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DEEP DIVE

How hospitals can prepare for an influenza pandemic

A pandemic could put a strain on the healthcare system, sicken hospital staff and stretch hospital resources to their limits.

By **Les Masterson** • April 24, 2017

Public health officials agree that the next major pandemic will be influenza. Are U.S. hospitals ready for it?

The HHS estimates that an infectious disease pandemic could infect 90 million Americans and kill as many as 1.9 million people. This kind of pandemic would put a strain on the country's healthcare system, sicken hospital staff and stretch hospital resources to their limits and beyond.

An influenza pandemic would go well beyond the normal seasonal flu virus. Patients' immune systems won't be able to cope with a pandemic flu, and it will spread quickly across the globe.

This isn't just the stuff of science fiction. There have been multiple pandemics over the past century.

The Spanish Flu of 1918 caused more than 50 million deaths. Between 20% and 40% of the world became infected. The late-1950s saw the Asian flu, which killed about 2 million people, including 70,000 in the U.S. In recent years, the H1N1 virus in 2019 killed 17,000 people worldwide.

Billionaire Bill Gates spoke about the pandemic threat earlier this year during a security conference in Munich.

"Imagine if I told you somewhere in this world, there's a weapon that exists -- or that could emerge -- capable of killing tens of

thousands, or millions of people, bringing economies to a standstill and throwing nations into chaos," Gates said. "Whether it occurs by a quirk of nature or at the hand of a terrorist, epidemiologists say a fast-moving airborne pathogen could kill more than 30 million people in less than a year."

Hospitals across the country are now planning and testing models to implement when an infectious disease pandemic eventually hits the U.S.

Are we prepared?

A 2015 report "The Next Pandemic: Hospital Management" examined how a pandemic could impact the healthcare system, the state of preparedness of hospitals and special considerations for them during a pandemic.

The authors of the report, Robert E. Falcone, vice president of clinical policy and population health at the Ohio Hospital Association and clinical professor of surgery at Ohio State University, and Andrew Detty, quality and population health analyst at the Ohio Hospital Association, warned that a severe pandemic like the 1918 flu could: infect 90 million Americans, hospitalize 9.9 million and kill 1.9 million.

To put that into perspective, the H1N1 virus in that impacted the country from 2009 to 2010 increased emergency department (ED) visits by 18% over the baseline in from 2005 through 2008 with individual hospitals and health systems seeing much higher rates.

Part of the issue with H1N1 was not so much that people were infected, but that they were afraid that they or their children had the H1N1 virus and rushed to EDs, according to the 2015 report. That caused a major drain on the healthcare system.

Preparing for a pandemic

The National Strategy for Pandemic Influenza involves three parts: preparedness and communication; surveillance and detection; and response and containment.

Over the past decade, the federal government has sounded the alarm about a potential pandemic. The Centers for Disease Control and Prevention (CDC) created a free program for hospitals called FluSurge 2.0 to figure out the number of hospitalizations, intensive care unit (ICU) admissions, ventilators needed and deaths caused by an influenza pandemic.

Hospitals and health systems, in turn, have employed full-time incident coordinators, created pandemic preparedness committees with clinical, support and senior administrative representatives and participated in regional hospital planning.

Colin Bucks, medical director for the office of emergency medicine at Stanford Health Care, tells Healthcare Dive that Stanford has a standing committee of 20 people that includes specialists in disease prevention, infection control and infectious diseases. The group meets quarterly to review plans, monitor infectious disease and bioterrorism updates, look for potential outbreaks, implement infection control procedures and decide when to start screening methods to prevent infections from spreading.

They also promote patient education, such as communicating with at-risk populations, informing patients about when to go to the hospital and educating people about proper disease-prevention hygiene so that they take the proper precautions to prevent infectious diseases.

Bucks says the health system also learns by reviewing how other health officials respond to crises, such as the SARS outbreak in Toronto in 2003 and the Ebola pandemic in 2014 and 2015, which he saw firsthand.

“It’s good to take the path that’s been tread before,” Bucks says of learning how healthcare facilities have tackled other emergencies.

