

## **Antibiotic misuse and overuse may create health crisis in near future**

Increasing levels of drug resistance are threatening to erode the medical advances of recent decades, according to a report released recently by the World Health Organization (WHO).

WHO sounded this alarm with the release of its annual *Report on Infectious Diseases*, titled, "Overcoming Antimicrobial Resistance." The report is the first of its kind to present a comprehensive picture of the perilous situation the world is facing as once-effective medicines become increasingly ineffective.

The report describes how almost all major infectious diseases are slowly but surely becoming resistant to existing medicines.

In Estonia, Latvia, and parts of Russia and China, more than 10% of tuberculosis (TB) patients have strains resistant to the two most powerful TB medicines. Because of resistance, Thailand has completely lost the means of using three of the most common anti-malaria drugs.

Approximately 30% of patients taking lamivudine -- a drug recently developed to treat hepatitis B -- show resistance to therapy after the first year of treatment. In India, 60% of all cases of the tropical disease visceral leishmaniasis no longer respond to first-line drugs.

A small but growing number of patients are already showing primary resistance to AZT and other new therapies for HIV -infected persons.

In many instances, poorly planned or haphazard use of medicines has caused the world to lose these drugs as quickly as scientists have discovered them.

"It took 20 years to develop penicillin for medical use, and then 20 years for this drug to become virtually useless for treating gonorrhoea in most parts of the world," said Dr. David Heymann, executive director of WHO's program on Communicable Diseases. In much of South-East Asia, resistance to penicillin has been reported in 98% of gonorrhoea strains.

A decade ago in New Delhi, typhoid could be cured by three inexpensive drugs. Now, these drugs are largely ineffective in the battle against this life-threatening disease. Likewise, 10 years ago, a shigella dysentery epidemic could easily be controlled with cotrimoxazole, a drug cheaply available in generic form. Today, nearly all shigella are non-responsive to the drug.

Those admitted to hospital wards are especially vulnerable. In the United States alone, some 14,000 people are infected and die each year as a result of drug-

resistant microbes picked up in hospitals. Around the world, as much as 60% of hospital-acquired infections is caused by drug-resistant microbes.

Antimicrobial resistance is a naturally occurring biological phenomenon amplified many times over due to human misuse and neglect of antimicrobial drugs. The effect of antimicrobial resistance is that it can reduce the curative power of once life-saving medicines to that of a sugar pill.

The social causes fueling the spread of antimicrobial resistance are paradoxical. In some settings -- especially in poorer countries -- the under-use of drugs encourages the development of resistance.

For example, where patients are unable to afford the full course of the medicines to be cured of their illnesses, or can only afford to purchase counterfeit drugs on the black market, the weakest microbes in the body may be killed by these insufficient doses while the more resistant microbes are given the opportunity to survive and multiply.

In wealthy countries, resistance is emerging for the opposite reason: drug **overuse**. Unnecessary demands for drugs by patients are often eagerly met by health services prone to over-prescribing. Similarly, overuse of antimicrobials in food production in wealthy countries is also contributing to increased drug resistance.

Currently, 50% of all antibiotic production is used to treat sick animals, promote livestock and poultry growth, or rid cultivated foods of destructive organisms.

Regardless of where drug resistance originates, globalization and increased travel and trade ensure that these strains quickly travel elsewhere. With new DNA finger-printing technology, scientists have been able to identify drug-resistant TB strains originating in Eastern Europe, Asia and Africa and track them as they increasingly reappear in patients in Western Europe and North America.

"The world may only have a decade or two to make optimal use of many of the medicines presently available to stop infectious diseases," said Dr. Heymann. "We are literally in a race against time to bring levels of infectious disease down worldwide, before the diseases wear the drugs down first."

**SOURCE:** Media alert: "Drug resistance threatens to reverse medical progress," World Health Organization, June 12, 2000.