



## Feverish Activity:

Global, National, and Local Lessons Learned  
from the 2009 H1N1 Flu Pandemic

FORUM SESSION  
ANNOUNCEMENT

A DISCUSSION FEATURING:

**Harvey V. Fineberg, MD, PhD**

*President*

Institute of Medicine

The National Academies

*Chair*

International Health Regulations Review Committee

The World Health Organization

**Nicole Lurie, MD, MSPH**

*Assistant Secretary for Preparedness and Response*

*Rear Admiral*

U.S. Public Health Service

U.S. Department of Health & Human Services

**Karen Remley, MD, MBA**

*State Health Commissioner*

Virginia Department of Health

**Sarah A. Lister, DVM, MPH**

*Specialist in Public Health and Epidemiology*

Congressional Research Service

FRIDAY, NOVEMBER 18, 2011

8:45AM–9:15AM—Breakfast

9:15AM–11:00AM—Discussion

### LOCATION

Reserve Officers Association  
One Constitution Avenue, NE  
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Fifth Floor

*(Across from the Dirksen  
Senate Office Building)*

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## OVERVIEW

*In June 2009, the World Health Organization (WHO) declared that the world was in the grip of an influenza pandemic. By the time the pandemic had largely run its course in August 2010, more than 214 countries had reported laboratory-confirmed cases of what is now called 2009 H1N1 influenza. In the United States, which saw the first cases in April 2009, the President declared a state of emergency, as did many states and localities. The nation benefited in many respects from prior experience and planning, and rapid identification of the novel virus by the U.S. Centers for Disease Control and Prevention (CDC) was widely praised. But public confidence in the government's response was undermined when vaccine supply initially fell short of expectations set by federal officials. Although this was the first pandemic declared in over four decades, public health experts believe that it may not be long until the world confronts the next one. Most would agree that the 2009 H1N1 pandemic was not as bad as it could have been, the response at every level could have been better, and it is important to learn everything possible from the experience—because the next pandemic could be far worse.*

## PANDEMIC FLU: EVERYONE'S PROBLEM

In June 2009, the World Health Organization (WHO) declared that the world was in the grip of an influenza pandemic, meaning that there were ongoing community-level outbreaks of the new flu in many parts of the world. In August 2010, WHO announced that the novel virus, now referred to as 2009 H1N1, had largely run its course, and that the world had moved into the post-pandemic period. However, even at that point some countries such as India and New Zealand were still grappling with significant outbreaks, and WHO cautioned that the future impact of the virus was unpredictable and national health authorities should remain vigilant.<sup>1</sup>

By the time the pandemic was officially winding down, more than 214 countries had reported laboratory-confirmed cases of 2009 H1N1 influenza.<sup>2</sup> The total number of cases of 2009 H1N1 influenza worldwide remains unknown, and estimates range widely from tens to hundreds of millions. Somewhat more precise estimates of the pandemic's impact are available for some countries.<sup>3</sup> Typically, the number of hospitalizations for flu-related illness is many times

the number of deaths, and the number of cases of flu many times again the number of hospitalizations.<sup>4</sup>

As anticipated, the 2009 H1N1 virus has continued to be in circulation, behaving more like a regular seasonal influenza virus, in part because many people have been exposed and may have developed some immunity. But like all viruses, it has the potential to change over time, and thus is subject to ongoing monitoring by public health authorities. Protection against the 2009 H1N1 virus was included in the vaccines against seasonal flu for both the 2010–2011 and 2011–2012 seasons.

An optimal response to a pandemic is necessarily global, requiring perhaps unprecedented levels of coordination and cooperation—for tracking the disease and its spread, understanding its nature and developing means to combat it, implementing strategies to contain it, and deploying the medicines and personnel needed to minimize its impact on people. The 2009 H1N1 Pandemic provided the first major “stress test” of the International Health Regulations (the framework for a global response) since they were first implemented in 2007, and WHO received praise from some quarters and criticism from others for its performance during the pandemic.<sup>5</sup> In the midst of the pandemic, WHO established a new International Health Regulations Review Committee to assess the functioning of the regulations, monitor the ongoing global response including the role of WHO, and identify lessons learned that are important for strengthening preparedness and response for future pandemics and public health emergencies.

