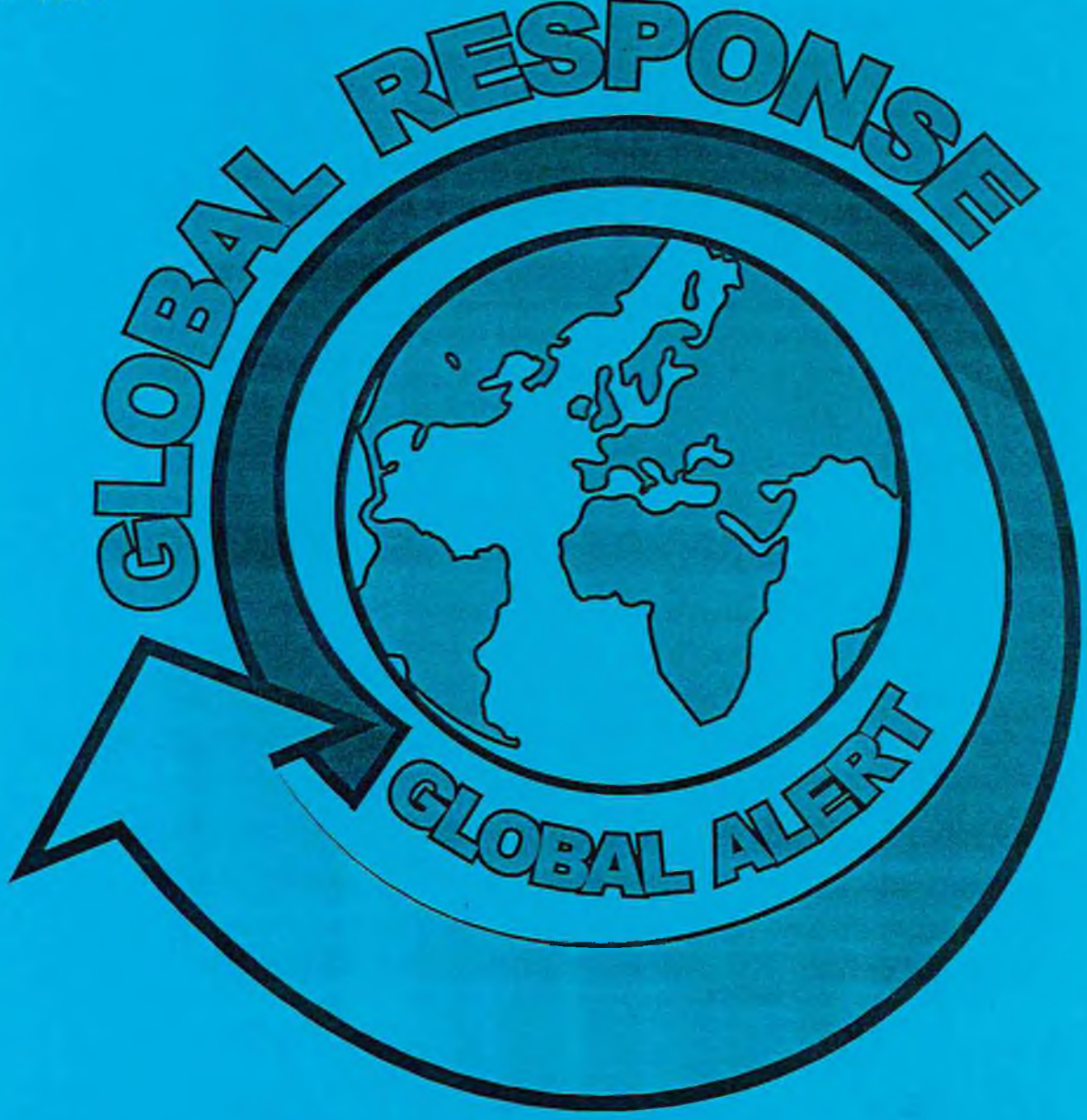
Emerging Infectious Diseases

WORLD HEALTH DAY 1997

7 April 1997



World Health Organization
CH-1211 Geneva 27, Switzerland

WORLD HEALTH DAY 1997 INFORMATION KIT

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MESSAGE FROM THE DIRECTOR-GENERAL

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Until quite recently there was a widespread feeling that the struggle against infectious diseases was almost won. The means of controlling most of them seemed either available or discoverable without undue difficulty. Spectacular progress has indeed been made: smallpox has been eradicated and six other diseases will be eradicated or eliminated soon. But tragically, with optimism came a false sense of security, which has helped many diseases to spread with alarming rapidity.

Major diseases such as malaria and tuberculosis are making a deadly comeback in many parts of the world. At the same time, diseases such as plague, diphtheria, dengue, meningococcal meningitis, yellow fever, and cholera have reappeared as public health threats in many countries, after many years of decline.

In addition, previously unknown infectious diseases are emerging at an unprecedented rate. In the last 20 years, more than 30 new and highly infectious diseases have been identified. They include the virulent Ebola-type haemorrhagic fever, HIV/AIDS and hepatitis C. For many of these diseases there is no treatment, cure or vaccine.

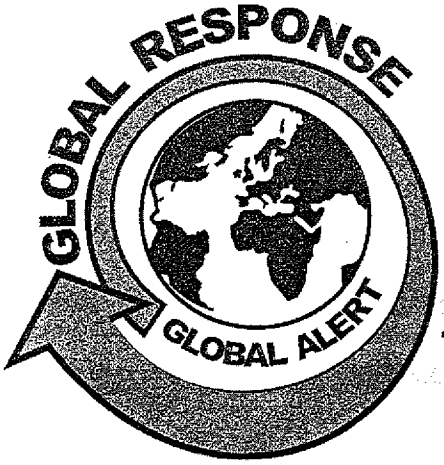
Antibiotic resistance is another important threat to human health which has emerged during the last 20 years. Drugs which once could be counted on for protection against many infectious diseases are becoming less and less useful as resistance to them spreads. In addition, fewer new antibiotics are being produced, owing partly to the high costs of development and licensing. As the treatment of communicable diseases becomes less effective, more people need hospitalization, illnesses last longer, treatment costs more and absenteeism from school and work increases.

There are many reasons for the appearance of new diseases and the resurgence of communicable diseases once thought to be well under control. These include the rapid increase in international air travel and the growth of mega-cities with high population densities and inadequate safe water and sanitation. The risk of foodborne diseases has been heightened by the globalization of trade and changes in the production, handling and processing of food. Environmental factors can lead to the exposure of humans to previously unknown diseases. For example, man is destroying forests and moving into previously remote animal and insect habitats which carry high risks of exposure to disease.

Meanwhile, in rich and poor countries alike, resources for public health are being reduced as limited funds are spent on other priorities. As a result, the appearance of new diseases, the re-emergence of known diseases, or the development of antibiotic resistance, may go unnoticed until it is too late. A recent striking example is the human immunodeficiency virus (HIV) which was recognized only after it had already infected large numbers of people in many countries. If diseases of epidemic potential are detected early enough, epidemics and pandemics can be prevented in some cases, in others minimized.

For these very pressing reasons, the theme «Emerging Infectious Diseases - Global alert, Global response» has been chosen for World Health Day 1997. It is my hope that, by using World Health Day as a catalyst, countries will be able to take a realistic look at these problems and concentrate on rebuilding the foundations of disease surveillance and disease control. Both the public and the private sectors must be encouraged to research and develop better techniques for surveillance and control, and new antibiotics to replace those which are no longer effective.

We have to face the fact that infectious diseases are a common threat which demands urgent attention, especially at a time when people all over the world are being brought closer together by international travel and trade. Communicable diseases respect no frontiers. We must work together globally to control them



Emerging Infectious Diseases

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EMERGING INFECTIOUS DISEASES

What are emerging and re-emerging infectious diseases?

Emerging infectious diseases are those due to newly identified and previously unknown infections which cause public health problems either locally or internationally.

