Emerging and other Communicable Diseases. Strategic Plan 1996-2000

World Health Organization
Emerging and other Communicable Diseases, Surveillance and Control

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EMC Vision for the 21st Century

A world on the alert and able to contain communicable diseases through:

- strong national disease surveillance and control programmes
- global networks of centres, organizations and individuals to monitor diseases
- rapid information exchange through electronic links to guide policies, international collaboration, trade and travel
- effective national and international preparedness, and rapid response to contain epidemics of international importance

This strategic plan outlines goals and strategies of the World Health Organization in the strengthening of surveillance and control of communicable diseases, especially those which represent new, emerging or re-emerging public health threats. The plan shows how these goals and strategies fit into the global framework for the surveillance and control of communicable diseases which was recommended by a WHO ad hoc group of experts in 1994 and 1995; it represents WHO's contribution to the global partnership that is required to effectively combat communicable diseases.

The strategic plan has been reviewed and approved by a technical advisory group in February 1996; it will serve as a flexible and broad guiding document for the development of specific activity plans and of the programme budget for the period 1996-2000. The plan will be modified as required, based on the advice and recommendations of the EMC technical advisory committee\(^1\), to ensure that global, regional and national surveillance and control of communicable diseases meet the changing needs of the WHO Member States.

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\(^1\) To be formally established before the end of 1996
CURRENT WORLD SITUATION

In the post-World War II era, with the development and increasing availability of new antibiotics and vaccines, and the resulting decrease in communicable diseases and eradication of smallpox, there was great hope that communicable diseases would no longer pose a major threat to public health. During the past two decades however, at least 29 new microorganisms linked to emerging² communicable diseases have been identified; they range from the highly virulent Ebola virus and HIV to others such as rotavirus, the most common cause of childhood diarrhoea worldwide, and hepatitis C virus. At the same time, well known diseases such as plague, diphtheria, dengue, meningococcal meningitis, yellow fever, and cholera are re-emerging³ as public health problems.

During the same period, the problem of resistance of microorganisms to antibiotics has become increasingly serious and widespread and some antibiotics are now ineffective in treating once highly sensitive organisms; fewer new antibiotics have become available, partly because of the high costs associated with their development and licensing. The treatment of communicable diseases has thus become less effective; this has led to greater numbers of hospitalizations for common infections, higher treatment costs, longer duration of illness, and to increasing absenteeism from schools and the workplace.

Several factors contribute to the emergence and re-emergence of communicable diseases: the ease of spread of communicable diseases from endemic to non-endemic areas through rapid and intense international travel; overcrowded cities with poor sanitation; changes in the handling and processing of food; ecological changes exposing man to disease vectors and reservoirs in nature; deteriorating public health, laboratory and surveillance services; and microbial evolution. One example of microbial evolution, resistance to antibiotics, is fostered by the misuse of drugs which favours selection of resistant strains of microorganisms.

Underlying these phenomena is an erosion of the public health structure to combat communicable diseases in developing as well as industrialized countries where financial resources have been oriented to other health priorities such as cardiovascular disease and cancer. As resources for public health have decreased, the infrastructure for surveillance and control of communicable diseases has weakened.

As a result, the emergence of new diseases, the re-emergence of known diseases, or the emergence of antibiotic resistance may go unnoticed, until they attain epidemic levels and threaten to spread internationally. The most striking recent example is the human immunodeficiency virus (HIV) which was recognized in the early 1980s after it had already infected large numbers of people in many countries. If diseases of epidemic potential were detected earlier, epidemics and even pandemics could be prevented or minimized.

² Emerging diseases and public health problems are those for which the incidence in humans has increased in the past two decades, or threatens to increase in the near future.

