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Global health security - epidemic alert and response

Report by the Secretariat

INTRODUCTION

1. There is a continuous evolution in the public health risk posed by infectious diseases related to their causative agents, to their easier transmission in changing physical and social environments, and to their development of resistance to existing antimicrobial agents. In 1995, the World Health Assembly adopted resolutions WHA48.13 on new, emerging and re-emerging infectious diseases and WHA48.7 on the revision and updating of the International Health Regulations. The Health Assembly was fully aware that the strengthening of epidemiological and laboratory surveillance and of disease control activities at national level (i.e. where the diseases occur) is the main defence against the international spread of communicable diseases.
2. The globalization of infectious diseases is not a new phenomenon. However, increased population movements, whether through tourism or migration or as a result of disasters; growth in international trade in food and biological products; social and environmental changes linked with urbanization, deforestation and alterations in climate; and changes in methods of food processing, distribution and consumer habits have reaffirmed that infectious disease events in one country are potentially a concern for the entire world.
3. Another concern is the increasingly possible intentional use of infectious agents. In addition to epidemics that occur naturally, outbreaks might result from intentional or accidental release of biological agents. Natural epidemics and those due to the release of biological agents both present in the same manner.
4. Epidemics may become urgent events of international public health importance as the result of a combination of factors, such as: absence of correct information, misinformation or inconsistency in the information available to national governments, which can result in overreaction to media coverage and subsequent internal pressure on governments to respond; insufficient capacity at country level to recognize disease events in a timely manner, and to contain them; fear of costly repercussions if disease events are notified; and lack of appropriate overarching international response mechanisms, both legal and technical.
5. Consequently the need for international cooperation on epidemic alert and response is even more crucial now than when the idea was mooted at the first International Sanitary Conference in 1851. Such cooperation has been continued by WHO since its creation in 1948, notably using the International Health Regulations as a framework.

6. This report outlines the current status of global epidemic alert and response, and of the revision of the International Health Regulations, the legal framework for global alert and response, and suggests additional measures required to meet current and future challenges.

A MANAGEMENT SYSTEM FOR GLOBAL EPIDEMIC EVENTS

7. WHO's activities in the area of epidemic alert and response aim to contain the global public health threat of emerging infectious diseases, epidemics and drug-resistant infectious agents. In close partnership with the international public health community, WHO actively gathers information, coordinates international strategy, establishes global standards and supports countries in infectious disease surveillance, epidemic preparedness and epidemic response.

8. Reports of infectious disease events around the world are regularly received by WHO through formal laboratory and epidemiological channels and from sources such as nongovernmental organizations, the media or electronic discussion groups. In 1997, WHO established a mechanism to seek, collect and verify information on reported epidemics, working closely with its collaborating centres, governments and governmental agencies, as well as relevant nongovernmental organizations and other partners in the global outbreak alert and response network. Reports of current outbreaks received through this mechanism and thought to have potential international importance are included in a weekly e-mail service (Outbreak verification list) distributed only to public health professionals and global surveillance partners worldwide. Information on confirmed outbreaks is made available to the public on the WHO Web site¹ and in the *Weekly Epidemiological Record* (available in printed and electronic² forms).

9. At global level, international surveillance networks of laboratories and epidemiologists focusing on major threats including influenza, viral haemorrhagic fevers (e.g. Ebola), antimicrobial drug resistance and foodborne epidemics such as the new variant of Creutzfeldt-Jakob disease associated with bovine spongiform encephalopathy have been established. Taking advantage of new information technology, particularly the Internet, WHO has been strengthening its disease-specific Web-based global networks, such as the WHO antimicrobial resistance information bank, FluNet, RABNET and Global Salm-Surv, which link national reference centres and collaborating centres throughout the world for exchange of information on drug resistance, influenza, rabies and salmonellosis, respectively.