The review reached three summary conclusions:

- “The International Health Regulations helped make the world better prepared to cope with public-health emergencies. The core national and local capacities called for in the [regulations] are not yet fully operational and are not now on a path to timely implementation worldwide.
- WHO performed well in many ways during the pandemic, confronted systemic difficulties and demonstrated some shortcomings. The Committee found no evidence of malfeasance.
- The world is ill-prepared to respond to a severe influenza pandemic or to any similarly global, sustained and threatening public-health emergency. Beyond implementation of core public-health capacities called for in the International Health Regulations, global preparedness can be advanced through research, reliance on a multisectoral approach, strengthened health-care delivery systems, economic development in low and middle-income countries and improved health status.”<sup>6</sup>

The Committee's 15 recommendations stemmed from these conclusions and addressed such issues as consistency of restrictions on international travel and trade during a pandemic, the development and application of measures to assess the severity of influenza epidemics generally, and agreements on sharing of viruses and access to vaccines and other benefits.<sup>7</sup>

### MEANWHILE, IN THE UNITED STATES

The pandemic virus was first detected in the United States in April 2009. The U.S. Centers for Disease Control and Prevention (CDC) characterized it as a unique combination of influenza virus genes never previously identified in either animals or people. Cases were detected in a number of states, and on April 26, 2009, the U.S. Secretary of Health and Human Services (HHS) declared a public health emergency. In June, Congress made over \$6 billion available to HHS and the President from the 2009 supplemental appropriation to spend on pandemic influenza activities. On October 24, 2009, as the country was experiencing an atypically early rise in flu cases, the President declared a national emergency. During the course of the pandemic, numerous states and localities made similar declarations. Essentially, these declarations make additional resources available and allow public health and other officials at various levels to exercise emergency authorities, such as making certain unapproved drugs available.<sup>8</sup>

Even in the United States, which has a public health infrastructure that is more robust than many countries', precise estimates of the pandemic's impact are not available. Based on reported and confirmed cases, which likely represent the lower bounds, CDC estimated that by the time the virus had waned, as many as 89 million people in the United States had been infected with it, the virus had resulted in as many as 403,000 hospitalizations, and as many as 18,300 people had died from it. Although the impact of seasonal influenza has ranged widely over the past few decades, these figures compare with an average of about 200,000 hospitalizations and roughly 36,000 deaths per year from seasonal influenza in the United States. Mortality from the 2009 H1N1 was found to be notably different than that for seasonal flu in that it was relatively high among people under 65 years old and relatively low among people 65 years and older.<sup>9</sup>

Some aspects of the federal response, such as CDC's rapid identification of the novel virus, were widely praised, while others, such as the initially more limited than expected vaccine supply, were widely

criticized. At the request of Congress, the U.S. Government Accountability Office (GAO) reviewed the federal response to the pandemic and reached the following conclusions:

- “Prior pandemic planning efforts and federal funding paid off, although specific aspects of prior planning were not relied on because of the nature of the H1N1 pandemic. For example, interagency meetings and exercises built relationships that were valuable during the response. Prior funding built capacity in several areas, including vaccine production.
- The credibility of all levels of government was diminished when the amount of vaccine available to the public in October 2009 did not meet expectations set by federal officials. However, state and local jurisdictions valued the flexibility that they had in deciding their distribution methods. Additionally, while the use of a central distributor for the vaccines was generally cited as an effective practice, the 100-dose minimum order was viewed to be problematic.
- Public surveys generally found CDC’s communication efforts to be successful in reaching a range of audiences; however, these messages fell short in meeting the needs of some non-English-speaking populations.
- Deployment of the Strategic National Stockpile—a supply of medicines and medical supplies to be used for a national emergency—met the established goal. However, CDC and state officials identified gaps in planning, including disparities between the materials expected and those delivered, as well as the need for long-term storage plans for stockpile materials.”<sup>10</sup>

