

An Impending Pandemic

Viral immunology expert Bellur Prabhakar is invited to help the U.S. government prepare for an outbreak of avian flu.

Experts are projecting a global outbreak of influenza that could kill hundreds of thousands of people, if not more. And it could happen in the next 18 months.

"It's not a matter of if, but when," says Bellur Prabhakar, PhD, professor and head of microbiology and immunology. The damage from a pandemic won't be totaled only in lives lost, but also in its potential to wreak havoc on social, economic and political infrastructures around the world.

To help local businesses begin to understand the gravity of the situation, UIC sponsored a symposium in September titled "An Ounce of Prevention Could Save Your Business: Dealing With a Flu Pandemic in the Workplace."

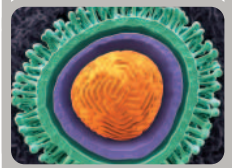
With more than 200 medical, public health and business leaders in attendance, Prabhakar led a national panel of experts who have worked closely with the federal government to develop plans for dealing with such an outbreak. They spoke about it as a global threat, the challenge of developing an effective flu vaccine, ways to create and implement an effective operational business plan in the event of an influenza outbreak and effective public health interventions, including such simple items as hand washing and telecommuting.

The discussion gave companies ways to prepare for the potentially devastating human and financial impact of pandemic influenza.

Consider these statistics: In the United States, a pandemic flu outbreak could affect 40 percent of the work force with both a potential mortality rate of 60 percent and a severe loss of manpower by those staying home to avoid infection. The loss to the work force in any given sector could be crippling.

In an effort to encourage preparations from all sectors of society, the Bush White House has allocated over \$7 billion for preparations. A major part of these provisions includes developing an operational plan to position the United States to confront an outbreak when it hits. The Centers for Disease Control and Prevention invited Prabhakar to be the lead scientist on this project. In Atlanta last spring, he and retired Army Lt. Gen. H.G. "Pete" Taylor, who is leading the overall effort, were among a team of 13 leaders from the fields of technology, communications, academia and the military that convened to form the official task force on preparedness for an avian flu pandemic. The group met for 90 days.

STRAIN H5N1



A Schematic Representation of Influenza Virus

Light blue represents the outer region consisting of hemagglutinin and neuraminidase, two proteins important for virus infection and spread. Purple and orange colors show lipid membrane and the protein-bound genetic material, respectively.

“I am glad to have had the privilege to participate,” says Prabhakar now back in his office in the college. “The process was intense,” he adds. The team completed four drafts of a report and had many, many meetings over the three months. He jokes, “They got at least twice their money’s worth.”

When Prabhakar wasn’t in Atlanta on the weekend, he would fly back to Chicago to see his family and work on his “day job” at the college.

Dean Joe Flaherty sent a memo to members of the department of microbiology and immunology, Chancellor Sylvia Manning, President Joe White and Provost Michael Tanner announcing Prabhakar’s involvement with the project and requesting their support.



Avian Flu Symposium

Left, Dr. Christopher Shoemaker, Dr. David Marder and Gen. Ronald Griffith spoke as part of the panel discussion.

Right, Bellur Prabhakar, PhD, led the symposium discussion on pandemic flu.

“The response from all was overwhelmingly positive,” says Flaherty. “We all agreed that providing Dr. Prabhakar with the time to spend on this national project of international importance was a tribute to his abilities as a scientist and a reflection on the institution and its role in health prevention on a global scale.”

The impending pandemic flu threatens to be the worst since 1918, which was the first of three flu pandemics in the 20th century. Pandemics are distinguished from the typical, seasonal influenza seen each year by introducing a novel human strain of the virus against which humans have no pre-existing immunity. The human immune system becomes overwhelmed because it hasn’t yet encountered the new strain, and doctors can’t immediately treat it effectively.

The most devastating pandemic was the Spanish flu, or “La Grippe.” In the winter of 1918-19, it hit worldwide, killing 40 million people, including 500,000 in the United States. By comparison, in a single month the death

toll nearly doubled the number of all deaths from AIDS in its first 10 years. It did more damage than the Black Death in Medieval England or smallpox during the Renaissance.

The 1957 Asian flu pandemic killed 2 million people worldwide, with 70,000 deaths in the United States. And, in 1968 the Hong Kong flu took 1 million lives around the world, with nearly 40,000 U.S. deaths. At three other times in recent history the world has faced the possibility of a flu pandemic, but the virus did not take on the proportions of infections in the past.

This task force hopes for the same. “I hope we spend all this time and effort and nothing happens,” Lt. Gen. Taylor says, adding, “We probably can’t prevent it, but we can be prepared.”

According to Prabhakar, the Centers

for Disease Control and Prevention, which oversaw the work of the task force, “was highly impressed with the team’s work.” Its members created a list of 1,600 tasks that must be completed to be prepared for the pandemic. They explored every possible scenario they could imagine. That’s where the military expertise came in particularly handy, says Prabhakar.

“They are used to scenario planning,” he says. “When you plan a military adventure, you plan for all contingencies. If you don’t, you get beaten. They’re used to minute-by-minute crisis management.”

Many of the task force members were associated with MPRI—a training, simulation and government services company that specializes in strategic planning and readiness preparation. “I’ve learned so much from them,” Prabhakar says. He has worked with MPRI in the past, specifically on a joint project between UIC and MPRI to create a national center of excellence for biodefense at UIC. That relationship began after 9/11.

Today the avian flu task force is preparing exercises that will simulate the worst case scenarios so that emergency workers, businesses, medical teams and national and local governments can be ready if the flu crosses the U.S. border. While the first objective is to keep the flu outside the United States, experts agree that a threat anywhere is a threat everywhere. To date, 148 deaths, largely in Vietnam, have been associated with H5N1, the official name of this strain of avian flu.

The exercises executed by the second phase of the CDC’s preparedness effort should help answer questions. Team members are implementing large-scale drills to provide experience and to work through any kinks in the plan. For example, in May 2007 the CDC will go through an internal, ever more complex operations exercise in which 40 percent of its workers will be told to stay home. “How those absences affect the organization will reveal a lot about the impact of the pandemic and how the United States intends to cope,” says Prabhakar.

A pandemic’s impact on the workplace was the subject of the September UIC symposium. At that meeting, Abe Barkin of Allstate Insurance says his company has been taking the possibility of a pandemic seriously for a year. “Our concern is significant,” he says. The conference was designed to alert and support businesses in their flu preparation efforts.

“By attending the ‘Ounce of Prevention’ conference, business people heard about what they can do to ensure their companies are prepared to manage this serious public health and financial issue,” says Prabhakar. “More importantly, those in attendance got information on ways to keep their employees and their families protected during the coming winter flu season.”

Quoting Louis Pasteur, Prabhakar says, “Chance favors the prepared mind.”

“I believe the task force’s work is strong and should make a difference in the event of a flu pandemic. Our goal is to leave as little to chance as possible.”

Pandemic Flu

PANEL MEMBERS

Joel Greenspan, MD, MPH, medical epidemiologist and preventive medicine specialist

Gen. Ronald Griffith, U.S. Army, retired, and executive vice president, MPRI

Don Nickels, PharmD, senior regional medical scientist, urology, vaccines and anti-infectives, North America Medical Affairs, GlaxoSmithKline

Brig. Gen. Frank Pontelandolfo, Air National Guard, retired

Bellur Prabhakar, PhD, professor and head of microbiology and immunology

Christopher Shoemaker, PhD, senior vice president for strategy, MPRI

Lt. Gen. H.G. “Pete” Taylor, U.S. Army, retired