Recent emerging diseases include a highly fatal respiratory disease caused by a virus called *sin nombre*; a variant of Creutzfeldt-Jakob disease, a disease of the central nervous system which is suspected, though not proven, to be associated with a similar disease in cattle called bovine spongiform encephalopathy; HIV infection which causes AIDS, with its sequelae of human suffering and economic burden; and diseases such as Ebola haemorrhagic fever with a potential for international spread. Other examples of new or newly detected infectious diseases of global concern include a new form of cholera , a haemolytic uraemic syndrome , hepatitis C and hepatitis E, Legionnaires' disease, and Lyme disease. Although it is not always possible to know if these diseases are new in humans, or whether they have been present but unrecognized throughout the years, many emerging diseases are thought to be due to a closer contact of man with their reservoirs in nature, with a successful «jump» of the infectious agent from animal to man across the species barrier.

Re-emerging infectious diseases are those due to the reappearance and increase of infections which are known, but had formerly fallen to levels so low that they were no longer considered a public health problem.

Re-emerging infectious diseases often reappear in epidemic proportions. Tuberculosis is increasing worldwide due in part to its close association with HIV infection; cholera has been re-introduced into countries and continents where it had previously disappeared, and where it can spread because water and sanitation systems have deteriorated; dengue or «breakbone» fever has started to occur in urban areas where mosquito control has broken down.

Microorganisms resistant to antibiotic drugs emerged and spread soon after the introduction of these drugs and in parallel with their use. Many well-known antibiotics are no longer effective to treat common infections such as otitis, pneumonia, gonorrhoea and tuberculosis. At the same time, fewer

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new antibiotics are released on the market, partly because of the high cost of developing and licensing them and because the development of resistance reduces the «useful life» of antibiotics. If the arsenal of drugs against infectious diseases loses its power, the future for patients with even a banal ear infection will become bleak.

What causes emergence or re-emergence of infectious diseases?

Several factors contribute to the emergence and re-emergence of infectious diseases, but most can be linked with the increasing number of people living and moving on earth: rapid and intense international travel; overcrowding in cities with poor sanitation; changes in handling and processing of large quantities of food; and increased exposure of humans to disease vectors and reservoirs in nature. Other factors include a deteriorating public health infrastructure which is unable to cope with population demands, and the emergence of resistance to antibiotics linked to their increased misuse.

Travel has always been a vehicle to spread disease across the world, and the central protective legislation edicted in the 14th century by the City-state of Venice has evolved, over the centuries, into the current *International Health Regulations*. The volume of travel has dramatically increased in recent years: presently well over 50 million people use international air transport each year. The speed of travel has similarly increased: whereas cases of cholera, plague and smallpox were slowly transported from one continent to another by ship and could be recognized during the voyage, it is now possible and quite likely that an infected traveller will only develop signs of the disease several days *after* arrival.

Emerging and re-emerging infections reflect the constant struggle of microorganisms to survive. One of the ways microorganisms have found of surviving is to overcome the barriers which normally protect humans from infections. This may follow deforestation, which forces forest animals closer to man in search of food, or failure to control mosquitoes and other carriers of disease to humans, or a breakdown in water and sanitation systems, or failure to detect diseases early, or failure of immunization programmes, or high risk human behaviour.

All of these have been observed within the past decades, together with a waning concern – and decreasing resources – for infectious disease control. During the first half of the 20th century deaths from infectious diseases declined steadily because of improved hygiene and nutrition. This trend was strengthened with the advent of vaccines and antibiotics during the 1940s and culminated in the late 1970s in the eradication of one infectious disease, smallpox. Because at that time infectious diseases appeared to be a decreasing threat, funds for their control were channelled to other problems, experts on infectious disease retired or left the field and students turned to more rewarding subjects than viruses and bacteria - the infrastructure for communicable disease control began to crumble.

The global response

Since 1992 alarm over emerging and re-emerging diseases has resulted in a number of national and international initiatives to restore and improve surveillance and control of communicable diseases. The Member States of WHO expressed their concern in a resolution of the World Health Assembly in 1995, urging all Member States to strengthen surveillance for infectious diseases in order to promptly detect re-emerging diseases and identify new infectious diseases. The World Health Assembly recognized that the success of this resolution depends on the ability to obtain information on infectious diseases and the willingness to communicate this information nationally and internationally. This resolution has been translated by WHO into the establishment of the Division of Emerging and other Communicable Diseases Surveillance and Control (EMC), whose mission 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 ensures a timely and effective response.

BSE

Bovine Spongiform Encephalopathy (BSE) was first described in the United Kingdom in November 1986 and up to mid-1996, approximately 160 000 cases had been confirmed. By mid-1996, BSE had been reported from 10 other countries and areas; in one group of countries the disease occurred in native cattle, while in another group cases were only identified in cattle imported from the United Kingdom.

This fatal neurological disease of cattle is associated with a transmissible agent, the nature of which is not yet fully understood.

It was known that similar transmissible agents caused brain disease in humans, including kuru, and the various forms of Creutzfeldt-Jakob Disease (CJD). The latter can be sporadic, familial, or occur accidentally as the result of a medical procedure (injection or graft of infected human material).

On 20 March 1996, the United Kingdom announced the existence of a cluster of 10 persons identified with what appeared to be a variant of CJD. Full investigation of these cases led to the conclusion that exposure to BSE was the most likely hypothesis. By late 1996, a total of 14 cases of the variant form of CJD have been reported in the United Kingdom and one confirmed in France.

The suspicion of a link between BSE, and the new variant form of CJD through the satisfaction of an essential need such as nutrition, has had important implications for public health and a devastating impact on consumer's confidence in beef safety and thereby the cattle industry. It has forced us to think through the links between public health, industrial development, technology, economic constraints, market and trade practices, public information and consumer safety. In the case of BSE and the new variant form of CJD, advancement of our scientific knowledge should permit policy-makers to ensure both the continuation of economic activities dependent on the cattle industry and the safeguard of public health.

Hepatitis C

Viral hepatitis is a major global public health problem. The discovery of the hepatitis C virus (HCV) in 1989 ended a period of intensive international research efforts aimed at the elusive «Non-A, Non-B» virus, which was well known as a cause of post-transfusion hepatitis. Although HCV is not as infectious as hepatitis B or HIV, as many as 80% of infected people can become chronically infected and risk serious long term effects such as liver cancer which places HCV among pathogens of primary concern to humanity.

As with all recently discovered diseases, there is considerable controversy within the scientific community regarding prevalence, incidence, natural course, patho-biological implications, socio-economic burden and management of acute and chronic hepatitis C. However, the route of transmission through transfusion with unscreened blood, through the use of inadequately sterilized equipment or through needle-sharing among drug-users is well documented. Sexual and perinatal transmission have been reported but are uncommon. Additional studies are needed on possible alternative transmission modes.

Based on prevalence rates ranging from 0.1% to 33% in different countries, WHO estimates today that as many as 3% of the world's population could be infected with HCV and that there may be some 200 million chronic carriers who are at risk of developing liver cirrhosis and/or liver cancer.

Although the socio-economic impact of chronic hepatitis C has only been partly studied, the costs are likely to be high, as was found in studies dealing with chronic hepatitis B. Treatment with interferon is effective in about 20% of patients. For the remaining 80%, international research efforts should focus on combined antiviral therapy. It is clear that 90% of patients who are in need of treatment today cannot afford it.

No vaccine is available, but most HCV infections can be prevented by:

- Screening of blood and blood products worldwide.
- Destruction of disposable medical material and adequate sterilization of reusable medical material.
- Promotion of public education about the risks of using inadequately sterilized material.
- At a time when traditional public health activities are weakened and when conditions in public health laboratories are deteriorating, the challenge of a new disease places extensive pressure on the medical community and additional financial burdens upon society.

TUBERCULOSIS-a global emergency

Alarming outbreaks of tuberculosis caused by multidrug-resistant strains in the United States have lately stirred public interest. In Minneapolis, a person with tuberculosis infected 41 people in a neighbourhood bar. In Western Canada, a health care worker infected 100 other people. In recent years, outbreaks of tuberculosis in wealthy countries have been investigated in discotheques, churches, subways, schools, airplanes, court rooms, and even on a riverboat casino.

