

nature medicine

VOLUME 9 • NUMBER 5 • MAY 2003

Solid response to SARS—almost

For years, Cassandra-like infectious disease experts have prophesied a flu-like epidemic, urging governments to build a public health infrastructure. Now that the world is fighting severe acute respiratory syndrome (SARS), their warnings appear fully justified. The research community has risen to the occasion, working around the clock to define the disease. But government officials have not yet struck the right balance between communicating risks to the public and placing them in the proper context.

The World Health Organization (WHO) first announced that a mysterious illness was sweeping through East Asian nations on 12 March, nearly a month after reports of the disease began to circulate. Five days later, it called on 11 laboratories in nine countries to investigate the disease. The WHO's worldwide network has been in place for several years, but it has rarely been used for an emergency response. Its importance is now paramount. As of 14 April, the disease had spread to nearly 3,200 people in 21 countries, claiming 122 lives.

Although initially slow to react, the WHO quickly picked up steam: it ran daily conference calls for its international team and set up a secure site with valuable pieces of information, including primers to the genetic sequence of the virus, detailed serologic information of SARS-infected individuals, electron microscopic pictures of viruses, X-rays, other laboratory tests and epidemiologic data.

This network is just one example of what has proven to be an unprecedented level of cooperation among ordinarily competitive scientists. Nearly 80 clinicians have participated every day in the WHO's electronic 'grand rounds', sharing information on symptoms and treatment of the disease, which is characterized by high fever, chills, a dry cough and difficulty breathing.

Researchers took less than two weeks to

tentatively identify new strains of a coronavirus and a paramyxovirus. The most likely culprit appears to be a previously unknown strain of the coronavirus, but this hypothesis has not yet been confirmed. We also do not know whether SARS is caused by a single virus or by a combination of viruses. Given these considerations, it may be a mistake to base all current SARS prevention and treatment efforts on the coronavirus.

The genomic sequence of the coronavirus should help resolve the uncertainty: two independent teams of Canadian and US scientists have each reported that the new virus, like all coronaviruses, contains a large positive-sense RNA genome. Although there are already early reports of mutating strains in East Asia, the sequence will help develop better diagnostic tests, treatment strategies for the disease and vaccine research. It will also help determine whether the virus jumped to humans from animals in the Guangdong province of China.

In the meantime, those on the front line of defense—healthcare workers—are bearing the brunt of the epidemic. Nearly a third of those infected by SARS are medical staff. In Hong Kong, healthcare workers have begun to steer clear of hospitals, forcing the government to turn to the private sector. The situation will no doubt worsen when the disease reaches developing nations. Governments in those nations should prepare for the illness while they still have time.

There is no question that SARS has the potential to develop into a very serious problem. It appears to be transmitted easily—particularly in the case of so-called 'superspreaders'—and has established itself as a global problem in a short time. Then again, these are still early days and it is difficult to predict what the picture will look like months, or even weeks, from now. People might develop immunity to the now-novel virus, the epidemic may

weaken over time, and we may be better equipped to combat the disease with vaccines and drugs.

China has been a prime example of what not to do when combating an emerging epidemic. Although the government finally issued an apology for its silence about the illness, it may still be underreporting the extent of the outbreak there.

In the rest of the world, public health experts have been extremely vocal and visible—but perhaps too much so. Officials from the US Centers for Disease Control and Prevention and elsewhere may be compensating for their earlier failures (such as the anthrax scare and the misidentification of the West Nile virus) in communicating with the public. But in the rush to get it right this time, the pendulum may have swung too far in the other direction.

With so many unknowns about the virus and the disease, some members of the research community question the wisdom of large-scale quarantines (see *News*, page 487) and alarming statements about the virus' permanence. The reported mortality rate—122 deaths or 3.5%—does not begin to approach that of many diseases that ravage the developing world, but panic about SARS is spreading faster than the disease itself.

In the long run, extreme measures are not sustainable and will most likely backfire. In Hong Kong and Singapore, for instance, there are reports that the mass quarantines are driving residents to seek untested alternative therapies and avoid hospitals—reactions that will only exacerbate the epidemic.

There is much to be lauded about the way the community has responded to the SARS epidemic, not least of which is the near-silence on the matter of patents and proprietary rights. But there are still many lessons to be learned about the best way to intervene in combating a global health problem.