

Sunday, December 3, 2006  
Raleigh · Durham · Cary · Chapel Hill

Modified: Nov 27, 2006 11:43 AM  
Published: Nov 26, 2006 12:30 AM

## N.C. arms against threat of flu pandemic

Officials are stockpiling money and resources in anticipation of a deadly influenza outbreak that many say will overwhelm the state

Jim Nesbitt, Staff Writer

At the start of a flu season that strikes every year, state health officials are focused on a far deadlier version of the virus that could cause a worldwide epidemic and kill more than 66,000 North Carolinians.

If a flu pandemic delivers its worst to the state, it would overwhelm hospitals with gravely ill and dying patients and outflank an emergency management system designed to handle hurricanes and floods.

Medical researchers say a future global outbreak is inevitable and long overdue, but they are unsure of when it will strike and how lethal it will be.

"Predicting the pandemic is like predicting an earthquake in San Francisco -- you know one's coming, but you don't know when and you don't know how big," said Dr. David Weber, professor of medicine, pediatrics and epidemiology at the University of North Carolina at Chapel Hill.

A rogue mutation of the flu bug could kill more than 2 million people in the United States, recent federal reports and computer models show. In North Carolina, the number of victims would dwarf the annual average of 1,000 deaths caused by the milder type of flu that is a misery-making hallmark of winter.

During such a biological disaster, the state would shut down any gathering where the virus could be easily spread. Schools, churches, shopping malls and theaters would be closed. Concerts and sporting events would be canceled.

North Carolina public health officials have either spent or requested more than \$12 million in state and federal money to plan and prepare for pandemic flu. Health professionals are concerned that there would be:



Patients in 1918 crowd an emergency hospital at Camp Funston, a training facility at Fort Riley in Kansas. The pandemic is said to have killed between 50 million and 100 million worldwide. For more on the 1918-19 flu pandemic, go to Sunday Journal.

*AP File Photo*

### AT ITS WORST

A modern rerun of the 1918-1919 pandemic flu could mean:

2 million - Possible deaths in the U.S.

90 million - Number of Americans potentially infected

66,075 - Possible deaths in North Carolina

291,015 - North Carolinians needing hospital care, competing for only ...

20,639 - ... licensed and staffed beds at 124 hospitals in the state

- \* No vaccine that specifically targets a pandemic flu virus available for up to six months.
- \* Not enough beds, medicine or equipment to treat all of the more than 290,000 North Carolinians expected to need hospital care in a severe pandemic.
- \* Not enough ventilators -- machines that help flu-stricken patients breathe. During the worst week of an extreme global epidemic, demand could outstrip the state's supply of these devices by more than 300 percent, federal computer models indicate.
- \* Up to 40 percent of the doctors and nurses in the state's hospital system sick with flu, treating a loved one at home or too scared to come to work. That same level of absenteeism could hit other crucial jobs, from police and paramedics to garbage collectors and power plant technicians.
- \* Strict rationing of scarce medical resources on an unprecedented scale, with patients denied care if their chances of survival are too slim. And, a pecking order for distributing limited supplies of antiviral drugs first to front-line medical personnel, cops, paramedics and employees of vital services such as utilities.
- \* A disaster that lasts up to two years, striking in three distinct and lethal waves of six to eight weeks each -- a far lengthier impact than a hurricane or flood.

State leaders know that talking publicly about these sorts of possibilities won't necessarily prod many to take a possible pandemic seriously. But they're trying to get people to think about how to prepare, including a conference later this week at UNC-Chapel Hill.

As proof of a flu pandemic's inevitability, medical experts and federal health officials point to historical chronicles that show these worldwide outbreaks strike about three times each century, or once every generation. The last one struck in 1968; dubbed the Hong Kong flu, it was relatively mild, killing about 34,000 Americans. An earlier pandemic, the Asian flu of 1957, killed roughly 70,000 in this country.

There is even a "worst-case scenario" highlighted by federal health officials for state and local planners to ponder and dread: the Spanish flu pandemic of 1918-19, the deadliest outbreak in the 20th century, which killed an estimated 675,000 Americans and up to 100 million people worldwide.

"It's the biological Katrina," said Steve Cline, North Carolina's deputy public health director.

A prime suspect for a pandemic: the H5N1 avian flu virus, an Asian strain that has proven ultra-lethal to humans, producing some of the same sudden-death symptoms as the Spanish flu virus and the same ability to kill young adults with healthy immune systems.

"It could be the closest thing to 1918 we've ever seen," said Dr. Paul Biddinger, an associate director at the Harvard School of Public Health.

Although a different avian flu strain could mutate into a pandemic killer, scientists focus on the H5N1 strain because it already has proved it can jump from birds to humans and has shown a limited ability to pass between people in close contact, killing 50 percent or more of those it infects.