Tuberculosis is easily transmitted from person to person. One-third of the world's population – nearly two thousand million people, from New York City to New Delhi – has already become infected. The infection with the tuberculosis bacillus may lie dormant for many years; some people may not even progress to the disease at all. Active tuberculosis has a better chance of developing when the person's immune resistance is weakened, as is the case for women suffering from hormonal and nutritional stresses of pregnancy or for people living with HIV/AIDS. People dually infected with the tuberculosis bacillus and with HIV are 30 times more likely than HIV-negative individuals to become seriously ill with tuberculosis.

In 1993, the World Health Organization declared tuberculosis a global emergency. Tuberculosis is now the leading infectious killer of adults, and will have killed at least 30 million people within the next ten years if current trends continue. It is likely that no other infectious disease is creating as many orphans and devastating as many families as TB. This huge toll is the price the world is paying for complacency.

A cost-effective and proven drug treatment exists, but careless tuberculosis treatment practices are triggering bacilli that are resistant to once-effective drugs. Multidrug-resistant tuberculosis develops when doctors or other health workers prescribe the wrong drugs or the wrong combination of drugs. It also occurs if the right anti-tuberculosis drugs are not taken on a consistent basis, or are not taken for the entire six months of treatment. Powerful tuberculosis drugs should not be prescribed without ensuring that they are taken correctly.

That is why the Global Tuberculosis Programme of WHO is urging all countries to adopt the DOTS (directly observed treatment, short-course) strategy, in which health workers or volunteers watch tuberculosis patients under their care swallow each dose of the medicine for at least the first two months of treatment and monitor their progress toward cure. The strategy is already showing remarkable success in many countries.

WHO is vigorously promoting DOTS: it trains key health workers, assists governments and health ministries worldwide, promotes research into effective ways to cure tuberculosis, contributes to the cure of tuberculosis patients, and mobilizes funds and political commitment to address the pandemic adequately.

The existing BCG vaccine prevents severe tuberculosis in children, but it does not have much impact on the disease in adolescents and adults. Research to develop a new and more efficient tuberculosis vaccine is under way. A range of candidate vaccines is now available.

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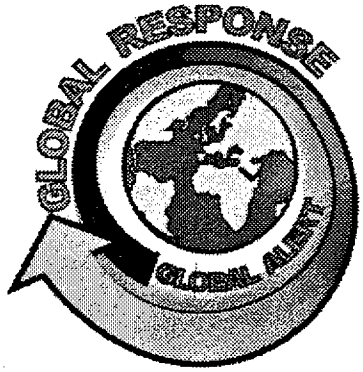
EMERGING AND OTHER INFECTIOUS DISEASES: PARTNERSHIPS TO MEET A CHALLENGE

THE LOGO

A worldwide partnership of countries, non-governmental organizations, international organizations, and individuals is required to respond to the threat of emerging and re-emerging diseases by ensuring rapid detection and effective containment. The logo selected for the Division of Emerging and other Communicable Diseases – Surveillance and Control illustrates this partnership. The arrow on the logo begins with a point or points on earth which signal a global alert – the re-appearance of a known disease such as yellow fever, cholera, meningitis or plague, or the appearance of a newly identified disease such as hepatitis C, AIDS or Ebola, or a disease resistant to usual antibiotic treatment. The arrow then increases in width and extends to encircle the earth, as do the increasing number of partners required to ensure a global response of maximal containment for communicable diseases, with minimal disruption.



The World Health Organization, as one of the partners in this global effort, is strengthening global monitoring systems to serve as part of the overall detection system. Three independent systems cover the globe, bringing together specialized laboratories and disease surveillance systems from all countries, and feed information electronically to the World Wide Web and other international electronic and printed media.

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WHO COLLABORATING CENTRES

The first global monitoring system is that of the WHO Collaborating Centres, specialized laboratories and institutions with expertise in infectious disease diagnosis and epidemiology. During recent epidemics it has become clear that the WHO system of Collaborating Centres could no longer fully respond to global needs. Some centres, for example, had failed to keep up with changes in technology and were unable to provide the diagnostic support necessary to confirm the etiology of disease outbreaks. Some of the centres specializing in infectious disease epidemiology had failed to develop expertise in some of the newer infectious disease challenges. There are not enough Collaborating Centres in developing countries to ensure regional self-sufficiency. WHO is asking governments to provide the resources necessary to bring the WHO Collaborating Centres up-to-date. WHO is also facilitating exchange of information and reagents among Centres, increasing the number of Centres in developing countries, and ensuring that all centres are linked electronically and regularly exchange information.

ANTIMICROBIAL RESISTANCE MONITORING

The second global monitoring system includes the WHO networks for monitoring and containing antimicrobial resistance: WHONET for the monitoring of antimicrobial resistance in general, and the programme for monitoring gonococcal antibiotic susceptibility (GASP). Antimicrobial resistance is rapidly increasing worldwide, facilitated by inappropriate prescribing by health workers, poor compliance by patients to prescribed dosage, and failure to control the availability of antibiotics by limiting them to pharmacies and health facilities. Antimicrobial resistance results in higher costs due to the use of more expensive combinations of antibiotics, to increased rates of hospitalization for infections once easily treated on an outpatient basis, and to time lost from work or school until cure. At the same time pharmaceutical companies are less willing to take the risk of developing new antibiotics, because the high cost of research and development and the potential of rapidly developing resistance jeopardize the recovery of investments made in research and development. Through WHONET and GASP, WHO regularly obtains standardized information of known quality on the current state of antimicrobial resistance, helps countries use this information nationally for sound drug policies, and internationally uses the information to identify problems and advocate research and development on antibiotics.

INTERNATIONAL HEALTH REGULATIONS

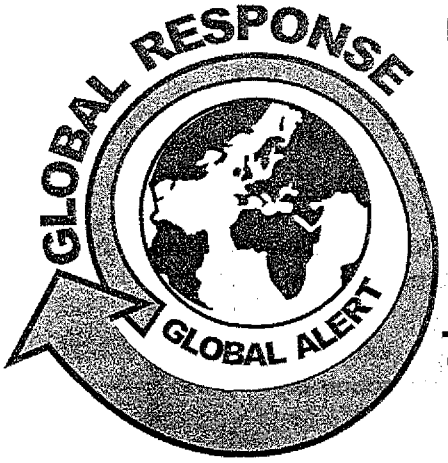
The third system is represented by the *International Health Regulations* (IHR), currently the only international public health legislation which requires mandatory reporting of infectious diseases. Three diseases are covered by the IHR – cholera, plague and yellow fever. Reporting these diseases, however, is often associated with negative repercussions such as restrictions to trade and travel. Some countries therefore do not report and WHO has no legal mandate to force reporting. In addition diseases such as haemorrhagic fevers and pulmonary disease are not included in the IHR. To turn the IHR into a

working global alert system, where reporting will be encouraged and all globally important diseases will be reported, WHO is rewriting the IHR. This will eventually require an initial reporting of clinical syndromes of potential worldwide importance to ensure an immediate and appropriate international response, followed by causal reporting once the diagnosis is known, when modifications in the response may be made as necessary. Clear and concise guidelines for countries are also being developed, describing both appropriate and inappropriate responses once a syndrome is reported.

In addition to partnership in global monitoring, WHO is working in countries to strengthen national disease detection and response through improved surveillance systems, and specialized training in epidemic preparedness and response. In this partnership WHO provides overall technical guidance through its international consensus policies on surveillance and control strategies; it facilitates bilateral or multilateral activities of governments and non-governmental organizations in enlarging the critical mass of epidemiologists and public health laboratory specialists, and it advocates for government commitment to provide the resources necessary.

