

Health officials sound the alarm

Public health experts are worried about the wide spread of epidemics as a result of health infrastructure collapse, reports Carol Hugunin.

Over the past six months, public health and epidemiological experts have been sounding the alarm over the gradual global decay in public health infrastructure, now reaching humanity-threatening proportions, in a series of conferences covering every aspect of public health monitoring. The most recent of these focused on Ebola virus, which can cause a highly fatal hemorrhagic illness. The virus, originating in the tropical rainforests, is contracted by an unknown species and periodically transmitted to humans. Although Ebola may not be any immediate threat to Americans, it is paradigmatic of other zoonotic diseases which threaten man. Its presence in sub-Saharan Africa, where public health infrastructure has been destroyed, epitomizes the general gutting of mankind's disease-fighting capacity that has occurred over the past few decades. Ebola is endemic to some unknown animal, or perhaps even transmitted by an insect species. It cannot readily be wiped out. This means that in order to fight it, and other zoonotic diseases like it, successfully, considerable public health and related types of infrastructure must be maintained both to research and monitor disease outbreaks in both human and animal populations, and to form the basis for a successful fight against epidemics whenever and wherever they occur.

At a three-day international conference on Ebola, which began on March 5, health officials focused on organizing international cooperation to create that public health infrastructure for the fight against Ebola. According to a Reuters wire dated March 7, World Health Organization (WHO) Director General Hiroshi Nakajima, speaking from the WHO-sponsored conference in Kinshasa, Zaire, said: "We must train epidemiologists. We need community-based epidemiologists. This is the responsibility of national governments as well as the international community." WHO African director Ebrahim Samaba elaborated: "In the past few days we have already contacted partners in order to implement the proposal."

Dr. Samaba said that both the WHO and the federal Centers for Disease Control and Prevention in Atlanta, Georgia had already discussed the issue of training epidemiologists. "We have put money aside to train epidemiologists at

the community level, primary health care, at the district level, nurses, medical assistants, paramedics, as well as doctors at the highest level."

Broader measures required

The fight to develop medical infrastructure in Africa to control the very deadly Ebola virus is only part of a much broader international medical and related infrastructure package that is required to keep mankind from being decimated by a hellish specter of emerging and re-emerging pandemics. This was the message conveyed by countless health professionals in a series of health conferences starting with the Oct. 16, 1995 Institute of Medicine conference on "Emerging and Re-Emerging Infections," (see *EIR*, Nov. 24, 1995).

At that conference, Dr. Donald Henderson of the Johns Hopkins School of Hygiene and Public Health warned his colleagues about precisely this point. "Surveillance systems are between fragile to nonexistent throughout the world," after three decades of neglect, especially in developing countries, home of 75% of humanity. If such a network of international medical centers, focused in developing countries, with well-equipped hospitals, with laboratories, and with a cadre of trained epidemiologists are not developed soon, "there will be hell to pay," Dr. Henderson said.

This conference was followed by a conference on "Remote Sensing and Vector-Borne Disease Monitoring and Control," over Nov. 28-30, sponsored by NASA and the Third World Foundation. The issue again was made clear: The technology exists, but without the commitment to funding and global infrastructural development, previously well-controlled zoonotic diseases (diseases that animals can contract and are often transmitted to man by vectors such as mosquitoes or ticks) will continue to re-emerge as a major threat to mankind.

On Dec. 11-13 experts met to deliberate on "Pandemic Influenza: Confronting a Re-Emerging Threat." In this conference, experts elaborated the conditions that were crucial to the emergence of the deadly 1918 influenza pandemic—infrastructural collapse, a crumbling economic system,

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global food shortages, increasingly untreatable bacterial infections—all of which are remarkably similar to conditions today. The implications of their conclusions are that, without a drastic change in economic policies, including policy toward international health and other forms of infrastructure, mankind might be facing, in the near future, the same, abrupt mass deaths among the world's 20- to 40-year-old citizens—i.e., the bulk of the skilled workforce in their child-bearing and -rearing years, as occurred in 1918. Already the effect on nations of mass deaths from AIDS in this age range, can be seen in the economies of many countries in Africa.