> **“Let’s learn from folks who have gone through major events.”**

> Colin Bucks
> *Medical director for the office of emergency medicine, Stanford Health Care*

Preparing for a pandemic isn't cheap. A 2006 report called "Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science" estimated a 164-bed hospital would need to spend $1 million to prepare for a pandemic, including $200,000 for a pandemic plan, $160,000 for staff education and training, $400,000 for stockpiling minimal personal protective equipment (PPE) and $240,000 to stockpile basic supplies.

Joan Ivaska, senior director of infection prevention at Banner Health, based in Phoenix, Ariz., tells Healthcare Dive she's not able to put a dollar amount on how much the large health system has spent on influenza pandemic preparation. Banner, which has 28 acute care facilities in six states, has committed resources to emergency management and infection prevention programs for any emergencies.

"Banner Health takes an all-hazards approach to preparedness for an influx of infectious disease patients," Ivaska says. "We maintain plans for responding to an influx of infectious patients, whether from influenza or some other disease," she adds.

Staff education and drills

It's one thing to put down a plan on paper. It's quite another thing to put it into action. Education and training drills help hospital staff, and administrators get more comfortable with a plan before there's an influenza pandemic.

The Occupational Safety & Health Administration recommends that staff education and training include infection control precautions, how to report pandemic influenza to hospital and public health officials, proper PPE usage, hand hygiene, training of infection control monitors and tabletop simulation exercises.

Banner Health reviews emergency response plans on a routine basis and conducts staff training and drill exercises every year,

says Ivaska.

> **“We have staff with expertise in infection prevention and control and emergency management who coordinate these activities as part of their ongoing responsibilities.”**
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> Joan Ivaska
> *Senior director of infection prevention, Banner Health*

Stanford Health Care tested an ED “drive-through” a few years ago to rapidly evaluate patients outside of the hospital environment to prevent cross-infection during a pandemic. In the test, hospital staff evaluated patients still in their vehicles or next to their vehicles.

The hospital tested the feasibility of the external influenza clinic and measured throughput times of simulated patients. Stanford Hospital used 38 patient charts from people treated during the H1N1 outbreak in 2009 to simulate the scenarios. It found that the medical length of stay was 26 minutes and physicians were able to identify the patients admitted and discharged during the real ED visit with 100% accuracy.

The ED drive-through and other programs that look to limit the spread of infectious disease focus on patient screening. They also seek to protect staff who meet patients first, including administrative staff, clerks, greeters, and security, as well as doctors, nurses and housekeeping staff. Stanford Health Care makes sure there are hand-washing supplies, masks, and other PPEs to protect them from infectious illnesses.

Stanford Hospital officials said the drive-through model is a “feasible alternative to a traditional walk-in ED or clinic and is associated with rapid throughput times. It provides a social distancing strategy, using the patient’s vehicle as an isolation compartment to mitigate person-to-person spread of infectious diseases.”

Bucks says Stanford hasn't needed to test or implement the ED drive-through model again, but it's in the emergency plan when needed. However, Stanford has needed to readapt the model because of changes to buildings or new facilities in the system, such as the new Stanford Hospital, which is slated to open in 2018.

"We haven't had to activate that in anger, but it's still a standing part of our response procedures," says Bucks.

Bucks says the ED drive-through works for Stanford Health Care and other hospitals can start a similar program with proper planning and testing. "I think others can look at this and implement it, but I wouldn't be under the illusion it could happen as a just in time," says Bucks about the need for planning and testing the plan.

Stanford's model is one of many that tried to limit potential exposure. Another example is triage telephone lines. The Minnesota Department of Health collaborated with health plans and hospital systems to establish MN FluLine.

MN FluLine uses standardized triage protocol and registered nurses talk to patients about their symptoms, when to seek medical care, and offers prescriptions to high-risk patients who are advised to stay home. MN FluLine believes the program has prevented about 11,000 face-to-face healthcare encounters. The CDC is looking at similar triage phone lines to see if it can reduce the spread of infectious diseases.