A final role of WHO in this partnership is to help ensure a coordinated global response to infectious diseases of international importance, often with the technical expertise of the WHO Collaborating Centres or other centres of excellence. At other times the WHO response requires involvement of WHO staff at the field site to begin surveillance and containment activities while facilitating the arrival of technical expertise from other international partners, and to remain after containment to plan and implement activities for the prevention of future outbreaks.

To enter the 21st century and meet tomorrow's challenges of new, emerging, re-emerging infectious diseases, or even to meet the challenge of well-known diseases, WHO will continue to participate in and synergise global partnerships by ensuring strong national disease surveillance and control programmes, global networks to monitor and alert the world to infectious disease and related public health problems, rapid information exchange through electronic links, and rapid response to contain epidemics of international importance.



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PROTECTION WE TAKE FOR GRANTED

The routine immunization activities of WHO prevent an estimated 3 million deaths per year. In addition, at least 750,000 children are protected from blindness, mental retardation, or other disabilities. In 1995, almost 80% of children throughout the world were immunized against six vaccine-preventable diseases – diphtheria, tetanus, whooping cough, measles, polio, and tuberculosis. This achievement involves over 500 million immunization contacts throughout the year; at the same time, immunization activities provided opportunities for other primary health care interventions, such as health education for mothers, growth monitoring, administration of vitamin and mineral supplements to children in need/deficiency, child spacing and routine health checks. This again helps prevent diseases, disability, suffering and deaths.

An important key to the success of this ongoing preventive activity is the promotion of good disease surveillance and monitoring. As high immunization coverage is attained and the number of cases declines, disease surveillance becomes critical to monitor the changing patterns of vaccine-preventable diseases and to guide changes in immunization strategies. Disease surveillance is also critical to pinpoint pockets of poor performances and high risk so that public health action can be enhanced in these areas. For instance, incidence and immunization coverage data can help identify areas at high risk for neonatal tetanus and ensure that resources are channelled to these areas. Surveillance data can also be used as an early warning system to monitor trends in the number of new cases of a disease and predict where and when epidemics may occur. Specific action can thus be taken in time to prevent an epidemic. Surveillance systems also help detect and prevent the re-emergence of vaccine-preventable diseases such as yellow fever and diphtheria by identifying sub-populations and certain age groups at high risk.

Monitoring systems determine ways to boost immunization coverage rates and improve service delivery and related costs. For example, for vaccines to be effective, it is crucial that they be kept cool at all times of the supply chain (cold chain). By improving and developing good surveillance and monitoring systems, poor programme performance can be detected and corrected before public confidence in immunization is undermined.

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Control of influenza

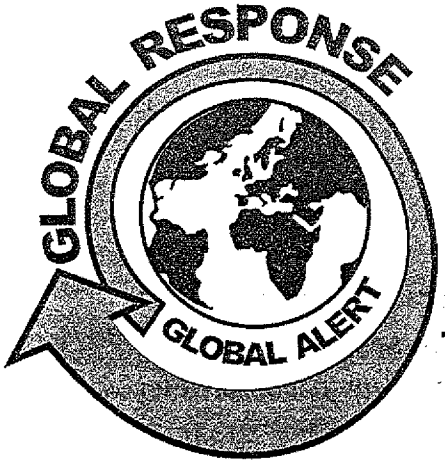
Unlike other acute respiratory diseases, influenza can cause severe illness complicated by pneumonia. Elderly persons or persons with underlying health problems are at increased risk for these complications. The severity of influenza is reflected during major epidemics by large increases in the number of cases admitted to hospital and in the number of deaths from influenza; the increase in deaths during influenza seasons is in some countries used as a measure of the impact of influenza epidemics.

Influenza occurs globally and epidemics are registered in regions of temperate climates every year. Three to four times per century a new influenza virus appears which causes worldwide epidemics (pandemics) and some of them have been associated with extremely high mortality rates. The most severe pandemic this century occurred in 1918-1919 and killed at least 20 million. The last influenza pandemic started in 1968 with the appeareance of the A/Hong Kong influenza strain. It is clear that new pandemics will occur and it is equally evident that the preparation for this global threat has been insufficient.

Two measures can reduce the impact of influenza: vaccination and treatment with anti-viral drugs. Because of the cost, side effects and limited availability, drug treatment is not applicable on a global scale. Vaccination of persons at high risk therefore remains the most effective measure to reduce the impact of influenza. As the virus mutates continuously, vaccination must be repeated annually before each influenza season with an updated vaccine to assure a good match with the circulating influenza strains. Influenza vaccine can prevent severe influenza and deaths and it is therefore strongly recommended for persons aged more than 65 and those at risk to develop severe complications - especially those over 6 months of age with underlying conditions such as chronic heart or lung disease, renal or metabolic disorders.

WHO coordinates the global influenza surveillance which is built on a network of 110 national influenza centres in 80 countries and four WHO Collaborating Centres for Reference and Research on Influenza in Atlanta, London, Melbourne and Tokyo. The surveillance ensures the collection of epidemiological data and of viral isolates for rapid characterization and international comparisons. The annual recommendations for the influenza vaccine are based on the information obtained through this surveillance system. This regular and continuing influenza surveillance programme will also most likely detect a pandemic threat.

To prepare for the forthcoming pandemic, national and regional plans should be developed now. These plans should take into account that in case of a pandemic a vaccine might not be available or available only in insufficient quantities. The plans should set priorities and objectives to guide control strategies, operative decisions and allocation of resources at the national, regional and district levels.



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EXAMPLES OF SUCCESSFUL PREVENTION AND OUTBREAK CONTROL

THE PAST

Smallpox

One of mankind's greatest triumphs is the eradication of smallpox. Under the leadership of WHO, all the countries of the world united to destroy the killer virus.

Although a vaccine to fight smallpox had already been discovered 200 years ago, the disease was still endemic in the 1960s. In 1967, WHO launched a global smallpox eradication campaign, systematically vaccinating entire populations in endemic countries – an enormous and complex exercise. The strategy soon became «surveillance and containment»: every time a new case was discovered, it was isolated and contacts of the patient traced and vaccinated. Where cases were detected, local immunization was intensified. The last case of naturally acquired smallpox was reported from Somalia in 1977, and in 1980, WHO declared the world free from the scourge. In its 1996 session, the World Health Assembly recommended that the last smallpox stocks would be destroyed in 1999.

THE FUTURE

Just as they eradicated smallpox, WHO and its partners are optimistic that they are on the right track to eradicate or eliminate other infectious diseases by the year 2000, in particular poliomyelitis, leprosy and guinea-worm disease (dracunculiasis).

Poliomyelitis

Poliomyelitis is an infectious viral disease that attacks the central nervous system, causing permanent paralysis of the muscles and frequently death. It mainly affects young children. In 1988, WHO established a target to eradicate polio by the year 2000. The strategy used rests on two basic activities:

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surveillance and immunization. Surveillance data are used to gear immunization activities towards populations at higher risk for polio. Worldwide, almost half of the children under 5 were immunized against the polio virus in 1995 in the course of National Immunization Days.

An estimated US$700 million are needed to reach the target of eradicating polio by the year 2000, to save many lives and avoid much human suffering. The projected savings of more than US$1 500 million a year thereafter far outweigh this expenditure. WHO is confident that the drive for the eradication of poliomyelitis is on target.

Leprosy

Leprosy is a disfiguring but curable disease. It is caused by an organism which mainly affects nerves and skin and is spread from person to person by droplets from the nose of an infected individual.

In 1996, the number of registered cases of leprosy in the world has fallen below one million. This offers striking evidence that WHO's strategy for eliminating leprosy as a public health problem is on course for success. There were an estimated 1.8 million people with leprosy compared with 5.5 million in 1991 and 12 million in 1985.

WHO pursues a two-fold strategy against leprosy: treating patients with a combination of three drugs (multidrug therapy – MDT) combined with case-finding. There is evidence that the elimination strategy has already had a significant impact in terms of a dramatic and constant reduction in morbidity. This approach has also increased the priority accorded to leprosy control activities in highly endemic countries; it has also improved case detection through better coverage with MDT (a free supply of drugs was provided through WHO to countries in need), and focused attention on difficult-to-reach populations.

