INFECTIOUS DISEASES KILL OVER 17 MILLION PEOPLE A YEAR

WHO warns of global crisis

Nearly 50,000 men, women and children are dying every day from infectious diseases; many of these diseases could be prevented or cured for as little as a single dollar per person, the World Health Organization says in **The World Health Report 1996**, published today.

At least 30 new infectious diseases have emerged in the last 20 years and now together threaten the health of hundreds of millions of people. For many of these diseases, there is no treatment, cure or vaccine.

"We are standing on the brink of a global crisis in infectious diseases. No country is safe from them. No country can any longer afford to ignore their threat".

the Director-General of WHO, Dr Hiroshi Nakajima, says in the report.

The report warns that some major infectious diseases, such as cholera, malaria and tuberculosis are making a deadly comeback in many parts of the world, despite being preventable or treatable. At the same time, many new and highly infectious diseases such as HIV/AIDS and the notorious Ebola haemorrhagic fever - both of which are incurable - are emerging to pose additional threats. Fears are growing over a possible food-chain link between bovine spongiform encephalopathy ("mad cow disease") and a variant of the incurable Creutzfeldt-Jakob disease, due to an infectious agent that attacks the human brain.

Meanwhile, antibiotics and other life-saving drugs used against many diseases are rapidly losing their effectiveness as bacteria and other microbes develop resistance to them. For example, doctors worldwide are losing some of the most useful and affordable anti-biotics against the two principal bacteria which cause pneumonia, the major cause of death in children.

The World Health Report 1996- Fighting disease, fostering development, published by WHO, states that infectious diseases are the world's leading cause of premature death. Of about 52 million deaths from all causes in 1995, more than 17 million were due to infectious diseases, including about 9 million deaths in young children. Upto half the world's population of 5.72 billion are at risk of many endemic diseases. In addition, million of people are developing cancers as a direct result of preventable infections by bacteria and viruses, the report says.

"The optimism, of a relatively few years ago that many of these diseases could easily be brought under control has led to a fatal complacency among the international community. This complacency is now costing millions of lives - lives that we have the knowledge and means to save, yet that we are allowing to trickle through our fingers" Dr Nakajima says.

"The socio-economic development of many nations-their prospect of a better future-is being crippled by the burden of these diseases. Other countries are paying a huge price in lost foreign currency income from food trade and tourism as a result of epidemics of cholera, plague and other diseases."

"The world has lost sight of its priority to reduce poverty through better health and foster development by fighting disease. Today, infectious diseases are not only a health issue; they have become a social problem with tremendous consequences for the well-being of the individual and the world we live in. We need to recognize them as a common threat that has been ignored, at great cost, for too long, and to build global solidarity to confront them."

"What is required is the commitment of the international community to help countries most at risk to help themselves. By helping each other, nations united protect the world and protect themselves."

According to the report, many countries have failed to invest adequately in the control of common infectious diseases. Less prevention is now resulting in rising treatment costs.

The Ten Biggest Killers

About 52 million people died from all causes in 1995, according to the report. Of these, more than 17 million were killed by infectious diseases.

*Acute lower respiratory infections such as pneumonia killed 4.4 million people, about 4 million of whom were children.
*Diarrhoeal diseases, including cholera, typhoid and dysentery, spread chiefly by contaminated water or food, killed 3.1 million, most of them children.
*Tuberculosis killed almost 3.1 million, mostly adults.
*Malaria killed 2.1 million people, including 1 million children.
*Hepatitis B infections killed more than 1.1 million people.
*HIV/AIDS killed more than 1 million people.
*Measles killed more than 1 million children.
*Neonatal tetanus killed almost 460,000 infants.
*Whooping cough (pertussis) killed 355,000 children.
*Intestinal worm diseases killed at least 135,000 people.