As recommended by preparedness experts, many federal departments, states, localities, and other public and private entities conducted after-action reviews of their response to the pandemic and used them to derive lessons learned and develop improvement plans.<sup>11</sup>

The general consensus is that while the 2009 H1N1 pandemic was not as bad as it could have been, the response at every level had room for improvement, and it is important to learn from the experience because next time might be far worse. Although this was the first pandemic declared in over four decades, public health experts believe that the next one may not be far behind, and they are urging everyone to take the opportunity to learn as much as possible from the experience with the 2009 H1N1 pandemic.

## KEY QUESTIONS

The speakers for this session bring decades of public health experience and were involved in the response to the pandemic and the



evaluation of that response in a variety of capacities. They will describe and discuss the lessons learned from the 2009 H1N1 influenza pandemic and address the following questions:

- Which aspects of the global, national, and local response to the 2009 H1N1 influenza pandemic were effective, and which were not? What factors contributed to the successful and unsuccessful aspects of the response?
- What progress has been made in implementing the recommendations from entities such as the WHO Review Committee and the GAO, as well as the after-action reviews and improvement plans of the various agencies and states?
- What else needs to be changed to support an optimal response to future pandemics? What challenges are inherent in making these changes?

## SPEAKERS

**Harvey V. Fineberg, MD, PhD**, is president of the Institute of Medicine of The National Academies. He also served as chair of the World Health Organization's International Health Regulations Review Committee and will provide an overview of the work, conclusions, and recommendations of the Committee.

**Nicole Lurie, MD, MSPH**, is the assistant secretary for preparedness and response and a rear admiral in the U.S. Public Health Service in the U.S. Department of Health & Human Services. She was appointed assistant secretary in July 2009, in the midst of the pandemic, and will discuss the conclusions and recommendations of after-action reviews of the federal response to the pandemic.

**Karen Remley, MD, MBA**, is the state health commissioner for Virginia and served in this position both prior to and during the pandemic. She will discuss Virginia's experience with 2009 H1N1 and the results of its after-action review and improvement plan.

**Sarah A. Lister, DVM, MPH**, is a specialist in public health and epidemiology in the Domestic Social Policy Division at the Congressional Research Service (CRS). She is an author of an overview of the pandemic for Congress and will highlight the federal policy issues raised by the pandemic and the United States' response to it.<sup>12</sup>