Guinea-worm disease (dracunculiasis)

This is caused by the parasite *Dracunculus medinensis*, commonly known as the guinea-worm, which is transmitted by drinking water infested with the intermediate host of the parasite. The worm, ingested with drinking water, migrates through the body and eventually emerges slowly through the skin causing fever, nausea and vomiting, frequently for several months.

Although there are no drugs to treat the disease nor a vaccine to prevent it, dracunculiasis may be totally eradicated from the world in the near future. The strategy advocated by WHO combines a variety of interventions and approaches but emphasizes two primary measures: the strengthening of surveillance, which implies establishing or strengthening case-containment activities in all endemic villages with intensified community participation, and the mobilization of decision-makers, including village chiefs to improve community awareness and participation in making drinking water supplies safe and other eradication efforts. Campaigns to control guinea-worm disease have been instituted by most of the 18 endemic countries, mainly in Africa.

Proven strategies exist to reach the targets for all three diseases; their implementation requires more political commitment and financial resources. Together with WHO and UNICEF, Rotary International, for example, is raising funds to advance the polio eradication initiative. Global 2000, UNICEF, bilateral agencies, several non-governmental organizations, WHO and countries themselves are furthering guinea-worm eradication activities. More such expanded partnerships are needed for investments to be rewarded by significant economic, social and human benefits of eradicating these diseases.

Emerging Infectious Diseases

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EMERGING INFECTIOUS DISEASES - CHALLENGES AND SOLUTIONS AHEAD

Vision for the 21st Century

A world on the alert, 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

Between the world of today and this vision for the 21st Century lies a huge gap. The likelihood of bridging this gap depends on how well committed partnerships can be forged between individuals and countries, with the backing of WHO and other agencies within and outside the UN family.

Recent outbreaks of Ebola haemorrhagic fever, meningitis, plague, and yellow fever illustrate the challenges to making both the global alert and the global response a reality.

CHALLENGE: EARLY DETECTION OF EPIDEMICS

In a poor public health environment an unusual disease event may not be detected until it has become a major threat to the population and cannot be contained with national resources. Public health laboratories, even if they exist, are often poorly equipped or unable to diagnose common diseases and assess their impact on the community.

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International response required:

Improve the national infrastructure for routine surveillance of common diseases. Assess national surveillance systems, strengthen public health laboratory services, support training in epidemiology and laboratory techniques to increase the pool of staff capable of maintaining routine surveillance on a national scale. Surveillance will provide the background data against which uncommon events can be identified.

CHALLENGE: RAPID NATIONAL RESPONSE TO UNUSUAL DISEASE EVENTS OR OUTBREAKS

An unusual disease event or outbreak may have been reported to local or national health authorities but may not trigger a response, or only trigger an inadequate or late reaction.

International response required:

Train key national staff, assess surveillance systems and prepare plans to contain future outbreaks before they become international emergencies. In addition to these long-term activities, WHO may be required to play an active role in the management of outbreaks with its partners through the provision of expert advice, diagnostic reagents, vaccines and drugs, an international response team if needed, within 24 hours. Once the outbreak is brought under control, WHO and its partners assist countries in evaluating the outbreak and the way it was handled, to improve future performance.

CHALLENGE: EFFICIENT AND VIABLE NATIONAL SURVEILLANCE SYSTEMS

Many countries lack a national, uniform surveillance system for the routine monitoring of communicable diseases. There may be a surveillance system dedicated to monitor one disease or a series of uncoordinated systems for different diseases. Data and information from a fractioned and poorly integrated system do not provide for disease alerts and for the global monitoring of communicable diseases, nor do they help national authorities in setting public health policies.

International response required:

Develop surveillance guidelines with internationally accepted case definitions; stimulate the use of these guidelines through workshops for regional and national key staff. Facilitate and coordinate the flow of information to and from national surveillance systems within a global network. Collaborate with international initiatives for communicable disease surveillance to ensure an efficient and cost-effective collection of data that can be compared internationally.

CHALLENGE: TIMELY HEALTH INFORMATION

Outbreaks of communicable diseases have become news; the media are often the first, and sometimes the only source of information on outbreaks. In the absence of official information from the

country concerned, inaccurate reports have triggered panic situations which made it difficult to evaluate the true situation and the need for intervention. Official information, which could temper exaggerated or inaccurate reports, has sometimes been difficult to obtain, either because it does not exist or because it could not be cleared for release.

International response required:

Advocate an open, responsible exchange of information and facilitate national reporting of outbreaks. Make available reliable and relevant information on diseases and outbreaks to the world community through electronic and conventional media. Supplement this with appropriate advice to people living in or going to affected areas.

CHALLENGE: SOUND INTERNATIONAL REACTIONS TO OUTBREAKS

The international community sometimes reacts with panic to outbreaks of cholera, Ebola haemorrhagic fever, and plague in recent years. Extraordinary and inappropriate measures have been instituted, and barriers set up against travel and trade, including quarantine at airports. These measures cause heavy losses in tourism and export without providing much real protection against the potential import of the disease into the country. Quarantine is a poor protection against the import of a disease. Travel time is short and an infected person can board a plane in apparent good health and arrive at a new destination days, if not weeks, before symptoms appear.

International response required:

Revise the International Health Regulations to provide an internationally-agreed code of practice and control of the international spread of potentially dangerous infectious diseases, according to today's epidemiological and economic realities. Provide guidelines on the application of the Regulations to minimize the disruption of travel and trade which has been a strong disincentive to give alert in the past.

CHALLENGE: CRUMBLING INTERNATIONAL INFRASTRUCTURE

As public health priorities changed in the 1970s and 1980s, resources for communicable diseases became scarce and the necessary infrastructure weakened.

International response required:

WHO's network of Collaborating Centres is an important component in this infrastructure. The Centres are laboratories selected for their degree of excellence and willingness to cooperate internationally. Together they make a network which can handle a broad range of communicable diseases with a high degree of specialization. Strengthening of the WHO Collaborating Centres is required to provide high quality reference service for diagnosis, training and

intervention in outbreaks. Identifying new laboratories to extend the network to new areas (subject and geographical), and establishing electronic links to facilitate the flow of data and information within, to, and from the network are also required.

CHALLENGE: SPREADING ANTIMICROBIAL RESISTANCE

Antibiotic-resistant bacteria appeared almost as soon as antibiotics began to be used. The emergence of resistant bacteria has accelerated in the past two decades and some infections have become difficult and expensive to treat. The problem is compounded by the slow appearance of new antibiotics on the market. They cost much to develop and license and the problems of resistance gives manufacturers only a short time to recuperate these costs. A major cause is a massive misuse of antibiotics in humans and animals. The result is increasing health care costs and longer hospitalizations.

International response required:

Extend the use of WHO-developed programmes and others that accurately monitor the frequency and geographical distribution of antimicrobial resistance. Link users of the programmes in an international surveillance network to generate the data needed to develop national and global strategies and guidelines for the appropriate use of antimicrobials in humans and animals. Stimulate and support research to improve the number of drugs available on the market and to develop alternative ways of preventing and treating infections.

CHALLENGE: DISEASE EMERGENCE THROUGH CONTACTS WITH ANIMALS

Animal farming and food production has intensified and increased the risks that diseases in the animals are transmitted to humans through the food chain. Another reason why new infectious diseases have emerged in the past two decades is that more humans risk coming in contact with animals carrying diseases, for example when forest areas are cut and destroyed and animals living there seek other habitats closer to human populations, or when humans penetrate deeper into the remaining forest areas for leisure or work.

International response required:

Strengthen surveillance of communicable and zoonotic diseases, seek international consensus on policies to prevent and contain transmission of animal diseases to humans and prepare guidelines for the use and management of animals reared for human consumption.