Tale of two Ebola outbreaks

It is somewhat ironic that Ebola, which has caused far fewer deaths globally than the many more classical microbial threats, has caught the public's attention in a way that the latter never could. But even the juxtaposition of the recent, mid-February outbreak of Ebola in Gabon, with the 1995 outbreak of Ebola in Kikwit, Zaire, gives one a better handle on why supporting international public health infrastructure, even for remote areas such as those that are plagued by Ebola, needs to be an immediate financial priority.

The mid-February outbreak in a remote area of northern Gabon was contained by a rapid response by the Gabonese government, backed up by considerable support from the in-

ternational health community. In a press conference on Feb. 22, Gabon's Minister of Health Dr. Serge Mba Bekale, said: "As soon as the government suspected that the illness in Mayibout might be due to infection with Ebola virus, and before the exact cause was known, all appropriate measures were taken to limit the outbreak," according to the WHO release dated Feb. 23. Measures included classical quarantine against infectious diseases; and a broad public information campaign on Ebola, and its modes of transmission. Twelve of the 13 Ebola deaths in Gabon, were people who had eaten a chimpanzee found dead in the bush around Mayibout. Other dead animals found around the same time in that area include two gorillas, an antelope, and a wildcat.

The same rapid response did not occur during the Ebola outbreak around Kikwit, Zaire in May 1995. There, lack of basic medical infrastructure, including sterilized syringes, and proper equipment and electrical power to sterilize reusable syringes, spread the deadly virus among patients and medical personnel in the hospital. Lack of knowledge of the disease, and lack of a capacity to treat it, fueled panic, causing infected people to flee to more populated areas. The result was tragic: of 316 people infected, 245 died. Had Zaire's military not blocked people from leaving the Kikwit area, it is likely that the epidemic would have spread to the capital, Kinshasa, leading to much higher rates of infection and death, and the possibility of spread via jet travel to other countries. Ebola begins with a sudden fever, followed by vomiting, diarrhea, and massive bleeding, and, often, circulatory collapse and death.

Why would villagers in Gabon, in Zaire, and other sub-Saharan African areas eat meat from a chimpanzee found dead in the bush, when it is known that primates can carry Ebola? Dr. Jacques Muyembe, Zaire's top virologist explained to foreign medical experts gathered at the Ebola conference: Given the hideous economic conditions imposed on sub-Saharan Africa, meat from monkeys and apes is a significant source of protein for most Africans. Dr. Muyembe advised Africans under current economic conditions to continue eating such meat: "If it is in good health and killed by a hunter, there is minimal danger. Those who can eat well-cooked monkey meat do not run any risk." But Dr. Muyembe advised against eating raw monkey meat, or meat from a monkey or ape found dead.

With a 77% fatality rate in the 1995 Zaire epidemic, Ebola is probably the most deadly, and least understood of zoonotic diseases, which are periodically spread to humans after contact with infected animals, exposure to their meat, blood, milk products, urine or feces, or by biting insects. And it is paradigmatic of the hideous conditions of economic collapse that breed new diseases: Outbreaks occur in sub-Saharan African areas devoid of medical, and all other types of infrastructure, among people living under such terrible conditions that they continually risk death from Ebola to obtain some vital protein in their diet.

The case of plague in India

Another dramatic example of the way the international collapse in public health infrastructure fuels a panicked spread of zoonotic diseases when they do, inevitably, break out, was relayed to the author recently by Dr. Duane Gubler, CDC's director of Vector-Borne Infectious Diseases at the National Center for Infectious Diseases in Fort Collins, Colorado. In India, during the first quarter of the 20th century, 12 million people died from bubonic plague, which is endemic among the wild rodent population, just as it is endemic among the wild rodent population in the United States. Rising to meet the tragedy, the Indian government developed a very aggressive and successful plague control program. But by the 1960s, under pressure to cut the budget, the Indian government declared victory over bubonic plague, and dismantled plague and rodent control programs. Therefore, when bubonic plague broke out in the town of Surat in 1994, India, a nation of considerable educated expertise, had not one single medical expert trained in bubonic plague control or treatment, and no rat control program!

