

CIA National Infectious Disease Threat Report (NIE 99-17D January 2000)

The Global Infectious Disease Threat and Its Implications for the United States

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I am pleased to share with you this unclassified version of a new National Intelligence Estimate on the reemergence of the threat from infectious diseases worldwide and its implications for the United States.

This report represents an important initiative on the part of the Intelligence Community to consider the national security dimension of a nontraditional threat. It responds to a growing concern by senior US leaders about the implications--in terms of health, economics, and national security--of the growing global infectious disease threat. The dramatic increase in drug-resistant microbes, combined with the lag in development of new antibiotics, the rise of megacities with severe health care deficiencies, environmental degradation, and the growing ease and frequency of cross-border movements of people and produce have greatly facilitated the spread of infectious diseases.

In June 1996, President Clinton issued a Presidential Decision Directive calling for a more focused US policy on infectious diseases. The State Department's Strategic Plan for International Affairs lists protecting human health and reducing the spread of infectious diseases as US strategic goals, and Secretary Albright in December 1999 announced the second of two major U.S. initiatives to combat HIV/AIDS. The unprecedented UN Security Council session devoted exclusively to the threat to Africa from HIV/AIDS in January 2000 is a measure of the international community's concern about the infectious disease threat.

As part of this new US Government effort, the National Intelligence Council produced this National Intelligence Estimate. It examines the most lethal diseases globally and by region; develops alternative scenarios about their future course; examines national and international capacities to deal with them; and assesses their national and global social, economic, political, and security impact. It then assesses the infectious disease threat from international sources to the United States; to US military personnel overseas; and to regions in which the United States has or may develop significant equities.

Key Judgments

The Global Infectious Disease Threat and Its Implications for the United States

New and reemerging infectious diseases will pose a rising global health threat and will complicate US and global security over the next 20 years. These diseases will endanger US

citizens at home and abroad, threaten US armed forces deployed overseas, and exacerbate social and political instability in key countries and regions in which the United States has significant interests.

Infectious diseases are a leading cause of death, accounting for a quarter to a third of the estimated 54 million deaths worldwide in 1998. The spread of infectious diseases results as much from changes in human behavior--including lifestyles and land use patterns, increased trade and travel, and inappropriate use of antibiotic drugs--as from mutations in pathogens.

- Twenty well-known diseases--including tuberculosis (TB), malaria, and cholera--have reemerged or spread geographically since 1973, often in more virulent and drug-resistant forms.
- At least 30 previously unknown disease agents have been identified since 1973, including HIV, Ebola, hepatitis C, and Nipah virus, for which no cures are available.
- Of the seven biggest killers worldwide, TB, malaria, hepatitis, and, in particular, HIV/AIDS continue to surge, with HIV/AIDS and TB likely to account for the overwhelming majority of deaths from infectious diseases in developing countries by 2020. Acute lower respiratory infections--including pneumonia and influenza--as well as diarrheal diseases and measles, appear to have peaked at high incidence levels.

Impact Within the United States

Although the infectious disease threat in the United States remains relatively modest as compared to that of noninfectious diseases, the trend is up. Annual infectious disease-related death rates in the United States have nearly doubled to some 170,000 annually after reaching an historic low in 1980. Many infectious diseases--most recently, the West Nile virus--originate outside US borders and are introduced by international travelers, immigrants, returning US military personnel, or imported animals and foodstuffs. In the opinion of the US Institute of Medicine, the next major infectious disease threat to the United States may be, like HIV, a previously unrecognized pathogen. Barring that, the most dangerous known infectious diseases likely to threaten the United States over the next two decades will be HIV/AIDS, hepatitis C, TB, and new, more lethal variants of influenza. Hospital-acquired infections and foodborne illnesses also will pose a threat.

- Although multidrug therapies have cut **HIV/AIDS** deaths by two-thirds to 17,000 annually since 1995, emerging microbial resistance to such drugs and continued new infections will sustain the threat.
- Some 4 million Americans are chronic carriers of the **hepatitis C** virus, a significant cause of liver cancer and cirrhosis. The US death toll from the virus may surpass that of HIV/AIDS in the next five years.
- **TB**, exacerbated by multidrug resistant strains and HIV/AIDS co-infection, has made a comeback. Although a massive and costly control effort is achieving considerable success, the threat will be sustained by the spread of HIV and the growing number of new, particularly illegal, immigrants infected with TB.
- **Influenza** now kills some 30,000 Americans annually, and epidemiologists generally agree that it is not a question of whether, but when, the next killer pandemic will occur.
- Highly virulent and increasingly **antimicrobial resistant pathogens**, such as *Staphylococcus aureus*, are major sources of hospital-acquired infections that kill some 14,000 patients annually.

- The doubling of US food imports over the last five years is one of the factors contributing to tens of millions of *foodborne illnesses* and 9,000 deaths that occur annually, and the trend is up.