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WORKING TOGETHER TO FIGHT DISEASE: THE RED CROSS AND WHO

EBOLA

Kikwit, Zaire 1995

In May 1995, joint action by the Red Cross, the World Health Organization, Médecins sans Frontières (Belgium), Institutes of Tropical Medicine (Belgium), Sweden, South-Africa, and Centers for Disease Control and Prevention (USA) teams and local non-governmental organizations proved quick and effective in containing a deadly epidemic of haemorrhagic fever caused by an outbreak of the Ebola virus in the town of Kikwit, Zaire.

The combination of medical advice from WHO and its partners and the capacity of the Red Cross Society of the Republic of Zaire (National Society) to access all levels in the community through its thousands of volunteers proved particularly efficient in stopping the spread to the rest of Zaire of a disease which left 245 people dead in and around Kikwit. National Society volunteers were on the front line, transporting the sick to quarantined sectors of hospitals, collecting the bodies of victims and burying them. Five Zairian Red Cross volunteers became infected and died in the line of duty.

With support from the International Federation of Red Cross and Red Crescent Societies (the Federation), the Zairian Red Cross mounted a vast public information campaign. Posters and leaflets in the four national languages of Zaire and in French explained how to avoid infection. One poster recommended avoiding contact with blood or other bodily fluids of a patient. A second advised people against washing the bodies of the dead, which is a traditional part of burial rites. A third warned that used syringes must be burned. A fourth recommended that patients' clothes be handled only with gloves on and that they be boiled before being washed.

All activities were coordinated by an international monitoring and surveillance team which was set up as soon as the disease was diagnosed. It included representatives from the Zairian Red Cross, the Federation, WHO and its partners, the Government of Zaire and other non-governmental organizations. Research also began in order to identify the natural host of the Ebola virus.

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For use by information media: not official record

After the epidemic, the National Society helped families who had lost members to the disease, and who were shunned by neighbours afraid of contagion. Volunteers distributed short-term material assistance (such as food) to the affected families. They also informed neighbours that there was no risk in allowing these people to go about their ordinary business and that they should be re-integrated into the community.

Mayibout, Gabon 1996

The Federation and WHO joined forces again together with the French government to help the Gabonese national authorities and the Red Cross fight an outbreak of the Ebola virus in February 1996. A massive information campaign included information sheets on how to fight Ebola, designed for medical personnel and produced by the Federation and WHO. Protective wear for all those in contact with patients (gloves, aprons, masks and goggles) as well as disinfectant was immediately shipped to Gabon. The epidemic was quickly stemmed, but left 16 people dead.

At the beginning of March 1996, at an international conference on Ebola convened by WHO in the Zairian capital of Kinshasa, some 140 medical specialists and representatives of NGOs discussed ways to combat future outbreaks of the fatal disease. The Zairian Red Cross received a special citation of gratitude for its work from WHO and the memory of the five Red Cross workers who lost their lives after contracting the disease was honoured. It was also decided to begin studying the usefulness of blood from survivors of the Ebola outbreak at Kikwit (some 60 people survived) in treating others with the disease. WHO has so far collected 13 samples which are being tested for antibodies to the disease. Plans are under way to have the Zairian Red Cross collect blood from those who still have high antibody levels.

DIPHTHERIA in the former Soviet Union 1995

For decades, diphtheria, thanks to widespread immunization, had become a controlled, almost forgotten disease. The sense of control changed abruptly in the early 1990s, as a diphtheria epidemic broke out in the Russian Federation and Ukraine. This was linked to the destruction of the Former Soviet Union, to heavy population movements and to social and economic stress. Diphtheria rapidly spread to all other Newly Independent States (NIS); by the end of 1994, a total of 47 802 reported cases and 1 746 deaths had been reported. Worse seemed in store for 1995. Only mass immunization efforts could slow and finally did control the epidemic.

In 1995, Estonia reported 19 cases of diphtheria, Latvia 369 cases, Lithuania 43 cases, Belarus 322 cases and Ukraine 5336 cases. In June 1995, the Federation launched a combined appeal with WHO and UNICEF calling for resources to control the diphtheria epidemic. The funds requested for this appeal were as high as US$ 33 million.

Under the strategy drawn up by the three organizations, the Federation has taken on operational responsibility for the three Baltic States of Estonia, Latvia and Lithuania, and for Belarus and Ukraine, by providing vaccines, syringes and needles, cold chain equipment, antibiotics, antitoxin and human resources for implementing and monitoring the programme.

Under the responsibility of the Federation, with funding from ECHO (European Community Humanitarian Office) and other donors, approximately 31 million doses of vaccines were shipped into the countries and mass vaccination campaigns took place in autumn 1995 and spring 1996. As an effect of these mass vaccination campaigns, the case load and mortality are stabilizing in some countries and decreasing in others.

The whole programme was planned in close collaboration with the National Red Cross Societies and the Ministries of Health. The Red Cross Societies were responsible in particular for social mobilization efforts, for training seminars for health staff, for printing posters, leaflets and other information material about diphtheria, vaccination places and dates. The national and local media got involved throughout the whole programme. Other institutions, such as churches, schools, transport companies, big enterprises and police were also mobilized by the Red Cross for spreading out information to the public. Vaccination rooms were established in all polyclinics, and medical personnel was trained and instructed on the Federation's requirements in reporting and data collection.

A big challenge for the Red Cross Societies was how to contact the so-called hard-to-reach groups, such as the unemployed, homeless, gypsies, and alcoholics. Mr George Weber, Secretary General of the Federation said, "infectious diseases have become the biggest killer these days, and poor and vulnerable people are more affected than others. We in the Federation have therefore given high priority to the control of epidemics, particularly in those groups which are hard to reach. This is possible through the widespread network of Red Cross volunteers". For the vulnerable groups, soup kitchens and secondhand clothes distributions were organized, market places and dormitories were visited and many home-bound and disabled persons were vaccinated in their homes. These efforts increased vaccination coverage by at least 20%.

WHO acts as the secretariat for the Interagency Immunization Co-ordinating Committee (IICC) which is addressing the problem of diphtheria in the former Soviet Union and coordinates the implementation of the programme. UNICEF has taken on responsibility for carrying out the programme in other countries of the NIS. The partnership between these organizations and the Federation is very close and well functioning. Much has been learnt on how to combine different institutional cultures and management styles, and future plans for controlling the epidemic are jointly discussed. This big operation is now well under way, the epidemic is under control in the Baltic States and Belarus, and vaccinations are continuing in all six countries.

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PERSONAL ACCOUNTS

The control of the outbreak of Ebola haemorrhagic fever[1]: the account of a WHO medical officer

On 9 April 1995, a 35 year-old male laboratory worker from Kikwit II hospital was transferred to Kikwit General Hospital with severe bloating and high fever. Surgery was performed the next day and abnormal bleeding was diagnosed. Unfortunately, and despite a second operation, the patient died three days later, on 14 April. Although this could have been the end of an unfortunate medical concern, it was in fact, for most health workers, nurses and physicians involved in the operation, the silent beginning of an epidemic.

On 7 May 1995, rumours about a possible outbreak of Ebola haemorrhagic fever in Zaire, together with a request for assistance reached WHO, Geneva. The diagnosis was rapidly confirmed by the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia, a WHO collaborating centre. On 9 and 10 May an international team with members from WHO and WHO collaborating centres assembled in Kinshasa and flew to Kikwit, where the national experts were fighting the outbreak under difficult conditions.

The WHO team led and coordinated the international response, working closely with the local authorities and Non-Governmental Organizations (NGOs) such as Médecins sans Frontières (MSF), the Red Cross, and the local Catholic Mission. Additional expertise for laboratory diagnosis, viral diseases, epidemiology, clinical management, public education, information, engineering, disaster relief, arrived in Kikwit from CDC, WHO, MSF, the International Federation of Red Cross and Red Crescent Societies, Sweden, South Africa, Belgium and Zaire. A strict isolation ward was set up; an agreed definition of an Ebola case was approved and used to sort patients and provide them with appropriate care. After a few days, the management of cases was under control.

