

May 15, 2003

## Curbing the spread of SARS

### Emerging biological threat demands proactive vigilance

*Six months after emerging in China's Guangdong province, severe acute respiratory syndrome (SARS) has spread to 27 countries around the globe. The number of new cases continues to escalate on a daily basis—more than 7,500 total cases as of May 13, according to the World Health Organization (WHO)—and round-the-clock scientific research yields more questions than answers about the deadly new disease. Spreading even faster than the illness itself are fear and panic, which have emptied the city of Beijing and sent the international travel industry into a nosedive.*

*So far, SARS has killed at least 550 people, and new studies have raised the mortality rate from initial estimates of two to three percent up to an overall case-fatality ratio of 14 to 15 percent, depending on a person's age and the presence of underlying disease. Lack of knowledge about the illness renders it even more frightening. The medical community continues to seek basic facts concerning transmission, infectiousness and treatment.*

*Already the economic tolls of the disease have escalated to billions of U.S. dollars, threatening to send the world into a global recession. According to the WHO, the global cost of SARS is approaching \$30 billion as affected nations suffer SARS-related losses in tourism, productivity and retail sales. An independent financial firm estimates that the city of Toronto alone is losing \$30 million a day because of the epidemic. Meanwhile, those U.S.-based companies with operations in countries at risk for SARS have experienced related losses due to a combination of factors, including factory closings and the weak Asian markets.*

### An invisible enemy

Last month, scientists not only identified the microorganism believed to be responsible for causing SARS, but they also made significant progress in tracing its origins.

The culprit belongs to a family of viruses known as the coronavirus, so named because of a “halo” effect seen when viewed under a microscope. A form of coronavirus is also responsible for the common cold. This particular strain of the virus appears to be related to a variety that typically infects animals. When humans and animals coexist in a close environment—as is the case in parts of Guangdong province, known for cuisine pre-

pared with such exotic ingredients as snakes, cats, frogs and even rats—germs can easily make the transition from an animal host to a human. In fact, initial studies of early SARS victims in Guangdong have revealed that an unusually high percentage worked in the catering profession.

Such variations occur regularly in nature, but they typically have a localized effect. Globalization and modern technology have contributed to the biological success of these organisms, as seen in the example of the AIDS virus. Believed to have transferred from subhuman primates to humans in the African jungles, HIV proliferated because of a variety of factors, including the urbanization of the African continent and the introduction of blood banks. Similarly, the SARS virus appears to have traveled easily from rural farms in Guangdong to the international metropolis of Guangzhou, setting the stage for a global epidemic.

Several of the countries hit hardest by the disease have implemented extreme measures to curtail its spread. In Singapore, for example, passengers arriving from other countries must walk past thermal scanners that detect temperatures above 100 degrees Fahrenheit. Those individuals who pass receive a card informing them of possible exposure to a deadly disease. Masked soldiers escort those with fevers to a mandatory, 10-day quarantine, complete with video surveillance. At the time of this publication, more than 25,000 people across China have been put in quarantine—a drastic departure from the government-imposed secrecy that allowed the virus to spread unchecked for more than three months.

### Questions of contagion

Scientists have uncovered few hard facts about SARS, and even the “known” information does not necessarily hold true in all cases.

Since the outbreak of the disease first made international news, the medical community has believed the primary mode of transmission to occur via droplets expelled through a cough or

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sneeze. Several individuals, however, contracted the disease without apparent direct contact with an infected person, which led researchers to conclude that the virus could survive on common surfaces. Initially, scientists believed the virus remained viable for only three hours or so, while new research suggests that it can live up to 24 hours, particularly in cooler climates.

Another interesting finding, uncovered earlier this month, revealed that the SARS virus could survive up to four days in human feces, depending on the acidity level. This discovery appears to explain the mysterious outbreak at an apartment complex in Hong Kong, where hundreds became infected without encountering a sick person. A subsequent investigation determined that a SARS patient had developed diarrhea and used the bathroom in the apartment building. Investigators believe that a leaky sewage pipe circulated airborne droplets throughout the complex.