10. Partnerships are the key to effective cooperation around the world in order to detect and contain outbreaks promptly. In April 2000, WHO took the lead in creating the global outbreak alert and response network, in order to formalise its partnerships with various institutions and networks. This new network, which complements and strengthens existing networks, aims to ensure that the best expertise is harnessed wherever and whenever it is needed, as cost-effectively as possible. To maintain global public health security it provides coordinated mechanisms for epidemic alert and response. A working group ensures long-term preparedness for outbreaks, so that acute responses may lead to longer-term technical assistance. International efforts to contain epidemic outbreaks are under permanent evaluation.

¹ Disease outbreak news. <http://www.who.int/disease-outbreak-news/>

² <http://www.who.int/wer/>

11. In order to maximize the use of existing capacity, all possible partners must be engaged. For example, owing to their organization and defined infrastructure, medical departments in many countries are uniquely positioned to contribute to a network for standardized, systematic surveillance and control of infectious diseases. Military health care systems, which cover populations with well-defined demographic and health characteristics, facilitate the collection of accurate epidemiological information for particular groups, such as sentinel populations for influenza surveillance. WHO has conducted a survey in order to identify military laboratories that are willing to participate in global public health surveillance activities and to obtain information about their infectious disease-reporting systems, and will identify and catalogue military resources that could enhance established WHO global surveillance of emerging infections and facilitate responses.

12. Another example of partnership is the international coordinating group on vaccine provision for the control of epidemic meningitis, which brings together many parties such as United Nations agencies, nongovernmental organizations, pharmaceutical manufacturers, development agencies, WHO collaborating centres and other institutions. The group was set up in 1997 in response to a crisis in global availability of meningococcal vaccine and, in addition to ensuring collation and analysis of meningitis surveillance information, it provides vaccine at reduced prices to countries with epidemic emergencies.

13. The International Health Regulations serve as the legal framework for WHO's alert and response activities. The main challenges encountered during the revision include: ensuring that only public health risks (usually caused by an infectious agent) that are of urgent international importance are reported under the Regulations; avoiding stigmatization and unnecessary negative impact on international travel and trade of invalid reporting from sources other than Member States, which can have serious economic consequences for countries; making sure that the system is sensitive enough to pick up new or re-emerging public health risks. This approach goes beyond notification of specific diseases, though reporting by disease remains possible when the diagnosis is known.

14. The development and field-testing of syndromic reporting to replace disease-specific reporting was the first step in the revision process. Five syndromes were initially identified to cover the diseases of potential urgent public health importance, and included diseases that occur naturally as well as those that might be caused intentionally. A pilot study in 22 countries in all WHO regions (completed in 1999) field-tested the approach. As a result of an interim review, it was concluded however that syndromic reporting, although valuable within a national system, was not appropriate for use in the context of a regulatory framework, mainly because of difficulties in reporting syndromes in the field test, and because syndromes could not be linked to preset rules for control of spread. It was also recommended that, because trade was often adversely affected when certain public health risks occur, links with WTO should be investigated. Several meetings to begin this process have already been conducted between WHO and the WTO Committee on Sanitary and Phytosanitary Measures.

15. A great deal of information on public health risks, originating from formal laboratory and epidemiology networks and from electronic discussion groups and diverse media, has been collected through WHO's global outbreak alert and response network. Since 1997 when the mechanism became fully operational in WHO, 745 reports have been investigated in direct collaboration with the countries concerned, and the network is being continually extended to reduce currently existing gaps in coverage, mainly in developing countries where epidemiological and laboratory capacity is being reinforced. In addition to information on public health risks (whether arising naturally or through intentional acts), this network could also provide information on noncommunicable diseases and environmental, chemical or nuclear risks. WHO is currently investigating the feasibility of this further application. Work is also being done on developing a decision tree which, once field-tested, could be

useful to WHO and countries in determining whether a public health risk is of urgent international importance and, if so, in helping decide which public health measures should be applied.

16. Hence, proposals now being made within the framework of the revision of the International Health Regulations include the use of WHO's global outbreak alert and response network as an additional source of information on public health risks of urgent international importance together with reports from countries, and of the decision tree. It is proposed, however, to make only confidential use of the information derived from the network until it has been verified and analysed by WHO working with the countries concerned and with WHO collaborating centres. Such collaboration is essential in a world where information is widely available. For example, in two recent instances, unverified and misleading public health information published on electronic sites may have resulted in severe financial losses for the countries concerned. Collaboration between WHO and these countries after the reports appeared resulted in the misleading information being corrected.