³ Re-emerging diseases and public health problems are those which are known and reappear after a decline in incidence.
To address these challenges, countries must concentrate on rebuilding the foundations of disease surveillance, disease control, and public health laboratory support. At the same time both the public and private sectors must be encouraged to conduct the research and development necessary to provide improved technologies for surveillance and control, and new antibiotics to supplement those no longer effective. With countries coming closer through intensive travel and trade, and with communicable diseases respecting no frontiers, it is evident that all countries must work together to meet these challenges.

**GOALS IN COMMUNICABLE DISEASE CONTROL: A GLOBAL FRAMEWORK**

Four goals intended to guide the worldwide response to emerging, re-emerging and other communicable diseases and public health problems were defined at the first and second ad hoc meetings of international experts in emerging infectious diseases, held in Geneva in April 1994 and January 1995. These goals call for a collective response of all countries through national and international organizations, a response which has already begun with some national and regional plans and resource mobilization. The goals identified in these meetings are:

**Goal I:** to strengthen the global surveillance of communicable diseases,

**Goal II:** to strengthen the national and international infrastructure necessary to recognize, report, and respond to emerging communicable diseases,

**Goal III:** to strengthen national and international capacity for the prevention and control of communicable diseases, and

**Goal IV:** to support and promote research in communicable disease control.

**RESPONSE OF THE WORLD HEALTH ORGANIZATION**

The Division of Emerging and other Communicable Diseases Surveillance and Control (EMC) was created on 1 October 1995 to provide a focus for WHO’s response to recommendations of its ad hoc experts in communicable disease control. EMC incorporates staff from the Division of Communicable Diseases (CDS) which was dis-established at the same time, and ensures activities formerly undertaken by CDS such as technical guidance, surveillance and control of communicable diseases, including zoonotic infections, and the monitoring of the global situation of diseases such as influenza, arboviral diseases, hepatitis and haemorrhagic fevers. Staff have also been moved to EMC from the Division of Health Situation and Trend Assessment (HST) together with activities such as dissemination of information, strengthening of disease surveillance activities, training in epidemiology, and research on simpler and more cost-effective surveillance methods. Staff and activities related to the cholera task force in the Division of Diarrhoeal and Acute Respiratory Diseases Control (CDR) have also been transferred to EMC; the EMC mandate also includes AIDS surveillance, hitherto ensured through the former Global Programme on AIDS (GPA).
The mandate of EMC thus includes a strengthening of the national, regional and global infrastructure for surveillance and control of communicable diseases in general, and guidance and support for the specific EMC priorities among communicable diseases (including zoonoses). These priorities include:

- brucellosis
- cholera and shigellosis
- dengue/dengue haemorrhagic fever
- drug resistant bacterial infections
- Ebola/other viral haemorrhagic fevers
- echinococcosis
- hepatitis A, C, E and others
- HIV/AIDS
- influenza
- legionellosis

- meningococcal infections
- plague
- rabies
- rickettsial infections
- spongiform encephalopathies
- streptococcal infections, particularly type A
- viral encephalitis
- yellow fever and other arboviral diseases
- zoonotic diseases of public health importance

**EMC MISSION STATEMENT**

The mission of EMC is to strengthen national and international capacity in the surveillance and control of communicable diseases, including those that represent new, emerging and re-emerging public health problems for which it will ensure a timely and effective response. To achieve the above EMC will promote:

- the development of national and international infrastructure and resources to recognize, monitor, prevent and control communicable diseases and emerging health problems, including antimicrobial resistance; and research and training on the diagnosis, epidemiology, prevention and control of communicable diseases and emerging health problems.

**EMC GOALS AND STRATEGIES WITHIN THE GLOBAL FRAMEWORK FOR COMMUNICABLE DISEASE CONTROL**

The EMC goals during the coming five-year period, and the strategies to attain them within the global framework for communicable diseases surveillance and control are described below.

