

Infrastructure Is Front Line Against SARS

by Linda Everett

On March 18, as the Institute of Medicine (IOM) released a report ("Microbial Threats to Health: Emergency, Detection, and Response") warning that the U.S. public health system is in a state of disrepair and vulnerable to what it called a potentially "catastrophic storm of microbial threats," hundreds of people around the globe were already battling a deadly new "mystery" epidemic, now known as Severe Acute Respiratory Syndrome, or SARS.

Three weeks later, on April 9, the World Health Organization (WHO) reported that 2722 persons had been sickened by the disease, and 106 people killed in 18 countries since its outbreak in Guangdong Province of China in November. The number of countries and regions with reported cases grows daily: including Hong Kong, Taiwan, Singapore, Vietnam, Malaysia, Thailand, Canada, United States, Brazil, Germany, Britain, France, Ireland, Italy, Romania, Switzerland, and the latest, South Africa. In the United States, some 150 people from 29 states had been affected before a Florida outbreak on April 9-10 threatened to increase that significantly.

SARS is the most recent reminder of how infectious diseases are a continuing threat globally, and demonstrates that economic infrastructure, medical and economic, is the front-line defense. In every instance where the disease has travelled, if infrastructure—such as trained staff, quarantine capability, isolation facilities, and treatment equipment, such as ventilators—is present and utilized, there have been few or no deaths, and the contagion has been contained. Without the infrastructure, the disease spreads.

The point has been stressed for decades by Democratic Presidential pre-candidate Lyndon LaRouche who, in the 1970s, commissioned policy studies on the "biological holocaust" bound to come, if economic, public health, and sanitation infrastructure continued to deteriorate and be neglected for populations everywhere, but in particular, at that time, in Africa. This refers to basics ranging from water, sanitation and pest control, to medical facilities and research labs.

In the 30 years since the first warning study commissioned by LaRouche was published, in January 1974, approximately 30 new diseases not previously present in the human population have invaded it, from AIDS to Hepatitis C, to Ebola virus; other largely conquered infections have become "re-emerging diseases," such as tuberculosis, cholera, and malaria. It appears that SARS is the latest, following the outbreak of West Nile Virus.

Basic Sanitation Is Key

As 11 labs internationally grapple with finding the causative agent of SARS, Dr. Anthony Fauci, the Director of the National Institute of Allergy and Infectious Disease of the National Institutes of Health, testified before the Senate Health, Education, labor and pensions Committee on April 7 that SARS is almost certainly caused by a totally new coronavirus (the type, one of which causes the common cold) that may have jumped to the human species from an array of animal and bird species in which coronaviruses can cause disease.

As yet, there is no treatment for the disease. Some 80-85% of those with SARS do not reach the stage of respiratory distress, but 10-15% do need ventilators for treatment. About 4% of SARS victims die from it.

The disease spread globally from contagious individuals travelling from regions in Asia, where the first concentrations of infection were discovered.

Hong Kong continues to report the highest number of new SARS cases, 970 cases and 27 deaths; China as a whole has reported 1280 cases with 53 known deaths. On April 10, Hong Kong authorities set new quarantine requirements for anyone residing with a confirmed SARS patient. In an effort to contain the virus, authorities, on March 31, moved several hundred people to quarantine camps from the Amoy Gardens Apartments, where 268 SARS cases had occurred. The housing complex is in a middle-class area of Hong Kong. Public hospitals there are overwhelmed. The World Health Organization reported that the virus has been detected in fecal matter from patients who live at Amoy Gardens, and there is the possibility of an oral-fecal route of transmission. Basic sanitation infrastructure is key, and there are fears that the sewage system in this crowded apartment complex is leaking.

