a latecomer to the organization-wide and large-

scale use of ICT. For the most part, ICT systems are used to support administrative and financial services in medical care institutions. In some institutions, ICT is also used for individual patient care. We would like to see more effort to use ICT for public health purposes, including disease surveillance, health education, awareness creation, decentralization of services, mapping of diseases and services, and so on.

Routine population-based health information systems play a fundamental role, not only in serving to manage health care services, but more important, in helping development of evidence-based health policy in order to:

- monitor disease trends so that planning can be adjusted to meet new situations;
- identify, investigate and help control outbreaks or epidemics;
- identify specific population groups at high risk of illness or death from priority diseases;
- evaluate the impact of preventive and curative control activities on the incidence and relevance of priority diseases in the community; and
- confirm current priorities among disease control activities.

To achieve these aims, countries develop and maintain population-based information systems. Data in these systems is generated from different and multiple sources that have to be cross-checked, validated, integrated and synchronized. They may include data from a range of sources including national census, vital statistics systems and birth and death registries, national surveys, health records and disease registries, and disease surveillance systems.

Vital statistics constitute the cornerstone of the national health information system. They provide the official records of births and deaths, which makes them the primary source for better understanding of the health situation of a country and the way the health status of the population changes over time. Information on the emergence of phenomena such as ageing populations, young populations and vulnerable groups, the changing pattern of disease, the shift from communicable to noncommunicable diseases, etc., are based on evidence generated from vital statistics. One source cannot be enough to give a

full picture or understand its dimensions. The question then is, how can ICT help in managing health data from these multiple sources and in making sense of them?

When we think of computerization of a service, or even a function within a service, we look into the rationale for that and try to investigate the problem we are trying to solve. When we attempt to computerize disease surveillance, we are faced with some inherent weaknesses in surveillance itself. We look at ICT as an agent for change in the way surveillance is conducted and as a way to try to solve some of these problems.

The WHO Regional Office for the Eastern Mediterranean strives to ensure use of appropriate, consistent and timely surveillance data for the design and targeting of interventions to contain epidemic-prone communicable diseases in the Region, for identification of, and rapid and effective response to, unexpected threats from new or re-emerging diseases, and improving preparedness of countries in the Region. Disease surveillance systems in the Region have been characterized by a number of issues. For example:

- They lack standardization and reflect the historic response to infectious disease threats in individual countries.
- Most of the successful surveillance activities are sponsored and funded by vertical disease control programmes, such as for malaria, tuberculosis and poliomyelitis. This has resulted in imbalanced disease surveillance programmes where some diseases are strongly supported, while others are totally ignored.
- Many of the surveillance activities are disconnected from the national health system.
- Data collection and surveillance have no purpose or they become a purpose in themselves, with data never used for decision-making or updated or validated.
- There is a shortage of trained personnel to support disease surveillance and to use computer-based systems for the purpose.
- Disease surveillance does not necessarily cover surveillance of environmental aspects linked to the disease.

- Data are collected by multiple agents or national authorities. Nongovernmental organizations, research and academic institutions, ministries of health, ministries of environment and sometimes ministries of agriculture collect the same data with little coordination and no synergy.
- Parallel systems are used based on the interests of the donor community or research bodies or special interest groups in a government institution.
- There is a lack, or even absence, of participation of the private health sector in surveillance. It is mostly government (public sector) that conducts this activity.

From an information technology support perspective, all these issues have resulted in fragmented efforts, duplication of computer systems, disintegration of systems, absence of unified codes, absence of standards, collection of huge quantities of data with little analysis and use, and wide disparity in the quality of systems and of data collected.

Moreover, because of the weaknesses in data collection and information management, there has been little use of information for decision-making. Data collection should be driven by the need to collect and aggregate the data at higher levels, with full attention paid to using the data at each level of the health service for planning and decision-making. Data should be processed to generate information for action, which then can be transformed into knowledge to support decision-making and planning. However, the data collection, analysis and usage cycle should also feed back to the data collectors, to improve data quality, and also to enable action to be taken at the local level. Data may be collected and analysed at the local level and not necessarily at central locations. Data collection has to be purposeful. Huge quantities of data that are not analysable or useable create a greater burden on health professionals. The worst that can happen is that the surveillance function is totally alienated from any public health action, such as disease control efforts, outbreak response, health resource allocation or national health policy development.

Let us look at data collection and its utilisation from a knowledge management perspective, which encompasses people, processes and technologies. Information technology has a strategic value as an enabling tool for knowledge management.

Knowledge management is about people, processes and technology. Technology can substantially help in improving programme efficiency by processing and analysing large amounts of data quickly. IT minimizes the duplication of work which is a characteristic of hierarchical data collection systems. IT in an integrated and decentralized system allows data to be entered once, close to the periphery, and transmitted to the higher level. IT facilitates the decentralizing of data analysis and reduces the data entry bottleneck at the next higher level, and provides management information to health managers in a more timely manner. Through the application of a Geographic Information System, IT allows integration of service statistics data with already computerized data on demography, health infrastructure and financial data.

The Regional Office has taken steps and invested substantial time and resources to develop computer-based disease surveillance systems. The overall objective has been to use IT as a tool and enabler for public health. The Regional Office has had two major achievements in this area over the past two years.

- The first is the development of the Regional Alert, Surveillance and Detection of Outbreak Network (RASDON). RASDON, as a health information management platform, makes use of the latest software development tools to enhance different disease surveillance processes, such as outbreak and emergency response, health alerts, managing of cases, performing health data analysis and reporting, managing laboratory results and finally managing reference data.
- The second is the establishment of the Strategic Health Operations Centre (SHOC). SHOC is a state-of-the-art information technology and telecommunication integrated centre that provides a facility for an emergency team, disease surveillance and outbreak team and key decision-makers to operate in the event of an emergency situation, disease outbreak or health crisis of any nature.

RASDON and SHOC constitute the main elements of Regional Office's IT-based infrastructure to manage disease surveillance in support of public health in the Region. Together they provide the ability to develop and maintain multi-disease, multi-level, multi-sectoral, multi-source and integrated disease data recording and analysis, linking real time publishing and display on maps.

The geographic dimension of diseases and the importance of health mapping using geographic information systems have been given special attention in public health. The full integration between health/disease data and geographic/spatial data has brought benefits to the public health community that would never have been possible without the information technology revolution. Maps in computer-based geographic information systems can provide concise, clear, logical, flexible and expandable messages using minimum natural language representation, building on the power of graphic presentation. It is estimated that nearly 80% of the information needs of local health system decision-makers and policy-makers involve geographical positioning, which means using maps in one way or another.

The investment in use of ICT in health in the Region has long been a policy of the Regional Office, supported by its governing bodies. In 2007, the Regional Committee for the Eastern Mediterranean further recognized the value of health mapping using GIS, with a resolution urging Member States to develop an institutional framework, policies and procedures, to establish health mapping units with the necessary infrastructure and resources as part of the national health information system; to develop integrated national systems for the management of health data, and link the systems to digital maps; and to build, develop and maintain a comprehensive collection of national and local digital maps.

WHO will continue to support Member States to achieve these, and all, goals that promote improvement in the health status of the peoples of the Region.

I wish you a successful conference and look forward to seeing your practical ideas and recommendations translated into action in Member States. I also look forward to seeing the private sector taking a greater interest and full partnership in the development of information systems for public health needs.