Panic ensued. During the first two weeks of October 1994, some 500,000 people, some of them in the early stages of infection, fled from Surat to surrounding cities of still greater population. Bubonic plague, a deadly old foe of mankind, was being spread both pneumonically (i.e., via person-to-person contact, by infected individuals whose disease had spread to the lungs), and via fleas from infected rodents that had crowded into population centers in the aftermath of flooding near Surat. Health officials internationally feared that plague might spread from one of India's more populated cities to become a global pneumonic plague pandemic via jet travel. Given this situation, India put out an international plea for help, knowing that the WHO maintained an international network of bubonic plague centers globally.

But, what had happened to this international network of bubonic plague control centers? Using the same penny wise and pound foolish logic, the United States had collapsed its bubonic plague control laboratories and surveillance system, arguing that the deadly bubonic plague was not a priority disease, even though it is endemic in the wildlife population throughout large parts of this country. Should it reappear, the argument goes, we have a magic bullet, antibiotics, which can treat it.

This argument, of course, conveniently ignores the unpleasant reality that many bacterial diseases are becoming resistant to antibiotic treatment, making any strategy relying primarily on antibiotics dubious, at best. The Soviet Union had maintained a bubonic plague control center in Savrapolka, Kazakhstan, but the center was rendered non-functional in the economic turmoil and political chaos caused by the savage economic liberalism imposed on the newly independent republics after the breakup of the Soviet Union.

The only laboratory that still has any capacity to produce reagents for diagnosis of bubonic plague was the CDC lab

of Dr. Gubler at Fort Collins. Dr. Gubler, then working at the Calcutta School of Tropical Medicine, also pulled together an emergency international team to contain the Surat epidemic, in cooperation with the Indian government.

Worst-case assumption

Lacking any on-the-ground capacity to monitor developments, the Indian government, in cooperation with international health authorities, operated on the worst-case assumption that the primary spread of the plague was pneumonic, and distributed antibiotics widely to bring the deadly outbreak under control. As a result, there was no spread of pneumonic plague to other countries, and a rapid containment of the disease within India. By contrast, by earlier "saving" a small amount of money with the dismantling of its plague and rat control programs, India lost millions of dollars in export earnings and tourist income, during 1994.

What would have happened if Dr. Gubler had not been around to pull together the international medical expertise, reagents, and equipment to fight the Surat outbreak? And just how vulnerable is the world's population to zoonotic and vector-borne diseases, given this penny wise and pound foolish global takedown of medical, sanitation, water, and other forms of infrastructure?

In 1982, the United States closed its last field station, the Middle America field station of the National Institute of Allergies and Infectious Diseases in Panama. This center had trained generations of zoonotic epidemiologists, now heading key U.S. epidemiology institutions. Since 1982, two generations of field-competent zoonotic epidemiologists have not been trained. Of course, nothing very dramatic happened immediately after this institution was closed, because the older zoonotic epidemiologists who had been trained there were still on the job. But now, that older generation is beginning to retire. Dr. Karl Johnson, former chief of the special pathogens branch at the Centers for Disease Control, pointed to this critical gap in competence in zoonotic diseases at the conference on "Emerging and Re-Emerging Infectious Diseases" on Oct. 16, 1995. Dr. Johnson has himself retired.

Spread of food-borne disease

Zoonotic diseases include most food-borne illnesses, and many potential biological warfare agents. Can we afford to have no field-trained zoonotic disease epidemiologists today, given the general international collapse of basic infrastructure; and the rate of emerging re-emerging epidemics? During that same speech, Dr. Johnson said: "It should not be forgotten that the Japanese cult which gassed the Tokyo subways, also apparently had plans to make and release Ebola virus into those crowded tubes. . . . Should we worry? Yes!"