**GOAL I: STRENGTHEN GLOBAL SURVEILLANCE OF COMMUNICABLE DISEASES**

**INTERNATIONAL HEALTH REGULATIONS**

EMC will revise the International Health Regulations (IHR) which will serve as a global alert system for communicable disease syndromes associated with high mortality or international public health importance. Operational guidelines for the IHR will be developed to describe how the system applies nationally, regionally and
internationally, and indicate national and international measures appropriate for the effective containment of disease threats. Mention will also be made of measures which are not appropriate, and which could lead to unnecessary disruption of commerce, trade, migration and tourism. WHO will assist countries in implementing the guidelines so that national authorities can participate efficiently in the global alert system. Specific activities will include:

Revision of the International Health Regulations to address disease syndromes rather than specific diseases, and presentation of the revised IHR to the WHO governing bodies for approval. Operational guidelines for the use of the IHR will be developed to ensure their implementation as a global alert and containment system.

**MONITORING OF ANTIMICROBIAL RESISTANCE**

EMC will strengthen the worldwide monitoring of antimicrobial resistance through WHONET\(^4\) and GASP\(^5\), so that global information can be made available through clear and concise geographic presentations. In collaboration with national laboratories and WHO collaborating centres, additional geographically representative laboratories will be assessed for participation in these two networks; those selected will be provided specialized training in standardized laboratory procedures, in data entry and analysis, and in quality assessment. Reagents will be provided as necessary and electronic linkages between laboratories, regional offices and headquarters will be established and maintained. Specific activities will include:

Designation of additional geographically representative national laboratories for standardized monitoring of antimicrobial resistance through WHONET. Staff will be trained as necessary in specialized laboratory techniques and in data management and analysis. Reagents will be provided if necessary, and stringent quality assurance systems will be set up internally. Laboratories will be enrolled in regional or inter-regional programmes for external quality assessment and proficiency testing. Military laboratories will eventually be included within the network.

A global network of the existing regional and subregional WHO activities on gonococcal susceptibility monitoring (GASP) will be brought together under EMC. The network will be composed of WHO collaborating centres with affiliated subregional and national laboratories which consistently isolate and test *Neisseria gonorrhoeae* strains using standardized methodologies, collect and analyse the data, and disseminate information through WHO channels.

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\(^4\) The WHO standardized system for laboratory monitoring of antimicrobial resistance

\(^5\) The WHO network for laboratory monitoring of gonococcal susceptibility
Regional and inter-regional external quality assessment and proficiency programmes will be continued, and the geographic distribution of the network will be enhanced.

**MONITORING OF VIRAL AND BACTERIAL DISEASES, INCLUDING ZOONOSES**

EMC will strengthen the worldwide monitoring of communicable diseases under its mandate, and develop clear and concise geographic presentation formats for data. Electronic linkages will facilitate communication between WHO headquarters, WHO regional offices, WHO country representatives, the over 200 WHO collaborating centres on communicable and zoonotic diseases, and other laboratories participating in global monitoring, in order to improve reporting and to help solve problems such as lack of reagents and/or outdated laboratory procedures. Additional collaborating centres will be established, especially in developing countries, in order to ensure a more representative geographical coverage.

EMC will promote regional self-sufficiency in the production of diagnostic reagents through agreements with, and seed funding to, collaborating centres. It will also provide specialized training in diagnosis, in disease monitoring and in quality assessment/proficiency testing to national public health laboratories as required, in order to improve the accuracy of information. Specific activities will include:

- Review of terms of reference and annual reports of WHO collaborating centres in viral, bacterial and zoonotic diseases, these terms will be modified if necessary in order to strengthen the network of centres to meet the epidemiological and diagnostic needs of a strengthened global alert and response. Additional centres will be designated, especially in developing countries, in order to ensure regional and sub-regional preparedness. Training and reagents will be provided to these new centres as necessary through agreements with existing centres.