By April 7, Canada had 226 suspected and probable cases of SARS, with 11 deaths, mostly in Ontario, where all the infrastructure necessary for detecting and controlling the contagion was not brought to bear when it first hit in Toronto. Shortages of basic supplies rapidly developed. It was only after Barb Wahl, President of the Ontario Nurses Association, made a public statement that "We're seeing a shortage of supplies, especially the N-95 masks that nurses need to wear to protect themselves and the public," that the government released some 10,000 masks to healthcare workers. On March 31, thousands of people who had recent association with Scarborough Grace Hospital in Toronto's East End, or with York Central Hospital in Richmond Hill north of Toronto, had been asked to voluntarily quarantine themselves at home for 10 days, because the majority of Ontario's SARS cases had been nurses and doctors.

In fact, Toronto's Mt. Sinai Hospital had to quarantine its entire SARS containment team, headed up by Dr. Allison McGeer, one of Canada's leading infectious disease specialists, who contracted the disease early in the Toronto outbreak

while trying to trace the progress of infection threading through staff and patients at Scarborough Grace Hospital. She is recuperating well, but will be quarantined after her hospitalization, because experts still don't know how long a SARS patient remains infectious. The hospital's microbiologist-in-chief, Dr. Donald Low, along with five other members of the SARS containment team, were also put in quarantine.

In Vancouver, British Columbia, where hospital and staff were on alert, with early warnings by the B.C. Center for Disease Control, the response of staff and the presence of intensive-care isolation facilities prevented a chain reaction of contagion when a case showed up in April, of a sick person recently returned from Asia. No one associated with this case was infected. But, public health specialists warn that there

Is a New Virus Causing SARS?

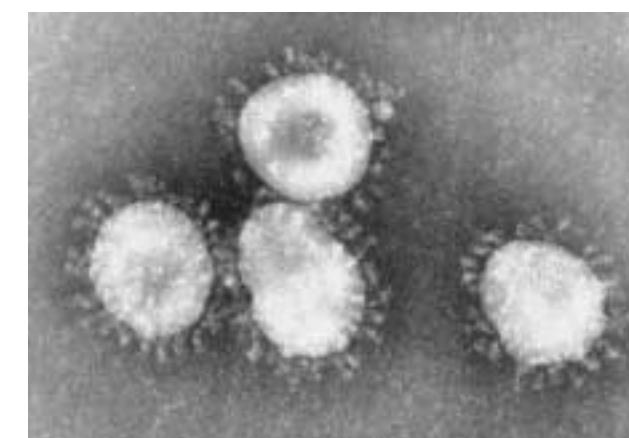
The Centers for Disease Control is cautiously reporting that it believes the current SARS outbreak is caused by a previously unknown type of coronavirus. This surprised many scientists, because the two types of coronavirus that are known to infect humans are not deadly, and include the virus responsible for many of the infections known as the "common cold." However, other laboratories around the world have reported the presence of other viruses in SARS patients, including paramyxovirus and metapneumovirus.

The CDC is basing its hypothesis, that the coronavirus is the causative agent, on several pieces of laboratory and clinical evidence. The CDC laboratory was able to culture the new coronavirus from lung tissue samples taken from a small group of SARS patients. Once cultured, DNA analysis showed that the virus was related to the coronavirus family; but it was unlike any other human or animal coronavirus. Electron microscopy also confirmed the new virus had typical coronavirus structures.

From this work, it was possible to identify an antibody response to the virus, which is now being used as a diagnostic test. This antibody test works only in patients in the later stages of infection.

A diagnostic test for the presence of viral DNA has now also been developed, which can detect the presence of the virus in the early stage of an infection. Bolstering the CDC's assertion that the coronavirus is the cause of SARS, research from Hong Kong showed that this virus was detected in 45 of 50 SARS patients there.

The origin of the virus is also a mystery, as it is so different from other known coronavirus types, that some scientists have proposed it may be a virus from another species, that has mutated and acquired the ability to make a species "jump" and infect humans.



Coronaviruses are named for their crown-like appearance. A new or mutated variety, possibly related to coronaviruses which infect animals, may be causing Severe Acute Respiratory Syndrome (SARS), although the evidence is still developing as the global outbreak spreads.