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[1] Excerpt from *World Health*, January-February 1997.

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It was then time for a more thorough investigation, to collect information from the population. The international team investigated reported deaths, suspected cases, unusual events or anything which could clarify the complex chains of transmission of the disease and lead to the source of the epidemic. Every day, special investigation teams checked rumours, by foot, on bicycle, driving miles in a 4-wheel drive vehicle. Daily radio contact with remote villages outside Kikwit was needed to monitor the entire region. This effort led to the identification of a 35 year-old charcoal maker who had died on 13 January 1996 in Kikwit General Hospital and who, retrospectively, seemed to be the first in a series of cases which had occurred over four months until the dramatic outbreak in the hospital.

Operational support from WHO headquarters in Geneva to the field operations faced complex logistical problems, because of the geographic inaccessibility of the outbreak zone, the poor state of the local infrastructure, particularly in telecommunications and transport, the high turnover of field staff; the high-level media interest in the epidemic intensified some of these problems. A satellite link with WHO headquarters in Geneva maintained the communication flow.

By late May, about two weeks after the alert, the epidemic was under control, although additional waves of patients were still expected. The last case occurred on 14 July 1995. A regional surveillance system for Ebola haemorrhagic disease was fully functional and the emergency phase was over. The epidemic command post, from which the international team of physicians and scientists had successfully controlled the outbreak, remained in place until October 1995.

The epidemic was declared over after 24 August 1995, once 42 days (twice the maximum incubation period of the disease) had passed without a case. The epidemic toll was 316 cases, of whom 124 women and 121 men lost their lives. A long-term surveillance system was set up in the Kikwit area, looking for any suspected case, particularly of haemorrhagic disease, or any unexplained death.

Dr Guenaël Rodier
Division of Emerging and other Communicable Diseases Surveillance and Control

Meningitis: the epidemic of the century in Nigeria
The account of a physician working for Médecins Sans Frontières

Nigeria: the states of Kano, Katsina, Bauchi... Three million people vaccinated, 30000 people treated. We did it! We would never have imagined we could carry out such a massive vaccination campaign in two months.

Since the beginning of 1996, Nigeria has been dogged by a meningitis epidemic of unprecedented scale. It is the first time that we in *Médecins Sans Frontières* have had to deal with an epidemic situation in such a densely populated region. There are two million inhabitants in Kano, the country's economic nerve centre, which we chose for our first mission.

When we arrived at Kano, the situation in the big 650-bed hospital was catastrophic: people with meningitis were laid out on mats, some people who were lying on the bare ground were in convulsions. The most serious cases were usually children. In mid-February 1996, when the situation deteriorated suddenly, 120 patients were arriving at the hospital every day. The staff were run off their feet and medicines and vaccinations had dwindled to nil.

There were too many cases in a very short space of time for the Nigerian health system to cope with the epidemic without outside help. Health structures were in place and the staff were qualified, but material resources were limited. Very soon, effective cooperation between Nigerian health teams and the international team from *Médecins Sans Frontières* helped provide suitable treatment and launch the vaccination campaign.

The challenge in Nigeria was, quite simply, enormous. In the three states of Bauchi, Kano and Katsina, with a total of 15 million inhabitants, several million people needed to be immunized. The race against time began on 7 March when 30000 vaccinations were given in one day at 20 centres. Armed with megaphones, we went round markets and places of worship in an effort to mobilize the population, and carried out a comprehensive information campaign.

Despite the operation's success, with 3 million people vaccinated and 30000 patients treated we are still slightly disappointed: of the eight Nigerian states that were particularly affected by the epidemic, we were able to help only three. Slow international mobilization, both in the media and at an operational level, more than likely deprived tens of thousands of patients of treatment*.

Elisabeth Le Saout

Meningococcal meningitis is found right across the world. It is the only form of bacterial meningitis that causes epidemics, with the most serious of which occur in sub-Saharan Africa. The disease is caused by a bacteria which is transmitted mainly through contact with the droplets given off by the respiratory tracts of persons infected. Meningitis is characterized by the sudden onset of headache, with fever, nausea, vomiting, photophobia and stiffness of the neck. Other symptoms of the disease are lethargy, delirium, coma and/or convulsions.

*Recognizing these difficulties, WHO and its partners launched an African meningitis initiative in 1996 with the objective of strenthening surveillance and response to prevent future epidemics of this size.

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WHD 97.8

WHO Network on Antimicrobial Resistance Monitoring

WHO is establishing a global network of laboratories that generate standardized, quantitative data on antimicrobial susceptibility testing. Data are used locally for containment of resistance and internationally to develop better drug policies and advocacy for new antibiotic development.

The long-term goals are to:

- encourage policies and practices that will ensure better infection control and patient care at local level
- prolong the useful life of available antimicrobials
- support rational selection of regional essential drug lists
- detect and contain the emergence of new and major multidrug resistant bacteria
- standardize interpretation of antimicrobial resistance tests
- support those involved in antimicrobial drug research, development and advocacy

1. Background

WHO headquarters, in close collaboration with the Regional Offices and WHO Collaborating Centres, is establishing a global network of laboratories to monitor antimicrobial resistance.

WHO is also developing a global data bank to help identify antimicrobial resistance problems of local, regional and global priority, seek consensus on how to tackle these problems, and initiate and coordinate appropriate control and containment measures.

The establishment of this Network represents a new stage in the global surveillance of antimicrobial resistance. Funds from both WHO regular budget and external sources are being made available and the first laboratories have been enrolled.

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WHO will support laboratories which:

- participate in an initial Quality Control pilot project
- routinely conduct quality control tests and process their test results in a computer database
- use standardized susceptibility tests (preferably as outlined by WHO guidelines) and process quantitative measurements
- process test results with a software compatible to WHONET (WHO supports provision of interfaces)
- participate in routine proficiency testing coordinated by WHO.

In order for the Network to generate data which are of regional and global significance, core network laboratories are applying standardized laboratory techniques so that the data are accurate.

The Network will:

– be temporally and geographically representative

– be flexible enough to react to changing trends

– be open to both hospital and community laboratories

– include important bacteria and antimicrobial drugs

– become sustainable.

Fifty laboratories will provide standardized, quantitative antimicrobial susceptibility testing data to WHO by the end of 1997. The Network will be expanded to 60% of WHO Member States in 1998 and to 80% in 1999.

2. Characteristics of the Network

Network laboratories are in command of the skills required to conduct standardized and quality controlled antimicrobial susceptibility tests.

Through training courses, external quality control and proficiency testing, local support.

Results of antimicrobial susceptibility testing are locally processed and analysed and data are routinely submitted to WHO for incorporation in the WHO data bank. Laboratories participate in a quality assurance programme.

Through local quality control, on-site evaluation, data bank and report monitoring, periodic proficiency testing.

WHO manages its data collation ensuring, feed-back and publication of information. It expands the Network with its partners and establishes national WHO working groups on antimicrobial resistance monitoring for identification of priority areas for research and development and policy formulation.

3. INSTITUTIONAL FRAMEWORK

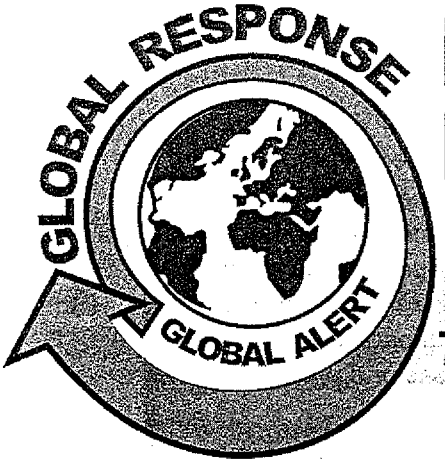
External quality control and proficiency testing is conducted by the Centers for Disease Control and Prevention, Atlanta, USA. A second centre is being identified for continuous external proficiency testing, which will be able to support a growing network of laboratories.

Training courses are conducted by WHO teams using training material developed in collaboration with WHO partners.

On-site quality control, local advice and training are provided by WHO consultants.