17. Based on experience gained from the operation of WHO's global outbreak alert and response network, it is therefore proposed that the revision of the International Health Regulations should cover: (1) maintenance of a reliable system to prevent the extension of public health risks through the application of updated and broader routine public health measures for transport of persons and goods; and (2) reporting of potential public health risks (by both countries and the WHO global outbreak alert and response network), evaluating the information in collaboration with the Member State concerned to establish whether it is of urgent international importance and, if this is the case, ensuring that appropriate international public health measures are identified by WHO in collaboration with the country involved and recommended internationally by WHO.

18. The following main next steps and schedules are envisaged:

- (1) seeking support from the Health Assembly for continuing work on the revision of the International Health Regulations, including adding the global outbreak alert and response network as a source of additional information to country reports, discussions with the WTO Committee on Sanitary and Phytosanitary Measures, the development of a decision tree for determining whether a public health risk is of urgent international importance and field-testing this decision tree in countries (2001);
- (2) preparation of a draft revised text of the International Health Regulations (by end 2002);
- (3) holding meetings of regional working groups to evaluate the applicability of the new text to Member States (by end 2003); and
- (4) submission of the revised text to the Health Assembly (no later than the Fifty-seventh World Health Assembly in 2004).

NATIONAL CAPACITY BUILDING

19. A core of technical competence is needed for epidemic alert and response at country level, and thus for strengthening global surveillance and alert mechanisms. A multidisease approach will improve the efficiency of the national surveillance system, particularly in resource-poor countries, and hence all individual disease-specific surveillance activities, the cost-effectiveness of the system, and its sustainability. Such an approach should build on existing systems, develop cross-cutting activities and capitalize on successful programmes; it should be dynamic and adaptable to changing national and

regional priorities; and it should link common resources to avoid duplication, and exploit synergies where possible in order to use better a country's limited laboratory resources and epidemiological skills.

20. At national level, with a particular focus on resource-poor countries, WHO closely supports capacity building for surveillance through laboratory diagnosis, intervention epidemiology, and mapping based on geographical information systems, using a multidisease approach that builds on existing, successful surveillance and control programmes. A special programme focuses on the control of infectious diseases in complex emergencies, in partnership with international and nongovernmental organizations.

21. Staff trained in intervention epidemiology and able to deal with several diseases are needed to strengthen regional and national epidemic alert mechanisms and responses. In order to achieve this, there are national training programmes in intervention epidemiology worldwide, and the Training in Epidemiology and Public Health Interventions Network (TEPHINET), a global alliance of epidemiology training programmes, continues to expand.

22. Several new initiatives are under way in order to build national laboratory capacity. One example is the establishment of the WHO Office in Lyons, France, for global surveillance and response to communicable diseases, through national capacity building, with particular attention to the enhancement of laboratory skills and training in intervention epidemiology in countries at greatest risk.

23. In addition, other partnerships are being explored within the framework of the global outbreak alert and response network established in April 2000. A project is being considered by a group of intergovernmental and nongovernmental organizations in order to bring together WHO and other technical partners with complementary capabilities in an open-ended group, so that epidemiological and laboratory structures in developing countries can be strengthened. A possible mechanism to support such an initiative is provided by Article VII of the draft Protocol of the Biological and Toxin Weapons Convention of 1972. This draft Protocol is being negotiated by an ad hoc group (established in 1994) of the States Parties to the Biological and Toxin Weapons Convention. Article VII (Scientific and Technological Exchange for Peaceful Purposes and Technical Cooperation) of the draft Protocol aims to enhance international cooperation for the peaceful use of biological materials, equipment, information and technology (e.g. biotechnology). Among the measures envisaged, assistance would be given to States Parties to improve their national capabilities for the surveillance of and response to infectious diseases, including related research and development.

ACTION BY THE HEALTH ASSEMBLY

24. The Health Assembly is invited to consider the adoption of the resolution contained in resolution EB107.R13.

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