**DISSEMINATION OF INFORMATION**

Information on rapidly changing communicable disease events obtained through the implementation of the International Health Regulations, from the WHO communicable disease and antimicrobial resistance monitoring systems, and from country experiences in disease surveillance and control, will be made available regularly in WHO publications such as the *Weekly Epidemiological Record*, and also electronically through the *World Wide Web* and other media. In addition, EMC will work pro-actively with the press to ensure that accurate information on disease outbreaks of international importance becomes rapidly and widely available.

WHO will use the information thus obtained through global surveillance and monitoring to advocate control of communicable diseases, to develop strategic priorities and for specific measures such as deciding on which viral strains to include each year in the influenza vaccine. AIDS information will be used in collaboration with the Joint United Nations Programme on HIV/AIDS to advocate support to programmes and research for the prevention and control of AIDS.
Information on antimicrobial resistance will be used locally by countries for establishing policies, and regionally and internationally to ensure awareness and to advocate research and development on new antibiotics.

Information for travellers on the geographic distribution of communicable diseases and on individual protection will continue to be made widely available through the annual publication *International Travel and Health*; the latter will also be widely available through the *World Wide Web*. Specific activities will include:

Publication of the *Weekly Epidemiological Record* and distribution by post and through the *World Wide Web*.

Strengthening of the EMC electronic distribution system to provide regular updates on epidemics of international importance through the *World Wide Web*, which will be further expanded and maintained for communicable disease alert and global surveillance.

Publication of *International Travel and Health* which will be updated annually and made available in print and through the *World Wide Web*.

**GOAL II: STRENGTHEN THE NATIONAL AND INTERNATIONAL INFRASTRUCTURE NECESSARY TO RECOGNIZE, REPORT, AND RESPOND TO EMERGING COMMUNICABLE DISEASES**

**ASSESSMENT AND STRENGTHENING OF DISEASE SURVEILLANCE SYSTEMS**

EMC will strengthen existing national surveillance, in collaboration with the WHO regional offices, through assessment of existing surveillance systems, and by strengthening the planning and training necessary for their implementation and regular evaluation. At WHO headquarters, EMC will stimulate collaboration in surveillance among communicable disease control programmes and the newly developed Summary Information System on Global Health Trends (SIGHT).

EMC will likewise, in collaboration with the WHO regional offices, assess the needs of public health laboratories in their support to national surveillance systems; in collaboration with WHO collaborating centres, specialized training and access to high quality reagents will be ensured as needed. EMC will also ensure the development and maintenance of national, regional and global quality assurance programmes. Specific activities will include:

Development of a manual for the assessment of generic surveillance systems, integrating the case definitions, the laboratory diagnostic criteria and the surveillance methods of all WHO communicable disease control programmes.
In collaboration with regional offices, this manual will be used in assessing national disease surveillance systems, and plans to strengthen existing systems will be developed and implemented. Technical guidance will be provided as necessary.

Simultaneously, an inventory of national public health laboratories will assess their potential to meet national surveillance needs; laboratories with special requirements will be strengthened through training and provision of reagents.

**GOAL III: STRENGTHEN NATIONAL AND INTERNATIONAL CAPACITY FOR THE PREVENTION AND CONTROL OF COMMUNICABLE DISEASES**

**PROMOTION OF COMMUNICABLE AND ZOONOTIC DISEASE SURVEILLANCE AND CONTROL**

EMC will assemble, review, update and promote surveillance and control guidelines and training materials for the diseases under its mandate, and generic training materials on the epidemiology and laboratory diagnosis of infectious diseases. Additional consensus guidelines and training materials will be developed and promoted for the surveillance and control of new, emerging diseases. Guidelines will also be developed for national, regional and global programmes of quality assurance and laboratory proficiency testing.

EMC will support the Action Programme on Essential Drugs (DAP) in assembling, reviewing, and updating guidelines for improving antimicrobial prescribing practices and patient compliance to dosage regimes. EMC will also promote these guidelines when supporting country efforts to use nationally-collected information on antimicrobial resistance obtained through WHONET and GASP.