THE TEN MOST COMMON INFECTIONS

*Diarrhoeal diseases - About 4 billion episodes in 1995.
*Tuberculosis - About 1.9 billion carry the tuberculosis bacilli;8.9 million new cases in 1995
*Intestinal worms - About 1.4 billion infected at any given time.
*Malaria - Up to 500 million new cases in 1995
*Hepatitis - About 350 million hepatitis B chronic carriers,and about 100 million hepatitis C chronic carriers.
*Acute lower respiratory infections - About 395 million episodes in 1995
*Sexually transmitted diseases - At least 330 million new cases in 1995
*Measles - 42 million total cases in 1995.
*Whooping cough - 40 million total cases in 1995

*Meningococcal meningitis - About 350,000 new cases in 1995

NEW DISEASES

Some of the causative agents, and diseases associated with them, include in chronological order of their identification:

1973: Rotavirus, a major cause of infantile diarrhoea worldwide.
1976: Cryptosporidium parvum, a parasite which causes acute and chronic diarrhoea.
1977: Legionella pneumophila, the bacterium which causes potentially fatal Legionnaires'disease
1977: Ebola virus, which causes haemorrhagic fever - fatal in up to 80% of cases.
1977: Hantaan virus, which causes potentially fatal haemorrhagic fever with renal syndrome.
1977: Campylobacter jejuni,a bacterium which causes diarrhoea.
1980: Human-T-lymphotropic virus 1 (HTLV-1), which causes lymphoma-leukaemia.
1982: Escherichia coli 0157:H7 strain of bacteria which causes bloody diarrhoea
1982: HTLV-2 virus, which causes hairy cell leukaemia.
1983: Helicobacter pylori, the bacterium associated with peptic ulcer disease and stomach cancer.
1983: Human immunodeficiency virus (HIV), which causes AIDS.
1988: Hepatitis E virus, which causes epidemics of jaundice in hot climates.
1988: Human herpesvirus 6, which causes fever and rash
1989: Hepatitis C virus, which causes liver cancer as well as liver disease.
1991: Guanarito virus, which causes Venezuelan haemorrhagic fever.
1992: Vibrio cholerae 0139, which causes epidemic cholera.
1994: Sabia virus, which causes Brazilian haemorrhagic fever.
1995: Human herpesvirus 8, associated with Kaposi's sarcoma in AIDS patients.

ANTIBIOTIC RESISTANCE

Drug - resistant strains of microbes are having a deadly impact on the fight against tuberculosis, malaria, cholera, diarrhoea and pneumonia - major diseases which together killed more than 10 million people last year. Some bacteria are resistant to as many as 10 different drugs.

"Disastrously, this is happening at a time when too few new drugs are being developed to replace those that have lost their effectiveness. In the contest for supremacy, the microbes are sprinting ahead. The gap between their ability to mutate into drug-resistant strains and man's ability to counter them is widening fast", the report says.

Many of the most powerful antibiotics have been rendered impotent. The two most common bacteria which are the major cause of death in children through acute respiratory infections, particularly pneumonia, are becoming more and more resistance to drugs.

Antibiotic resistance in hospitals worldwide threatens to leave medical and public health workers virtually helpless in the prevention or treatment of many infections. Antibiotic resistant bacteria are responsible for upto 60 per cent of hospital-acquired infections in the United States, for example. Resistance means that people with infections are ill for longer periods, and are at greater risk of dying, and that disease epidemics are prolonged.

"All bacteria possess an inherent flexibility that enables them, sooner or later, to evolve genes that render them resistant to any antimicrobial. The implications are awesome: drugs that cost tens of million of dollars to produce, and take perhaps 10 years to reach the market, have only a limited life span in which they are effective, "the report says. "As resistance spreads, that life span shrinks: as fewer new drugs appear, the gulf widens between infection and control."

A major cause of the antibiotic resistance crisis is the uncontrolled and inappropriate use of antibiotics globally. They are used by too many people to treat the wrong kind of infections at the wrong dosage and for the wrong period of time.

