

31 of 36 DOCUMENTS

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Global travel fans disease

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In a world that is getting smaller and more crowded, where people --- and animals --- can travel around the globe in a matter of hours, experts say outbreaks of diseases like monkeypox, SARS and West Nile virus will continue to increase.

"This is part of a new normal of emerging infectious diseases," said CDC Director Julie Gerberding. "This is a global community" and the recent outbreaks "illustrate the tendency for a problem in one corner of the world to emerge as a problem in another corner of the world."

Monkeypox, which first appeared in the Western Hemisphere last month, comes from Africa's rain forests. SARS is thought to have originated in China. And the West Nile virus, which also originated in Africa, made its Western Hemisphere debut in New York in 1999.

Corporate executives and tourists who jet the airways from Beijing to Boston, a growing exotic pet trade and increased human development of previously untouched forests and jungles have resulted in an "intense interaction among species that haven't really interacted that much," according to Jim Roth, director of Iowa State University's Center for Food Security and Public Health.

"The United States is affected by diseases that emerge anywhere in the world," he said. And the implications are global as well.

"These emerging diseases do have tremendous potential to cause worldwide epidemics if they're not contained," Roth said.

"We move people. We move animals. We move parts of animals. We move dead animals. We move live animals," said Mary E. Wilson, an associate professor at the Harvard School of Public Health. "We've also created a lot of new habitats, like cruise ships, jumbo jets and hospitals, where we crowd people together in the same place, where there is shared air."

Some experts note that greater awareness of disease is an inevitable outcome of increased surveillance after the

Sept. 11 terrorist attacks, but most agree that diseases also are likely to continue to crop up more frequently.

"I think surveillance is better now than it was 10 years ago . . . there's more alertness and better ability to detect these things now," said James M. Hughes, director of the National Center for Infectious Diseases at the Centers for Disease Control and Prevention in Atlanta. "But the world is changing. It's shrinking. We're in the era of globalization."

Exotic animals risky

As land developers and sprawling suburbs continue to "overtake some of the natural ecosystems," contact with exotic animals has increased dramatically, said Jan Patterson, a professor of medicine and infectious diseases at the University of Texas Health Science Center in San Antonio.

This encroachment puts "people in contact with what may have been species that were buried deep in the environment," said Stephen S. Morse, director of the Center for Public Health Preparedness at Columbia University.

At the same time, the importation of pythons, monkeys and other exotic pets has skyrocketed in recent years --- and public health experts warn that humans and exotic animals can be a dangerous combination.

"Both the SARS epidemic and the monkeypox outbreak in the United States stem from a common factor, and that is mankind's close association with animals," said Stanley M. Lemon, dean of the University of Texas Medical Branch in Galveston. "As long as humans are going to associate in a close way with exotic animals, they're going to be at risk."

Scientists speculate West Nile virus may have reached the United States in an infected wild bird through the pet trade. The SARS epidemic is thought to have originated in civet cats, served as a delicacy in China. And health officials believe the monkeypox outbreak in the Midwest came from Gambian giant rats sold as exotic pets.

The rats, from Africa, apparently infected prairie dogs while they were housed together in Texas or after they were shipped to Illinois. The prairie dogs were sold as pets by a Milwaukee distributor.

Last week, federal officials banned the sale and shipment of prairie dogs and the importation of Gambian rats and five other species of African rodents: tree squirrels, rope squirrels, brush-tailed porcupines, striped mice and dormice.

Overcrowding dangers

The monkeypox outbreak should be a warning, said Ruth Berkelman, director of the Center for Public Health Preparedness and Research at Emory University.

"In the context of monkeypox, I would say that prairie dogs should be left on the prairie," she said. "We're certainly not going to be able to stop travel around the world, but I do think people will have to look at issues like what animals are we bringing into this country."

In addition to the world's "exploding population growth," Berkelman and others point to the overcrowding of animals on farms that supply the world's food.

"We used to have chickens that ran around on a small farm," Berkelman said. "There didn't used to be this dense crowding of animals."

If the overcrowding continues, she said, more occurrences like Malaysia's 1998 Nipah virus outbreak, which spread from swine to humans and resulted in more than 100 human casualties, are likely to occur.