Shortages

An influenza pandemic would quickly fill EDs and ICU beds and could cause staffing, ventilator and PPE shortages if hospitals aren't prepared.

A 2010 study found that there were a little more than 62,000 full-feature mechanical ventilators in U.S. acute care hospitals. That's about one for each ICU bed.

The SARS outbreak of 2003 in Canada is an example of what

happens to supplies when hospitals are overwhelmed with an infectious disease. In Toronto, one 1,300-bed hospital used 3,000 disposable isolation gowns, 14,000 pairs of gloves, 18,000 N95 respirator masks, 9,500 ear loop masks and 500 pairs of goggles daily during the peak of the outbreak. The HHS recommends that hospitals stockpile disposable N95 respirators and surgical masks, face shields, gowns and gloves in case there's a pandemic.

Banner maintains an inventory of essential supplies and equipment in the event of an influx of infectious patients, according to Ivaska. The health system would also partner with public health partners for specific needs if there's a pandemic.

In terms of staffing, hospitals may need to bring in more staff to help with patient care and hospital upkeep to minimize the spread of the virus.

Hospital staff would also likely become sick themselves. One estimate suggests 40% of hospital staff would be absent during a pandemic because they're sick, caring for a sick family member or they may even refuse to come to work for fear of getting sick.

Hospitals may need to call in volunteers, medical students, nursing students and retired healthcare workers to help hospital staffing during a crisis.

There is also the issue of staff, patient and community well-being. In "The Next Pandemic: Hospital Management," the authors pointed to the 2003 SARS outbreak as an example of what happens to staff during a health crisis.

Quarantine during the SARS outbreak "caused fear, anger, loneliness, and boredom among isolated patients, and the fear of becoming infected and restrictions on activity caused discomfort for uninfected patients," the authors wrote. "Healthcare workers expressed fear and resentment in the face of the danger of infection and constantly changing information; social isolation exacerbated their anxiety, as did concern about infecting loved ones."

There is also the issue of hospitals needing to segregate flu patients to reduce spreading the disease. In case of a pandemic, a hospital may need to move patients to specific parts of a hospital or even to off-site locations.

Bucks says Stanford Health Care has used external facilities at times and the system would likely need to implement a similar plan if there is a flu pandemic.

Banner Health takes a whole system approach if there's an influx of infectious patients or other healthcare emergencies, Ivaska says. How specifically the system would respond to a specific emergency depends on a number of factors, including a facility's location, infrastructure, capabilities and staffing, she adds.

Planning for a pandemic in the current political climate

The federal government helps hospitals and health systems prepare for a possible health crisis through training and grants, such as $850 million in Hospital Preparedness grants.

But there is concern that federal money may soon dry up. In his budget outline in March, President Donald Trump proposed cutting nearly 18% from the Department of Health and Human Services budget. The president also proposed cutting almost $6 billion from the National Institutes of Health and another $400 million from training programs for nurses and other health professionals.

The Obama administration spent $1 billion on the Global Health Security Agenda, which focused on global health security, including preventing pandemics. That funding ends in fiscal year 2019, and the Trump administration hasn't said whether it will continue.

Congress will ultimately decide on the actual budget, and will likely ignore many of Trump's proposed health services cuts. In response to the president's proposed cuts, Rep. Tom Cole (R-OK), who chairs the House Appropriations subcommittee on labor, health and human services, education and related

agencies, called the health agencies “the front lines of defense for the American people for some pretty awful things.”

“If the idea of a government is to protect the United States and its people, then these people contribute as much as another wing on an F-35, and actually do more to save tens of thousands of lives,” he said, referring to Trump’s plan to increase military spending while decreasing money for health services.

Recommended Reading:

CNN
The big one is coming, and it's going to be a flu pandemic

AHC Media
The Next Pandemic: Hospital Management

CDC
Healthcare System Preparedness and Response

Washington Post
The Trump administration is ill-prepared for a global pandemic

Healthcare Dive
Next-generation sequencing for public health gets HHS' support