Antibiotics and other antimicrobial agents are used in enormous amounts worldwide for the production of animal meat for human consumption. Some 170 billion tons of animal meat is produced every year. Drug resistant bacteria and other microbes are passed through the food chain to the consumer, where they many cause disease, or transfer the resistance to human pathogens.

WHY DISEASES ARE SPREADING

WHO says that thanks to concerted international action, some infectious diseases are close to being eliminated or eradicated completely, among them poliomyelitis, leprosy, neonatal tetanus, guinea-worm infection and Chagas disease. Other targeted diseases such as onchocerciasis (river blindness) will soon follow. Extra resources must be mobilized to ensure that the campaigns against all of them continue, otherwise, progress already made will be compromised.

About 8 out of 10 of all the world's children have been immunized against six infectious diseases, diptheria, measles, neonatal tetanus, pertussis (whooping cough), poliomyelitis and tuberculosis.

But the outlook for many others is that they will continue to spread and become increasingly difficult to control, for a combination of reasons. These factors include:

*Population growth combined with rapid urbanization means that many millions of city dwellers live in overcrowded and unhygienic conditions that are breeding grounds for infectious diseases.
*Wars, civil turmoil and natural disasters mean that millions of migrant or refugees are on the move in conditions that are also fertile for infectious disease.
*Rapid increase in international air travel and the growing traffic in trade, particularly food trade, mean that disease-producing organisms can be transported within hours from one continent to another.
*Expanding areas of human habitation place additional millions of people risk from pathogens previously rare or unknown as causes of human disease.
*Social changes including the clustering in day-dare centres and growing numbers of the elderly in nursing homes place these age groups at higher risk of infections.
*Disease formerly under control are re-emerged because of complacency towards them in the public health sector - tuberculosis is one example - and a revival

of others, such as diphtheria, has been triggered by the collapse of public health systems because of economic or social crises.

EPIDEMICS OF 1995

The report covers the state of world health in 1995, with a special focus on infectious diseases, many of which caused lethal epidemics during the year. These included: An epidemic of dengue fever in 14 countries or territories of Central and South America, which struck more than 200,000 people. Dengue haemorrhagic fever, a complication of the initial infection, killed 24,000 people worldwide, with almost 600,000 cases.

Epidemics of cholera in south America, Africa and Eastern Europe caused at least 11,000 deaths, with about 384,000 cases worldwide.

The biggest epidemic of yellow fever in the Americas since 1950 struck in Peru; other epidemics of the disease hit Western Africa, causing thousands of cases in Liberia.

The Ebola haemorrhagic fever outbreak in Zaire killed 245 people, or about 80% of the 316 cases.

Diphtheria epidemics that began in the Russian Federation in 1990, have since spread to a total of 15 countries in Eastern Europe, causing tens of thousands of cases and many hundreds of deaths. WHO estimates that there were about 8,000 diphtheria deaths and 100,000 cases worldwide last year.

INFECTIOUS DISEASES AND CANCER

Viruses, bacteria and parasites emerge as the "secret agents" causing millions of cases of cancer, according to the report. WHO estimates that over 1.5 million of the total of 10 million new cancer cases a year could be avoided by preventing the infection associated with them. About 6.6 million people died from all types of cancer last year. Three main cancers are linked to infections.

Stomach cancer: About 550,000 new cases a year of stomach cancer-about 55 percent of the worldwide total-are attributed to a bacterium, Helicobacter pylori, transmitted in food. The bacterium also causes duodenal and gastric ulcers and gastritis.

Cervical cancer: Sexually transmitted infection of the cervix with human papilloma viruses types 16 and 18 involves a very high risk of developing cervical cancer. Of the 529,000 reported cases a year, the viruses are held responsible for an estimated 65 per cent of those occurring in industrialized countries, and 87 per cent of those in developing countries - a total of 436,000 cases.