"Once we get human-to-human transmission, a pandemic will happen like that," said Mary Lou Dobbs, manager of the emergency response team at Rex Hospital, with a snap of her fingers.

## How N.C. is preparing

## PANDEMIC INFORMATION SOURCES

Statistics used in these stories for death tolls, hospitalizations and the demand for life-saving ventilators in North Carolina are based on two computer models developed by the Centers for Disease Control and Prevention. News & Observer database manager David Raynor used the latest population projection for North Carolina -- 8.6 million -- to produce a statistical outline of a pandemic's potential impact.

In addition, Raynor and researchers Paulette Stiles and Lamara Williams-Hackett telephoned 124 hospitals statewide to determine their number of ventilators, a crucial piece of medical equipment to help flu-stricken patients breathe. Of those called, 107 hospitals responded, including all of the state's major trauma centers such as WakeMed Raleigh Campus.

News researchers Becky Ogburn, Susan Ebbs and Denise Jones also contributed to this report.

## TRYING TO BREATHE

The gap between available ventilators and those who would need them:

Number of ventilators nationwide

742,000

Americans needing ventilators at the worst point of a pandemic

Ventilators at 107 N.C. hospitals that responded to a recent N&O survey

Flu patients in North Carolina needing a ventilator during the height of a pandemic

CENTERS FOR DISEASE CONTROL AND PREVENTION; CONGRESSIONAL BUDGET OFFICE; N.C. DEPARTMENT OF HEALTH AND HUMAN SERVICES; UNIVERSITY OF MINNESOTA CENTER FOR DISEASE RESEARCH AND POLICY; N&O RESEARCH

North Carolina public health officials have a renewed sense of urgency about preparing for this potential disaster. The state is on pace to spend more than \$12 million in state and federal money to calculate the ability of hospitals to handle a pandemic and to start stockpiling crucial medicine and medical equipment. That includes more than \$4 million spent on a 400-bed tent hospital that will be divided into eight 50-bed units stationed across the state.

Health officials have conducted pandemic flu conferences, set up a task force on the ethical questions raised by a global outbreak and run tabletop training exercises with emergency managers to sharpen their planned response.

But they also have reached a grim conclusion: No amount of money, preparation and stockpiling will provide airtight protection against a severe flu pandemic.

"You can't spend that much -- it's not realistic," said U.S. Sen. Richard Burr, the North Carolina Republican who has a leading role in federal planning for pandemic flu, bioterrorism and public health preparedness. "That's why at the end of a tabletop drill, at the end of an exercise, everybody says when you ask 'What do we do?' they say 'We better get a vaccine.' "

That won't happen, though, for four to six months after the pandemic strikes. It takes time for researchers to isolate the virulent strain and concoct a vaccine serum to protect people from it. The massive quantity needed will also be delayed because flu vaccine production relies on an egg-based system developed in the 1950s.

This will force public health officials to rely on measures developed at the turn of the last century to dampen the spread of the disease -- shut down public events, isolate the sick and quarantine people suspected of infection. Expect travel restrictions, particularly on airline flights to Asia, home of the virulent avian flu.

Until there is a vaccine, doctors and nurses will be powerless to prevent infection by a flu virus from which no one is safe.

### **A pandemic's spread**

Pandemics are caused by a virus that the immune system doesn't recognize, a new mutation far different from the strains now in circulation. Although seasonal flu symptoms are unpleasant -- fever, cough, runny nose and muscle pain -- the bug is rarely fatal. Those who die are usually victims of a secondary infection, such as bacterial pneumonia.

But a pandemic virus can slip past the body's defenses and directly produce life-threatening symptoms. The stealthy invader can quickly cause organ failure through acute respiratory distress, clogging the lungs with fluid and depriving the body of oxygen. As with more typical flu, children and the elderly would be most vulnerable, at least at first. But young adults also would be at risk.

A modern-day rerun of the pandemic of 1918-19 would infect 90 million Americans -- roughly 30 percent of the population -- killing more than 2 million of them, according to a recently revised Congressional Budget Office report. Federal health officials are using numbers such as these to justify spending billions in the next three years to build a national stockpile of pre-pandemic vaccine, antiviral drugs and critical medical equipment, including \$3.3 billion earmarked for this fiscal year.

A Centers for Disease Control and Prevention computer model based on the 1918-19 pandemic spits out similarly staggering numbers. The CDC model's "most likely" scenario indicates between 28,318 and 66,075 North Carolinians would die, depending on the infection rate of the virus, and between 124,720 and 291,015 would need hospital care.

This number of gravely ill and dying flu patients would dwarf the capacity of a hospital network that, according to state licensing records, has 20,639 licensed and staffed beds at 124 hospitals and handles almost 12,000 patients a day.