The fatality rate of SARS also remains something of a mystery. Mortality rates published by the WHO have ranged from two percent, when the epidemic was first reported in March, to 7.2 percent. A new statistical analysis of 1,425 suspected SARS cases in Hong Kong revealed a death rate as high as 55 percent among people aged 60 and older and up to 13.2 percent in younger patients. The overall fatality rate was estimated as high as 19.9 percent, which would place SARS among the infectious diseases with the highest death rates. Shortly after the release of this study, the WHO sharply revised its estimate of the fatality rate to 14 to 15 percent, based on data from Canada, China, Hong Kong, Singapore and Vietnam. According to WHO officials, the fatality ratio is less than one percent for individuals under 25 years of age, six percent for those 25 to 44, 15 percent for those aged 45 to 64, and more than 50 percent for individuals 65 years or older. In contrast, the Spanish Flu pandemic of 1918-1919 that killed more than 20 million people in 18 months had an estimated mortality rate of less than three percent.

Some medical experts predict that SARS will not reach such monstrous proportions based on the limited contagion thus far. One infectious disease specialist warns, however, that most of the SARS cases seen to date have been contained within a health-care setting; only a small percentage of infections have occurred through community transmission. If the virus were to establish itself in the general population—as it is threatening to do in China and Taiwan—it could develop into a pandemic.

### Economic impact

The SARS outbreak has buffeted economies across Asia, primarily affecting the air travel and tourism sectors. The WHO estimates that the global costs of the disease are fast approaching \$30 billion. Economists predict that Asia alone will lose at least \$16 billion this year, with mainland China and Hong Kong bearing much of the cost. Even those figures could fall significantly short. A government economist for China recently indicated that the country could lose as much as \$17 billion in decreased exports and foreign investment if the disease continues to spread in China through the end of July, and this estimate does not include losses associated with reduced retail sales and tourism, coupled with higher healthcare costs.

As a natural consequence, air travel to Asia has fallen significantly in recent months. North American airline bookings to Hong Kong have dropped more than 85 percent. One Hong Kong carrier has cut its weekly flights by 45 percent, and tourist arrivals in Singapore decreased 70 percent for most of April. The International Air Transport Association group recently warned that airlines' losses could exceed \$6 billion by the end of the year, making the SARS impact on the industry far greater than that of the war in Iraq.

The economic tolls in Asia threaten to have a wide-reaching effect on the global economy. Fishermen in Australia, who sell much of their catch to Hong Kong restaurants, have experienced a dramatic drop in demand. Several U.S. companies have issued corporate announcements

concerning SARS and its impact on business. A leading global insurer that derives approximately 30 percent of its revenue from Asia indicated that sales in that market would likely drop as the disease would prevent agents from visiting prospective customers. A cosmetics manufacturer reported that SARS has contributed to lower sales at stores in Hong Kong, Singapore and China, as well as in duty-free shops, which typically serve travelers. The parent company for several international restaurant chains warned that earnings for 2003 could fall by three to four cents per share if SARS is not contained quickly.

These losses offer only a few examples of the financial devastation that could transpire worldwide if SARS escalated into a large-scale epidemic.

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At this stage, prevention remains the most effective means of managing SARS, but some U.S. groups have taken stronger measures. Earlier this month, a well-known university on the West Coast barred students from SARS-infected countries who were enrolled in the summer term. Companies have evacuated facilities because a traveling employee returned with a cough. Medical experts worry that these reactions may fuel public panic and produce an ultimately counterproductive effect.

Businesses can take a few concrete actions to protect their employees from this mysterious illness, but for the most part, the American population should not worry excessively about SARS. “The risk of SARS as we know it is extremely small for the average American, unless they are traveling to a location where SARS has circulated or they work in a healthcare community,” said the infectious disease specialist cited above. “If this continues to spread throughout China, however, the implications are huge. That’s why these recommendations will likely change over time as we continue to monitor what’s happening.”