Food-borne illnesses are becoming an increasingly serious problem for industrialized countries, and remain a devas-

tating problem for the Third World. The cartelization of the food industry means that food, unlike in the previous era, is grown in one part of the world, and consumed in another, allowing a greater opportunity than ever before for microbial contamination. WHO estimates that 70% of 1.3 billion cases of diarrheal disease that occur annually among children under five years old, are caused by food-borne diseases, and lead to an estimated 2 million deaths.

Environmentalists protect disease

The attack by Prince Philip's environmentalists on the safest refrigerant, freon, because it is a chlorofluorocarbon, means that refrigeration is about to become prohibitively expensive for most developing countries, which would lead to a potential further explosion of food-borne diseases. Given the cartelization of the food industry, if epidemics of food-borne diseases explode in one part of the world, isn't it likely that those fruits and vegetables imported from abroad will soon be harboring more infectious microbes than ever?

Even if you quit eating all those nice, lush fresh fruits and vegetables, you will still be increasingly at risk—thanks to the environmentalists—because the freon “alternatives” are much less efficient, making the refrigerated transportation of foods very vulnerable to increased spoilage: That means that chilled dairy products, meats, and poultry are also at risk as

the ban on freon goes into effect. If you take away fresh fruits and vegetables, meats, poultry, and dairy products, what is there left to eat?

Moreover, the cold chain for transport and protection of vaccines, so desperately needed in the tropical climates of the Third World, will be devastated by the ban on CFCs, as the less efficient refrigerants allow vaccines to denature.

Nor is the United States nearly as free from Third World-type zoonotic diseases as we would like to think we are. Dr. Gregory Guriglass of the Johns Hopkins School of Medicine told the author recently that he found a rate of 160 cases of leptospirosis per 1,000 residents in inner-city Baltimore, as well as 2 to 3 cases per 1,000 residents of Korean hemorrhagic fever, some with renal failure. Both leptospirosis and Korean hemorrhagic fever are rodent borne, which initially present as a flu-like illness; both can further develop into renal failure, and leptospirosis can also lead to liver failure. How did rats that carry Korean hemorrhagic fever get to Baltimore or other U.S. cities? They simply took the ship, truck, train, or other cargo routes, much as do the microbes that arrive on fruits and vegetables grown halfway around the world. The truth is, that we cannot be complacent about diseases in seemingly remote areas of the world, because microbes are seasoned travelers.

But why are rats now a serious problem in U.S. cities? Because in the mid-1980s, budget cuts decimated most urban rodent-control programs, as federal funding was eliminated. For a city like Baltimore, which was one of the few cities to maintain a robust, competent rodent-control program, the federal cuts halved their total rodent-control program: the same penny wise and pound foolish story.

Most U.S. physicians do not test for leptospirosis, because it is considered to be a developing country disease, and because it is difficult to test for. But Dr. Guriglass did locate a study published by A.B. Thiermann in 1977 indicating that he found a greater than 30% presence of antibodies to leptospirosis among children under six years old in Detroit. Dr. Thiermann's study was designed to compare leptospirosis exposure of urban and suburban pre-schoolers. The implication is clear: Leptospirosis is an undiagnosed problem in many urban areas, where medical services, sanitation, and rat control are being closed down for “fiscal” reasons.

If better tests for leptospirosis existed, it would be easy to mobilize U.S. physicians whose practices are in inner cities to test for it. But who would develop such tests? Here we come full circle, as only field-trained zoonotic epidemiologists, who are equally at home conducting laboratory tests and operating in the field, are likely to be interested in developing such new tests. These are the zoonotic epidemiologists who are no longer being trained, at precisely the same time that a global collapse in basic infrastructure, including clean water supplies, sanitation, and pest control, make the spread of such insect- and animal-vector-diseases all the more likely.

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