EMC will likewise strengthen the ability of countries to detect, and respond to, emerging and re-emerging diseases, by ensuring an increase in the number of health workers with skills in epidemiology at all levels of the health care system. This will be accomplished through facilitation of bilateral agreements for direct donor-funded programmes to train in field epidemiology in countries and regions, and by collaborating with the WHO regional offices in the conduct of national and regional workshops on surveillance, epidemic preparedness, and control. Specific activities will include:

Updating, development and promotion of guidelines for the surveillance and control of communicable and zoonotic diseases under the EMC mandate, based on consensus recommendations from WHO expert advisers and with support from the collaborating centres. The EMC technical advisory committee will identify issues which need to be studied further.
Training materials to supplement the guidelines will be developed, widely distributed internationally, and integrated into medical and para-medical school curricula in developing and developed countries. Training of trainers in the use of these guidelines and materials will be provided as and when necessary.

Bilaterally funded and implemented training programmes in field epidemiology and surveillance, using EMC guidelines and training materials, will be promoted and facilitated in each WHO region.

EPIDEMIC PREPAREDNESS AND RESPONSE

EMC will strengthen national preparedness in countries at high risk of communicable disease epidemics (including epizootics) in order that these countries may better detect and respond to diseases of epidemic potential. EMC will likewise strengthen the regional capacity to mobilize rapid response teams of WHO staff and other international experts. The teams will be mobilized in collaboration with the WHO Division of Emergency and Humanitarian Action (EHA), and will be on site of the outbreak, ready to start operations, within 24 hours of notification to WHO.

The rapid response teams will collaborate with WHO partners, including government agencies and non-governmental organizations, in conducting full outbreak investigation and essential intra-epidemic research. After the epidemic has been contained, teams will work with countries to develop medium- and long-term plans and to strengthen preparedness, surveillance and control.

WHO staff and potential external consultants will be given the necessary information on epidemic control from disease- and/or syndrome-specific guidelines for initial and medium-term activities, and teams will be trained to use and maintain state-of-the-art communications equipment. Supplies and equipment necessary for outbreak containment and investigation will be stockpiled and maintained regionally and at WHO headquarters, and protocols for critical intra-epidemic research developed, reviewed and updated as necessary. Specific activities will include:

- Development of WHO guidelines and lists of equipment for immediate and medium-term epidemic response for diseases under the EMC mandate and syndromes with epidemic potential, and use of these materials for training national, regional and international teams for epidemic response.

Response within 24 hours to outbreaks of communicable diseases of major global public health importance, by teams from WHO regional offices (and supplemented when necessary from headquarters) in partnership with governmental agencies, WHO collaborating centres, and non-governmental organizations. Outbreaks will be rapidly contained and studied in depth so that problems leading to their occurrence can be identified. After epidemic containment, medium- and long-term plans for strengthening epidemic preparedness, surveillance and control will be developed and supported.
IMMUNOLOGY, VACCINOLOGY, BIOTECHNOLOGY AND BIOSAFETY TRAINING AS APPLIED TO COMMUNICABLE DISEASES

Advanced training in immunology as it pertains to infectious disease control will be provided to selected professionals from developing countries through a special university-based training course organised by WHO and funded annually by a WHO Member country. The objective will be to increase the pool of professionals in developing countries capable of diagnosing and monitoring the main communicable diseases, and of testing the efficacy of preventive measures using adequate immunological and biotechnological methods. Specific activities will include:

Training in the annual courses at the WHO Immunology Research and Training Centre in Lausanne and refresher courses in developing countries. Extended periods of training will also be organized for a few particularly qualified participants. Trainees will be selected in collaboration with the regional offices. The material necessary for this training will be examined and updated annually.