Regional Trends

Developing and former communist countries will continue to experience the greatest impact from infectious diseases--because of malnutrition, poor sanitation, poor water quality, and inadequate health care--but developed countries also will be affected:

- **Sub-Saharan Africa**--accounting for nearly half of infectious disease deaths globally--will remain the most vulnerable region. The death rates for many diseases, including HIV/AIDS and malaria, exceed those in all other regions. Sub-Saharan Africa's health care capacity--the poorest in the world--will continue to lag.
- **Asia and the Pacific**, where multidrug resistant TB, malaria, and cholera are rampant, is likely to witness a dramatic increase in infectious disease deaths, largely driven by the spread of HIV/AIDS in South and Southeast Asia and its likely spread to East Asia. By 2010, the region could surpass Africa in the number of HIV infections.
- The **former Soviet Union (FSU)** and, to a lesser extent, Eastern Europe also are likely to see a substantial increase in infectious disease incidence and deaths. In the FSU especially, the steep deterioration in health care and other services owing to economic decline has led to a sharp rise in diphtheria, dysentery, cholera, and hepatitis B and C. TB has reached epidemic proportions throughout the FSU, while the HIV-infected population in Russia alone could exceed 1 million by the end of 2000 and double yet again by 2002.
- **Latin American** countries generally are making progress in infectious disease control, including the eradication of polio, but uneven economic development has contributed to widespread resurgence of cholera, malaria, TB, and dengue. These diseases will continue to take a heavy toll in tropical and poorer countries.
- **The Middle East and North Africa** region has substantial TB and hepatitis B and C prevalence, but conservative social mores, climatic factors, and the high level of health spending in the oil-producing states tend to limit some globally prevalent diseases, such as HIV/AIDS and malaria. The region has the lowest HIV infection rate among all regions, although this is probably due in part to above-average underreporting because of the stigma associated with the disease in Muslim societies.
- **Western Europe** faces threats from several infectious diseases, such as HIV/AIDS, TB, and hepatitis B and C, as well as from several economically costly zoonotic diseases (that is, those transmitted from animals to humans). The region's large volume of travel, trade, and immigration increases the risks of importing diseases from other regions, but its highly developed health care system will limit their impact.

Response Capacity

Development of an effective global surveillance and response system probably is at least a decade or more away, owing to inadequate coordination and funding at the international level and lack of capacity, funds, and commitment in many developing and former communist states. Although overall global health care capacity has improved substantially in recent decades, the gap between rich and poorer countries in the availability and quality of health care, as illustrated

by a typology developed by the Defense Intelligence Agency's Armed Forces Medical Intelligence Center (AFMIC), is widening.

Alternative Scenarios

We have examined three plausible scenarios for the course of the infectious disease threat over the next 20 years:

Steady Progress

The least likely scenario projects steady progress whereby the aging of global populations and declining fertility rates, socioeconomic advances, and improvements in health care and medical breakthroughs hasten movement toward a "health transition" in which such noninfectious diseases as heart disease and cancer would replace infectious diseases as the overarching global health challenge. We believe this scenario is unlikely primarily because it gives inadequate emphasis to persistent demographic and socioeconomic challenges in the developing countries, to increasing microbial resistance to existing antibiotics, and because related models have already underestimated the force of major killers such as HIV/AIDS, TB, and malaria.

Progress Stymied

A more pessimistic--and more plausible--scenario projects little or no progress in countering infectious diseases over the duration of this Estimate. Under this scenario, HIV/AIDS reaches catastrophic proportions as the virus spreads throughout the vast populations of India, China, the former Soviet Union, and Latin America, while multidrug treatments encounter microbial resistance and remain prohibitively expensive for developing countries. Multidrug resistant strains of TB, malaria, and other infectious diseases appear at a faster pace than new drugs and vaccines, wreaking havoc on world health. Although more likely than the "steady progress" scenario, we judge that this scenario also is unlikely to prevail because it underestimates the prospects for socioeconomic development, international collaboration, and medical and health care advances to constrain the spread of at least some widespread infectious diseases.

Deterioration, Then Limited Improvement

The most likely scenario, in our view, is one in which the infectious disease threat--particularly from HIV/AIDS--worsens during the first half of our time frame, but decreases fitfully after that, owing to better prevention and control efforts, new drugs and vaccines, and socioeconomic improvements. In the next decade, under this scenario, negative demographic and social conditions in developing countries, such as continued urbanization and poor health care capacity, remain conducive to the spread of infectious diseases; persistent poverty sustains the least developed countries as reservoirs of infection; and microbial resistance continues to increase faster than the pace of new drug and vaccine development. During the subsequent decade, more positive demographic changes such as reduced fertility and aging populations; gradual socioeconomic improvement in most countries; medical advances against childhood and vaccine-preventable killers such as diarrheal diseases, neonatal tetanus, and measles; expanded international surveillance and response systems; and improvements in national health care capacities take hold in all but the least developed countries. Barring the appearance of a deadly and highly infectious new disease, a catastrophic upward lurch by HIV/AIDS, or the release of a highly contagious biological agent capable of rapid and widescale secondary spread, these developments produce at least limited gains against the overall infectious disease threat. However, the remaining group of virulent diseases, led by HIV/AIDS and TB, continue to take a significant toll.

[The Estimate was produced under the auspices of David F. Gordon, National Intelligence Officer for Economics and Global Issues. The primary drafters were Lt. Col. (Dr.) Don Noah of the Armed Forces Medical Intelligence Center and George Fidas of the NIC. The Estimate also benefited from a conference on infectious diseases held jointly with the State Department's Bureau of Intelligence and Research, and was reviewed by several prominent epidemiologists and other health experts in and outside the US Government. We hope that it will further inform the debate about this important subject.]