"I think we're doing a lot of things that are really stupid," Wilson said. "It's interesting, because we often have the mind-set that a lot of these microbes are out there after us, but what we are doing is bringing the players to us. The way we move things around should be better regulated."

"We've been relatively lucky with both the SARS and monkeypox outbreaks in the United States," Lemon said. "It could have been a lot worse, and if we're not careful in the future we probably will experience something a lot worse."

Monkeypox, SARS and other recent outbreaks, as well as concerns over bioterrorism, have already increased public awareness of emerging diseases --- and government funding for preventing them.

Hughes said the timing is right for further public health system reforms.

"There's an increasing appreciation in the country right now for the global burden of infectious diseases," Hughes said. "We have to be concerned about and prepared to address bioterrorism, but at the same time we have to be prepared to confront the threats that Mother Nature poses in this global village that we live in."

But the battle cannot be fought in the United States alone. Experts say government agencies around the world also must be ready to combat any new outbreaks.

"Sometimes people will get complacent when we think we've controlled a disease, and we let the public health infrastructure decline," Berkelman said.

Don't get complacent

Educating animal owners and veterinarians about the potential for disease, according to Roth and other experts, is as important as preparing for possible bioterrorism.

"The accidentally introduced diseases are causing plenty of problems by themselves," Roth said.

Though it's impossible for even the most experienced scientists to predict when the next disease might pop up or what form it will take, public health experts stress the importance of remaining alert.

"We can't be complacent about any of them," Morse said. "We don't know which one is going to be the next AIDS."

But Morse stressed that most future outbreaks will be problems for public health officials, not the public.

"There's always a danger, if we go from crisis to crisis, people will feel a sense of panic which is neither necessary nor useful," he said. "In most cases, these will not be something an individual has to worry about."

Gerberding said Thursday the combination of monkeypox, SARS and West Nile appearing at the same time was "unprecedented" in CDC history.

"We're sitting here talking about three infectious diseases that we are simultaneously coordinating through our emergency operation center --- three diseases with global importance, three diseases that are new in our society, and three diseases that all of us are working very hard to contain and prevent," she said.

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GRAPHIC: Photo: HOW THE DISEASES COMPARE

The recent storm of diseases has caused alarm around the world. Here is a breakdown of the various emerging diseases and how the fatalities compare:

Worldwide deaths

SARS: 804 (none in the U.S.)

West Nile Virus: 304 (302 in the U.S.)

Monkeypox: No reported deaths in the recent U.S. outbreak

* SARS

Origin: China - Some researchers say they have traced SARS to the Malay civet cat.

Transmission: The coronavirus spreads to humans fecally or through "airborne droplets" from coughing or sneezing.

Person-to-person: Yes

Treatment: There is no known treatment.

Mortality rate: 9 to 19 percent.

* WEST NILE VIRUS

Origin: Africa - wild birds

Transmission: Mosquitoes bite infected birds and then transmit the disease to humans through bites.

Person-to-person: Yes

Treatment: There is no specific treatment.

Mortality rate: 3 to 15 percent.

* MONKEYPOX

Origin: Africa - rodents

Transmission: Gambian rats, possibly infected by monkeys, then infected prairie dogs. Humans contract the disease by contact with bodily fluids from an infected animal.

Person-to-person: Yes, but there have been no such cases to date in the United States.

Treatment: Smallpox vaccination is effective, depending on the strength of one's immune system.

Mortality rate: 1 to 10 percent

Deaths in the U.S per year*

Causes related to diabetes: 200,000

Lung cancer: 156,900

Influenza: 36,000

*The lung cancer figure is for 2000.

Note: The mortality rate is the percentage of people who will likely die after contracting the disease. Data for the West Nile Virus is from 1999 to 2002. There were no human cases reported for 2003. Data for SARS is updated through June 19 for worldwide deaths and June 18 for U.S. deaths. Data for monkeypox is updated through noon on June 19.

Sources: Newsweek, The New York Times, Centers for Disease Control and Prevention, World Health Organization, International Diabetes Federation, American Lung Association; research by JENNIFER RYAN/ Staff / COBI EDELSON /Staff; Photo: The last group of SARS patients is discharged Friday from Xiaotangshan Hospital outside Beijing, completing the 51-day historical mission of China's largest designated SARS hospital./ WANG JIANMIN / Associated Press