GOAL IV: SUPPORT AND PROMOTE RESEARCH IN COMMUNICABLE DISEASE CONTROL

OPERATIONAL RESEARCH FOR SURVEILLANCE AND DISEASE CONTROL

EMC will stimulate and support research required to develop new and more cost-effective disease surveillance and control strategies, including research on new epidemiological tools. Specific research areas include studies to complete the epidemiological information on emerging or re-emerging diseases such as hepatitis C, hepatitis E, Ebola haemorrhagic fever, and the newly identified variant of Creutzfeldt-Jacob Disease (V-CJD). EMC will also stimulate and support research to develop feasible prevention and patient management strategies, and to develop simple methods for assessing the health situation. Specific activities will include:

Identification of priority operational research areas in surveillance, prevention and control by the EMC technical advisory committee; research and development in these areas will then be stimulated and supported as feasible. Operational research aimed at identifying the most cost-effective strategies for surveillance and control, and epidemiological research to fill gaps in information will be given high priority.

RESEARCH ON FIELD DIAGNOSTIC TECHNIQUES

EMC will also stimulate research on diagnostic tests suitable for use in developing countries. Such tests should not be affected by climatic factors, and should make use of non-invasively obtained specimens such as exudates, urine and saliva. Specific activities will include:
Identification of priority needs for diagnostic testing at the peripheral health care level in developing countries by the EMC technical advisory committee and promotion of research in these areas in both the public and private sectors. Field evaluation of newly developed tests will be facilitated and supported, and potential obstacles to research and development identified and addressed as feasible.

**ASSETS OF THE WORLD HEALTH ORGANIZATION IN COMMUNICABLE DISEASE SURVEILLANCE AND CONTROL**

**GLOBAL INFORMATION EXCHANGE**

WHO maintains an up-to-date automatic fax response service on disease notifications, publishes the *Weekly Epidemiological Record*, and maintains a series of pages on the *World Wide Web*. WHO also administers the International Health Regulations, the only international health agreement on communicable diseases that is binding on Member States. The Regulations make provision for notification of plague, cholera and yellow fever, and for vaccinations required for international travel. They also serve as a global alert system for cholera, plague and yellow fever. A resolution by the World Health Assembly in May 1995 (WHA48.7), calls for the revision of the Regulations to broaden the range of diseases under their mandate and ensure a more appropriate international response.

**MANDATE FROM WHO MEMBER STATES**

The WHO Member States have clearly expressed their commitment to communicable disease prevention and control in a resolution at the World Health Assembly in May 1995 (WHA 48.13). The same resolution charged WHO with the mandate which was translated into the establishment of EMC on 1 October 1995. A similar reorientation of priorities is reflected in the WHO regional programmes to strengthen communicable disease surveillance and control efforts.

**WHO COUNTRY REPRESENTATION**

WHO is present through the office of the country representative in almost all developing countries which are Member States. In the absence of a country office, as is the case in many industrialized countries, Member States maintain close links with the WHO regional office.

**WHO COLLABORATING CENTRES**

WHO has a long tradition of securing technical back-up, research, training, and transfer of technology through its network of collaborating centres. These centres have over the years provided invaluable support to WHO's efforts in investigating and controlling outbreaks of communicable diseases. They are the natural starting point in the creation of a global network for the surveillance and control of communicable diseases. The network
will secure the capacity and capability for early detection, investigation and confirmation of outbreaks, and facilitate the exchange of data for global monitoring of communicable diseases. The centres also support national and regional control activities, provide specialized training, and prepare, conduct and evaluate research.

PANEL OF INTERNATIONAL EXPERTS

An ad hoc panel of international experts has been available to support WHO in the establishment and development of activities to strengthen global communicable disease surveillance and control. The experts met twice prior to the establishment of EMC and outlined the four main goals of the future programme. After the start of the programme, the group was enlarged at a third ad hoc meeting, organized by the Rockefeller Foundation, which reviewed this strategic plan and the EMC Summary of Programme Activities and Budget, 1996-1997. EMC will formally establish its technical advisory committee in 1996.