"People need to understand that pandemic is not just a bad flu outbreak," said Dr. John Meredith, medical director for disaster management at

Pitt County Memorial Hospital in Greenville.

State officials urge residents to stockpile canned food, bottled water, prescription drugs and other supplies to last at least two weeks. They will need to restock repeatedly for up to two years.

"This isn't tsunami -- it's high tide for a very long time," said Dr. Julie Casani, director of the N.C. Office of Public Health Preparedness and Response.

### Hospitals' challenge

Every state will face this harsh reality: an overwhelming surge of patients seeking treatment in a hospital network whittled down for maximum economic efficiency, already operating near or above peak capacity each day.

"To say there is surge capacity in our hospitals right now is just not true," said Cline, the state's deputy public health director. "They're operating full tilt."

The gap between hospital supplies and the overflow of flu-stricken patients in a worst-case pandemic is illustrated by a vital piece of medical equipment: ventilators, \$30,000 machines that help people breathe when their lungs are clogged with fluid.

In North Carolina, there are about 2,000 ventilators at 107 of 124 hospitals that responded to a recent News & Observer survey.

But a CDC computer model based on the Spanish flu pandemic indicates a demand for ventilators far higher than the statewide supply. Under the model's "most-likely" scenario, between 2,613 and 6,097 flu patients across North Carolina will be sick enough to be placed on ventilators -- and that is just during the fifth week of one of the pandemic's two or three eight-week waves, when demand is expected to peak.

Despite the prodding of federal officials, North Carolina's pandemic flu plan assumes a less lethal toll more along the lines of the Hong Kong flu of 1968, with a projection of between 4,441 and 11,102 residents dead, less than 1 percent of the state's population.

When they update the state's pandemic flu plan next year, public health officials say they will include numbers from the CDC computer model based on the Spanish flu pandemic.

Money is the main reason the state's plan remains rooted in the less-deadly scenario. There's not enough cash to buy all the antiviral drugs, ventilators, masks, gloves, antibiotics and extra hospital beds necessary to handle a pandemic on the scale of 1918-19.

For example, state legislators earmarked \$400,000 last year to stockpile antiviral drugs such as Tamiflu. But they will be asked to spend \$13.1 million more next year to take advantage of a federal program allowing the state to buy enough discount-priced antivirals to treat 880,000 people. That is a fraction of the more than 2 million North Carolinians who might get sick in a milder pandemic.

But manpower, not money and equipment, is the chief worry of pandemic planners. A severe outbreak would swamp a disaster response machine calibrated for hurricanes and floods and dependent on drawing manpower and resources from other states and North Carolina counties outside the swath of destruction.

"In pandemic, that model doesn't work," said Brian Letourneau, public health director for Durham County. "If the state is hit, it gets hit as a whole. We're building our response under the assumption that we're on our own."

Worried about the toll on doctors and nurses, hospital and public health officials are scrambling to create a volunteer reserve corps of retired doctors and nurses.

At Duke and UNC hospitals, medical academics will be pressed into service alongside senior medical and nursing students. At WakeMed, paramedics may work the floor of a ward. These reserves will handle routine medical tasks, freeing more experienced doctors and nurses.

Broader plans aim to provide a backstop to hard-pressed hospitals. These include deploying all eight state medical assistance teams -- units of nurses and doctors drawn from 2,000 volunteers at hospitals across the state and armed with mobile medical equipment based at major trauma centers.

arge auditoriums  
limited hospital  
bed space and supplies for the sickest patients.

"Not everybody needs to be in a hospital," Casani said. "If what you need is just Aunt Sally's soup and some medicine to take care of the aches and pains, you can do that at home."

But hospitals facing a flood of patients may not let their doctors and nurses pull a volunteer tour with a state medical assistance team because those with emergency medical skills will be in high demand.

"We will not deplete our resources at the mother ship to go someplace else," said Dr. Tom Blackwell, medical director of pre-hospital medicine at Carolinas Medical Center in Charlotte who also oversees the center's mobile hospital, MED-1. "We are in town and focused on this community, and we won't abandon that."

Nobody knows when the next pandemic will strike. But experts say one is coming, and they don't think America is prepared.

"We know there is going to be a pandemic -- that's inevitable. And we know what that's going to look like," said Wes Wallace, associate professor of emergency medicine at UNC-CH and an emergency physician at UNC Hospitals. "But we aren't acting on devoting the resources we should to be ready."

(Database manager David Raynor contributed to this report.)

Staff writer Jim Nesbitt can be reached at (919) 829-8955 or [jim.nesbitt@newsobserver.com](mailto:jim.nesbitt@newsobserver.com).