The **WHO data bank** is managed within WHO.

Overall management and coordination of the WHO Network and routine publication of results are the responsibility of the Division of Emerging and other Communicable Diseases Surveillance and Control (EMC) in WHO. EMC liaises with national authorities, the pharmaceutical industry and other interested parties.



Emerging Infectious Diseases

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WHD 97.9

7 April 1997

THE INTERNATIONAL HEALTH REGULATIONS: MAXIMUM PROTECTION, MINIMUM RESTRICTION

INTRODUCTION

In 1377, Venice wrote the first recorded quarantine legislation to protect itself from rats on ships arriving from foreign ports. Later legislation in Europe and elsewhere led to the Paris international sanitary conference in 1851, which laid down the basic tenet protection against the international spread of infectious diseases: *maximum protection with minimum restriction*, a tenet still valid today. A full century lapsed before the International Sanitary Rules were adopted, in 1951; these were amended in 1969 to become the International Health Regulations (IHR).

Three communicable diseases – cholera, plague, yellow fever – must currently be reported under the IHR. International enforcement of reporting is not a feasible proposition under the IHR, however, and reporting is far from complete. Countries fear economic consequences when they report (see below); for new diseases with potential for international spread, the IHR do not apply (see box).

In 1995, the World Health Assembly called for a revision and updating of the IHR to make them more applicable to infection control in the 21st century. Over the years, the policing sense of the Regulations, reflected in the emphasis on quarantining of cases and contacts, has given way to public health measures in order to minimize the risk that an imported infection establish a new focus. The application of the IHR has been affected by changes in the global health situation and the increase in international travel. The control of infectious disease at the international level through improved surveillance and intervention strategies is more effective than the application of quarantine practices. The basic principle of the revised IHR should continue to be to ensure maximum security against the international spread of diseases with minimum interference with world traffic and trade. The IHR will be revised along the lines shown in the following box:

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Immediate reporting for only three diseases should be replaced by immediate reporting to WHO of defined syndromes representing disease occurrence of international importance and of the basic epidemiological information that will be useful in control of disease. The IHR should be accompanied by a practical handbook facilitating their use and defining the requirements for international reporting. The revised IHR should be integrated into all epidemic surveillance and control activities at global, regional and national level. The IHR should include a mention of inappropriate or unnecessary interventions and provide clear indications as to why their actions are not required.

The IHR also describe health facilities and personnel that should be available in ports, and what maximum measures national health authorities should institute to protect their territories. The IHR allow national authorities to dispense with those measures which are not appropriate in the national context.

The revised draft will be submitted to the World Health Assembly for ratification in 1998, and widely diffused along with its operational handbook; these documents have great potential to serve as a global alert system for diseases of international importance, and to ensure maximum protection with minimum restriction.

Examples of misapplication of the IHR

Cholera in Latin America. When cholera was identified in 1991, Peru notified the disease at once, as specified by the IHR. Help was immediately forthcoming, but during that year alone cholera infected over 300 000 persons and caused 3000 deaths in Peru. In addition to its public health impact, the epidemic led to losses in trade and travel estimated at US$ 700 million at least due to excessive measures imposed by other countries.

Plague in India. In 1994 an outbreak of presumptive plague occurred in India. India reported the outbreak to WHO after information had been diffused by the international press. The outbreak led to much economic disruption and concern worldwide: in some countries airports were closed to aeroplanes arriving from India, and Indian guest workers were forced to return even though some had not lived in India for several years. Imports of foodstuffs from India plummeted; the overall loss was estimated at nearly US$2000 million.

Examples of irrelevance of the IHR in new diseases

Ebola in Zaire. In 1995 an outbreak of Ebola haemorrhagic fever occurred in Zaire (316 cases and 245 deaths). The immediate official reaction was to close the road leading to Kinshasa, the capital city 500 kilometres away, but the airport near the outbreak site was not part of the quarantine and a case of Ebola did arrive in the capital city by air. Strengthened disease surveillance in Kinshasa, however, immediately detected the case and no local spread occurred. Even if this case of Ebola had boarded an international flight in Kinshasa, the IHR would have had no application since the disease does not fit under their mandate.

Hantavirus Pulmonary Syndrome in the United States. In 1993 an outbreak of a disease characterized by fever, muscle aches and intestinal complaints followed by of shortness of breath and rapid progression to death was first identified in the southwestern United States, then in other states. The cause was found to be a newly identified virus in the Hantavirus family. The deer mouse is now known to be the reservoir of this virus. Despite national alarm as a result of this outbreak and concern about the possibility of cross-border transmission, the IHR again were not applicable.

The revision of the IHR is being undertaken with such scenarios in mind in order to ensure an orderly and appropriate response to outbreaks of infectious disease of global importance.

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WWW.WHO.CH - the home of WHO on the Internet

How to navigate your way around the WHO home pages

Using the WHO site

Once you have contacted the WHO via the Internet (www.who.ch) the main menu page should appear quite quickly. The layout of the WHO Web pages will be familiar to anyone who has used the net because they follow a pattern used by many other users and institutions. You will see the WHO logo and a picture of WHO HQ in Geneva but few other graphics as the site has been designed to allow the fastest possible downloading of information*.

The main menu is linked to other pages in the site by key words or phrases highlighted in blue and underlined. By clicking on the highlighted section, the desired pages are called up. For example, if you click on the light blue WHO, you access the page which gives you background information on WHO and a list of addresses, phone and fax numbers, and e-mail addresses regarding WHO HQ and the six Regional Offices. It might help to think of our web site as a book. The main menu page is the cover with the contents listed on it. By clicking on a particular subject on the cover (highlighted and underlined in blue), you will go to the chapter on that subject. Then by clicking on a highlighted topic in the chapter menu, you will see the individual pages of information, and so on.

So, if you want more detailed information on the topic of this year's World Health Day, Emerging and Communicable Diseases, click on WHO Headquarters' Major Programmes (light blue underlined) in the main menu. This will take you to another menu listing the major programmes including the Division of Emerging and other Communicable Diseases Surveillance and Control (EMC). By clicking on this you will see another menu listing various aspects of the work of EMC such as News of diseases reported to EMC, Cholera and Epidemic Dysentery or Haemorrhagic Fevers (including Ebola, dengue...) If you click on any of the highlighted areas, you will find the latest information on that subject.

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If you have a special interest in a topic and know you will visit the page frequently, you may like to *bookmark* that particular page to save time. How you bookmark a page will vary depending on which Internet browser you are using. For example, if you are using Netscape and want to bookmark a page simply click on **Bookmarks** and then on **Add Bookmarks** in the box which appears. The page will automatically be called up every time you select the page from your list of bookmarks.

As well as information about WHO programmes, the site also gives you access to all of the Organization's Public Information materials in most cases both in French and English. These include Press Releases and Fact Sheets. To reach this information click on **Public-Information-Publique** on the WHO main page, there under Headquarters choose the language in which you want to view the information: either **English** or **Francais**. Then choose **Press releases** or **Factsheets** or **Backgrounders** or **Notes to the Press** and so on.

From the main page you may also view electronic versions of 10 WHO **Newsletters** on topics ranging from chemical safety and noncommunicable disease to changes in medical education and practice.

The WHO web site is big and getting bigger all the time, but don't be put off! There is a search engine installed at the top of the main menu page and on many of the inside pages, such as Public Information, which will help you find what you are looking for either by key word or concept. This is particularly useful in the WHO **Statistical Information System (WHOSIS)** page where there is a great deal of health and health-related data and information. Also, WHOSIS and some other Programmes have hypertext links to other non-WHO sources of information such as the **Centers for Disease Control and Prevention (CDC)** in the USA and the **Global Health Network** which also has versions in Japanese, Portuguese and Spanish.

In addition to the web site at WHO HQ there are links to web sites or e-mail addresses in the six WHO Regional Offices. These sites will contain information specific to the region. You can link to these sites or find the e-mail address by clicking on **Regional and other offices.**

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