The virus seems to be able to spread in droplets from coughing, sneezing, and other fluids from infected people. It also is likely that the virus can survive for a brief period on moist surfaces, as other coronaviruses have this ability. It is not known if the virus can be transmitted by any insect vectors, or if it can be spread through water systems or ventilation systems. Scientists are investigating the possibility of some other type of spread of the virus in the Hong Kong outbreak in an apartment complex, where 280 people became infected. At present, they are investigating the possibility of cockroaches mechanically transmitting the virus from one surface to another, or to food that people would come into contact with, but so far, no evidence proving this has been found.

There have been over 100 deaths worldwide due to SARS, but in most cases the patient recovers fully. It is unclear if the development of severe respiratory symptoms in some SARS victims requires a co-factor, or the presence of a second virus. This is actively being investigated by teams in Asia, Canada, and the United States. So far, in the United States, there have been 149 cases of SARS, but none of the patients has died.—Colin Lowry



Centers for Disease Control biologist Cynthia Goldsmith, whose work helped identify a new form of coronavirus as suspect in the SARS outbreak, working at an electron microscope at CDC's laboratories in Atlanta. Other viruses are still possible as causes or co-factors.

are not enough anti-viral drugs stockpiled in Canada to treat everyone who might be infected. And it would take at least six months to make a vaccine.

What If Case Numbers Escalate?

The reason that there have been no deaths yet in the United States from SARS, is the presence of an adequate combination of hospital infrastructure and staff training—so far. How the very first U.S. case of SARS, which occurred in Northern Virginia near the U.S. capital in mid-February, was treated, is exemplary. Even before the Atlanta-based Centers for Diseases Control and Prevention (CDC) or the WHO recognized the SARS epidemic, the quick action of a hospital triage nurse, with her training in bioterrorism and threats to public health and her ability to utilize her hospital's advanced isolation capability, stopped a potentially deadly contagion from spreading.

The nurse quarantined an emergency patient who was in respiratory distress with atypical pneumonia, because she had recently travelled to a province in China where the illness was in evidence. The Virginia patient was placed in a negative-pressure room, which uses a reverse ventilation system that prevents air and contagions from escaping through an open door. The nurse's actions automatically triggered the Hospital's Emergency Response Team, which, within two hours, initiated tracking of every medical worker, family member, or friend exposed to the patient, contacted the CDC, and sent patient tissue samples off for testing.

The question, of course, is what happens if the number of cases of SARS escalates in the country, just as the West Nile virus did so rapidly. Dr. David Goodfriend, Director of the Loudoun County Health Department, told the House Government Reform Committee on April 9 that Loudoun Hospital, which cared for the above SARS patient, has only seven isolation rooms, which are used for tuberculosis and other patients as well. "It doesn't take many cases to overwhelm this system," he said. Janet Heinrich, Director of Health Care-Public Health Issues for the U.S. General Accounting Office (GAO), testified at the same hearing, that the GAO found considerable gaps in the form of shortages of hospitals' workforces, disease surveillance, and laboratory facilities: "Hospitals lack the capacity to respond to large-scale infectious disease outbreaks. . . . Most hospitals lack adequate equipment, isolation facilities, and staff to treat a large increase in the number of patients that may result."

As Sen. Edward Kennedy (D-Mass.) reiterated to the April 7 Senate hearing: "Homeland security means protecting our country against health threats as vigorously as we protect them against military threats; yet today, we are already stretched to the limit in protecting the country against bioterror. Obviously we must provide the resources needed to meet both the man-made threats of terrorism and the natural threats of SARS. At a time like this, it makes no sense for either Congress or the states to be cutting reimbursements to public health agencies and hospitals struggling to face these challenges."

Prepare Now in Southern Hemisphere

Dr. Julie Gerberding, Director of the Centers for Disease Control, testified at the Senate hearings that coronaviruses do have a seasonal pattern, "The problem is that what are the Winter months here, is the Summer months in the Southern Hemisphere, and vice versa, so a seasonal pattern might allow a specific region to get a head start on containment."