Liver cancer: About 434,000 cases a year of liver cancer, or 82 per cent of the world total, are attributed to hepatitis B and C viruses. The viruses are transmitted in a number of ways, including through contaminated blood or blood products and through sexual intercourse. Hepatitis B causes 316,000 of the cases; and hepatitis C a further 118,000 cases. Some cases are the result of infection with both viruses.

PRIORITIES FOR ACTION

The report identifies priorities for action in three categories. These are "old diseases - old problems", old diseases-new problems" and "new diseases - new problems". It says that by applying existing technology and expertise, many infectious diseases can be controlled, eliminated or eradicated. What is required is the political and professional commitment to finance and sustain well-planned, cost-effective disease control measures.

In the "old diseases-old problems" category, cost-effective interventions already exist, the report says. These include:

* Immunization of children against diphtheria, pertussis (whooping cough), tetanus, polio-myelitis, measles and tuberculosis, with the addition of hepatitis B and yellow fever vaccine for selected countries,and vitamin A and iodine supplements in others. The cost: about $ 14.60 per child.

* An integrated approach to the management of sick children to prevent them dying from acute respiratory infections and diarrhoeal diseases. The cost: about $ 1.60 per capita in low-income countries.

* Provision of adequate and clean drinking-water, basic sanitation and waste disposal,together with simple personal hygiene measures can prevent diseases ranging from poliomyelitis and hepatitis to cholera and typhoid.

* School health programmes to treat worm infections and micronutrient deficiencies, and school health education programmes. The cost: about 50 cents per capita in poor countries.

* Simple standard procedures for improved diagnosis and treatment of sexually transmitted diseases. The cost: $ 11 per case in poor countries.

In the second category of "old diseases-new problems" are tuberculosis and insect-borne diseases including malaria and dengue. The report says the strategy for controlling them largely involve cost-effective interventions, which also exist for many of them. But the development of antimicrobial drug resistance or of pesticide resistance, poses a greater threat to public health.

* The main components of WHO's global malaria strategy are providing early diagnosis and prompt treatment, prevention measures including vector control, and the early detection, containment or prevention of epidemics.

* Tuberculosis control depends on DOTS-directly observed treatment, short-course which is already showing itself to be a successful and cost-effective intervention.

* New research initiatives are needed in treatment and improved diagnostics, drugs and vaccines related to all deceases in this group.

* Strengthened epidemiological surveillance systems nationally and internationally are required to detect and combat all deceases in this category, particularly their drug-resistant forms.

The "new diseases-new problems" category is probably the most frightening, says the report. The natural history of diseases such as Ebola and other viral haemorrhagic fevers is unknown, and

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there is incomplete understanding of the factors behind their emergence. The need therefore is for expanding research on the agents of such diseases, their evolution, the vectors that spread them, methods of controlling them, and vaccines and drug development. The report points out that much of this approach has already been applied to HIV/AIDS, one of the most serious diseases to emerge in recent decades.

The priority requirements in this category of deceases are :

* Improving national and international epidemiological surveillance.
* Developing prevention strategies to fight new and re-emerging infectious diseases.
* Responding more rapidly to outbreaks and epidemics.
* Integrating laboratory science and epidemiology to optimize public health practice.

In confronting infectious diseases as a whole, the first priority is to complete "unfinished business" of eradicating or eliminating certain targeted diseases-poliomyelitis, guinea-worn infection, leprosy, neonatal tetanus and Chagas disease, to be closely followed by measles and onchocerciasis-while simultaneously addressing other major diseases. "Relatively small financial resources are needed for this final stage. If they cannot be found, eradication or elimination will not be achieved; these diseases will exploit any easing of the campaign against them, and return with a vengeance," the report says.

"The eradication of smallpox shows the way forward. The lessons of malaria and tuberculosis must not be ignored, or the efforts and resources already invested will have been wasted. This must not be allowed to happen."