Organizations should implement the following steps to prepare for a potential SARS outbreak:

- **Maintain close contact with state and local public health agencies.** Companies need to build relationships with these public services, learning what resources they have to offer and what their limitations will be in the event of an emergency. Such contacts will enable a firm to stay informed of any important developments regarding diagnosis, treatment and local outbreaks. Currently, federal agencies are screening incoming passengers from SARS-infected nations, and the public health departments will follow up with those individuals who may have been exposed to the virus during their travels.
- **Develop a contingency plan.** Every hospital and clinic should work with state and local health departments to develop contingency plans on how to handle a single case of SARS and how to prevent further transmission. This recommendation applies to healthcare facilities in remote, rural areas, as well as those in urban environments, because of the interconnectedness of modern society. Likewise, other businesses—regardless of their geographic location—should also prepare for such an eventuality, even though the present risk is relatively low.
- **Stay informed of new developments.** In addition to following daily news reports, companies should monitor websites such as those operated by the WHO at [www.who.int](http://www.who.int) and the Centers for Disease Control and Prevention (CDC) at [www.cdc.gov](http://www.cdc.gov). Both of these organizations publish up-to-date studies and guidelines. An East Coast infectious disease expert attributes the relative containment of SARS to the widespread dissemination of knowledge. By sharing this information, businesses can help curb public panic, while preparing staff members to respond to a potential outbreak. **Guardsmark** distributes a daily electronic bulletin to all offices with the latest WHO statistics on cumulative SARS cases and those areas identified as high risk. The company also publishes articles on the latest SARS developments in its employee

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newsletter and has invited international experts to speak to management on this evolving threat. All existing employees are completing questionnaires to verify that they do not present a SARS risk to their co-workers or the general public. Additionally, senior executives have developed and implemented procedures to protect employees, client personnel and even applicants from potential exposure to SARS.

- **Postpone non-essential travel to SARS-infected areas.** At present, the WHO recommends that people planning to travel to Tianjin and Inner Mongolia in China and to Taipei, Taiwan, postpone all but essential travel. The international agency reassesses these travel advisories regularly, posting the most current information on its website.
- **Emphasize the importance of hand washing.** Beyond avoiding high-risk locations, the most effective preventive action a person can take to avoid SARS is to practice sound hand hygiene. Individuals need to wash their hands carefully and often, using either soap and water or alcohol-based hand sanitizers. Companies can help promote greater hand hygiene by making hand-sanitizing solutions readily available to employees, either in pump form or portable towelettes.
- **Use high-quality respirator masks if exposed to the virus.** Those individuals who work in a healthcare facility treating potential SARS patients or who have a possible SARS patient in the household need to wear disposable respirators when in the presence of someone who may have SARS. The only respirators currently approved by the CDC and the WHO are those certified by the National Institute for Occupational Safety and Health with a rating of N95. Unlike surgical masks—which do not protect the wearer from airborne pathogens, but prevent the wearer from infecting others—these devices fit snugly and use a combination of filtering methods to trap viruses. The CDC

and the WHO do not recommend that the general public wear masks at this time.

- **Exercise vigilance.** Global connectivity demands constant vigilance. People who exhibit SARS-like symptoms—including a temperature of 100.4 degrees Fahrenheit or greater and a dry, unproductive cough—should contact a local public health agency if they also have the primary risk factor for the disease: travel to, or possible exposure to someone who has traveled to, a high-risk area within 10 to 14 days before onset of the illness.

*Each day brings new answers about SARS, but scientists warn that a treatment or cure may be years away. The upcoming summer season may even hinder progress, as many respiratory viruses go into hibernation during the warmer months. One expert cited above warns that the world might not know the extent of the virus's presence until next winter. "Now that the virus has made the jump from animals to humans, there's nothing to keep it from continuing to jump in the future," he said. "It's not like we've turned off a faucet. Once it has started leaking, it will probably continue to keep dripping—or even gushing."*

*No one knows what the ultimate impact of SARS will be. In the meantime, the world must continue to work together to learn about this new disease and to contain its spread. In developing policies to address this emerging threat, American businesses must keep in mind that SARS does not currently present a threat in the U.S. workplace. Organizations must strike a balance between proactive responsibility and overreaction—preparing for the worst and thereby preventing it.*



The Lipman Report Editors