Dr. Peggy Hamburg, co-chair of the Institutes of Medicine's "Microbial Threats" report, told the House Government Reform Committee on April 9, "In our transforming world, conditions are ripe for the convergence of multiple factors to create microbial 'perfect storms'—yet unlike meteorological perfect storms, these events would not be once-in-

Sanitation As National Defense

During the anthrax-letter episodes of Fall 2001, Lyndon H. LaRouche, Jr. released an Oct. 28 policy document, "National Defense Against Germ Warfare," through his Presidential campaign, LaRouche in 2004. Some excerpts (full text at www.larouchein2004.com):

War costs a lot of money, and more; but, losing a war to an attacking adversary costs infinitely more. That is the lesson to be learned from the wave of anthrax attacks launched from inside the U.S.A. The question posed by these attacks is, "What is coming next? . . . The immediate, urgent problem is that of developing and deploying a well-coordinated homeland defense on the biological warfare front. This must be deployed not only against the anthrax attacks presently reported, but against whatever might be the weapon and strategy used by the enemy next.

The most important principles of national defense against bacteriological and related forms of warfare, were consolidated as knowledge in the experience of World War II and the war in Korea. Those lessons were featured in the adoption and implementation of the Hill-Burton legislation adopted shortly after the close of World War II.

From the related experience our nation, and others, have accumulated over the centuries, we must not limit the idea of defense against germ warfare and related attacks, to the role of medical practice. We must situate the role of the medical profession, both in care for the sick and in other ways, as an essential, subsumed feature of public sanitation.

I explain this extremely important distinction to be made at this point of our national defense requirements. It is to the degree that we have taken down much of the national-defense protection provided by public and related measures of sanitation, during the recent three decades, that our nation's vulnerabilities to the presently ongoing germ-warfare attacks were created as the oppor-

tunities they presently represent to the advantage of our enemies.

National biological defense means, chiefly, those measures of sanitation which are essential to improving and defending the life-expectancies and well-being of the population as a whole. . . . This includes not only safe water, but also improved supplies of energy, per capita and per square kilometer; it includes improved public transportation.

The General Hospital

It also includes the practice of the medical professions generally. The pivotal feature of the medical profession's role is the general hospital, provided as a public institution which is not only a teaching institution, but which serves those sections of the population which are relatively indigent, and are therefore the most likely radiators of infectious diseases. The public teaching hospital of this type, which is also integrated with the teaching and research functions of a university, is among the most valuable such facilities.

The feature of medical practice to be emphasized in dealing with the actuality and threats of biological warfare, as now, is the ability of the medical profession to respond effectively by producing, rapidly, appropriate forms of non-standard treatment for diseases of a non-standard quality. In such circumstances, we must deal not merely with the apparent "ingenuity" of infectious organisms, but with an enemy, like H.G. Wells' fictional "Dr. Moreau," whose satanic impulses are employed to make infectious agents more deadly than such diseases could become by so-called natural means.

However, without lessening emphasis on the importance of medical counter-intelligence practice, *it is public sanitation which remains the first line of defense of the population against both normal epidemic disease, and also biological warfare attacks.* We require a coordinated, "crash program" sort of attack on both fronts, combined.

This means that we must move quickly, not only to restore the indispensable Washington, D.C. General Hospital, but to restore those medical and infrastructural defenses which were taken down, piece by piece, during the approximate quarter-century since the enactment of the [1974] HMO legislation.

a-century events, but frequent or ongoing. SARS is not an isolated event."

Public officials and members of Congress, among others, show awe and frustrations at SARS' devastation. But, if we are to wage war on this disease, which may still be evolving

into a larger pandemic, Congress has only one sane choice: Join with other world leaders in taking up LaRouche's economic reorganization programs that are aimed at a return of government policy to national protection of the general welfare.