## ENDNOTES

1. For more information, see the World Health Organization's (WHO) webpage for H1N1, available at [www.who.int/csr/disease/swineflu/en/index.html](http://www.who.int/csr/disease/swineflu/en/index.html). WHO reports 18,449 laboratory-confirmed deaths worldwide. Because a relatively small proportion of cases can be subjected to laboratory confirmation, this figure is considered to represent the lower bound for deaths and is used primarily to develop estimates rather than to characterize worldwide mortality from the pandemic.
2. WHO, "Pandemic (H1N1) 2009 - update 112," August 6, 2010, available at [www.who.int/csr/don/2010\\_08\\_06/en/index.html](http://www.who.int/csr/don/2010_08_06/en/index.html).
3. Marc P. Girard *et al.*, "The 2009 A (H1N1) influenza virus pandemic: A review," *Vaccine*, 28, issue 31 (July 12, 2010): p. 4896, abstract available at [www.ncbi.nlm.nih.gov/pubmed/20553769](http://www.ncbi.nlm.nih.gov/pubmed/20553769).
4. For example, although the United States has relatively good reporting systems, scientists at the Center for Disease Control and Prevention (CDC) estimated that the total number of pandemic 2009 H1N1 cases in the United States may have been up to 140 times greater than the reported number of laboratory-confirmed cases. See "The Study" section of Carrie Reed *et al.*, "Estimates of the Prevalence of Pandemic (H1N1) 2009, United States, April–July 2009," *Dispatch*, 15, no. 12 (December 2009), available at [wwwnc.cdc.gov/eid/article/15/12/09-1413\\_article.htm#thestudy](http://wwwnc.cdc.gov/eid/article/15/12/09-1413_article.htm#thestudy).
5. The International Health Regulations are an international legal agreement that is binding on 194 parties across the globe, including all of the Member States of WHO. The basic purpose of the regulations is to help the international community prevent and respond to acute public health risks that have the potential to cross borders and threaten people worldwide. For more information about the International Health Regulations, see the WHO website at [www.who.int/ihr/en/](http://www.who.int/ihr/en/).
6. WHO, *Implementation of the International Health Regulations (2005): Report of the Review Committee on the Functioning of the International Health Regulations (2005) in relation to Pandemic (H1N1) 2009*, A64/10, final report, May 5, 2011, pp. 11–12, available at [http://apps.who.int/gb/ebwha/pdf\\_files/WHA64/A64\\_10-en.pdf](http://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_10-en.pdf). For more information about the review process and the Committee's report, see [www.who.int/ihr/review\\_committee/en/index.html](http://www.who.int/ihr/review_committee/en/index.html).
7. WHO, *Implementation of the International Health Regulations (2005)*, pp. 13–23.
8. See the Centers for Law and the Public's Health, "2009 H1N1 (Swine Flu) Legal Preparedness and Response," available at [www.publichealthlaw.net/Projects/swinefluphl.php](http://www.publichealthlaw.net/Projects/swinefluphl.php) for more information.
9. CDC, "Updated CDC Estimates of 2009 H1N1 Influenza Cases, Hospitalizations and Deaths in the United States, April 2009 – April 10, 2010," May 14, 2010, available at [www.cdc.gov/h1n1flu/estimates\\_2009\\_h1n1.htm](http://www.cdc.gov/h1n1flu/estimates_2009_h1n1.htm). CDC estimated that a reported case of 2009 H1N1 represented 79 cases, and every hospitalized case reported represented an average of 2.7 total hospitalized people. Reed *et al.*, "Estimates of the Prevalence of Pandemic (H1N1) 2009."
10. Government Accountability Office (GAO), "Influenza Pandemic: Lessons from the H1N1 Pandemic Should Be Incorporated into Future Planning," GAO 11-632, Highlights, June 2011, available at [www.gao.gov/new.items/d11632.pdf](http://www.gao.gov/new.items/d11632.pdf).

11. For state and county examples, see Delaware: <http://dhss.delaware.gov/dph/php/files/h1n1aar.pdf>; Wisconsin: <http://pandemic.wisconsin.gov/docview.asp?docid=20048&locid=106>; overview of states by Trust for America's Health: <http://healthyamericans.org/newsroom/releases/?releaseid=201>; overview of states by the Association of State and Territorial Health Officers: [www.astho.org/Display/AssetDisplay.aspx?id=4933](http://www.astho.org/Display/AssetDisplay.aspx?id=4933); Seattle and King County, Washington: [www.kingcountyhealthcarecoalition.org/media/H1N1-Influenza-Swine-Flu-2009.pdf](http://www.kingcountyhealthcarecoalition.org/media/H1N1-Influenza-Swine-Flu-2009.pdf); and Central Ohio: [www.copinworks.org/documents/COPIN%20H1N1%20AAR%20\\_2\\_.pdf](http://www.copinworks.org/documents/COPIN%20H1N1%20AAR%20_2_.pdf).
12. Dr. Lister's report is available to congressional staff: "The 2009 Influenza Pandemic: An Overview," Congressional Research Service, 7-5700, Order Code R40554, November 16, 2009.