

# **Summary Report of the Orange County Health Care Agency Response to Pandemic H1N1 2009 Influenza**

**I**n the spring of 2009, the world was confronted with a unique and unanticipated influenza virus. Pandemic planning had occurred globally over the preceding five years due to concerns surrounding H5N1 influenza, or avian influenza, a particularly virulent strain associated with birds. When the pandemic flu hit, it was not avian influenza; it was a new strain – initially called “swine flu” – which posed unknown risks and immediately galvanized the public health community. The next 12 months challenged the Orange County Health Care Agency (HCA) in collaboration with our community and public agency partners to protect the health of those who live and work here in Orange County.

The following report provides summary information of HCA’s response to the Pandemic H1N1 influenza threat that began in April 2009. Pandemic H1N1 Influenza – Type A was a novel virus that quickly spread around the world. As a novel virus, the human transmissibility and severity of the virus was unknown and Public Health organizations around the world moved quickly to identify cases, understand the epidemiology of the disease, develop treatment recommendations, implement communicable disease control strategies, distribute antiviral medications, and ultimately develop and distribute preventative vaccine.

From the early surveillance and laboratory work which sought to identify characteristics of the disease, to provision of public information intended to reduce the spread of the disease while vaccine was produced, to the vaccination campaign – HCA was at the forefront of response efforts locally. HCA provided leadership to a countywide response that included partnerships with the U.S. Centers for Disease Control and Prevention (CDC), the California Department of Public Health (CDPH) and multiple community partners such as hospitals, community clinics, private health care providers, schools, businesses, community-based organizations, law enforcement, cities, and media outlets.

County of Orange  
Health Care Agency



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## **Event Overview**

Although the novel virus was first identified in California, retrospective analysis suggests the first illnesses with H1N1 began in Mexico and spread quickly to the United States. Upon notification of the first identified cases in San Diego and Imperial Counties in April 2009, HCA heightened surveillance activities and increased laboratory testing in conjunction with the CDC and CDPH to identify new cases and learn more about transmission of the virus. The Department of Health and Human Services (HHS) declared a nationwide Public Health Emergency on April 26, 2009. By April 30, 2009, Orange County reported its first two confirmed cases and a local emergency was proclaimed by the Board of Supervisors. Five weeks later, on June 8, 2009, the first H1N1 death in Orange County was reported.

Increased global surveillance confirmed rapid spread of the disease and on June 11, 2009, the World Health Organization (WHO) declared H1N1 influenza a pandemic. With the virus now widely spread in the community, surveillance and laboratory testing changed its focus to identification of the most severe cases (those requiring intensive care and/or resulting in death) and protection of high risk individuals; monitoring for changes in the virulence, transmissibility and resistance to antiviral medications of the virus; and identifying clusters of cases to help control outbreaks in settings such as schools and institutions.

The declaration of a nationwide Public Health Emergency enabled the federal government to provide supplies, antiviral medications, vaccine, and funding to support local health jurisdictions in responding quickly and comprehensively to the pandemic. Orange County was awarded up to \$7,106,632 in Public Health Emergency Response (PHER) funding to support laboratory, surveillance, and vaccination activities.

Vaccine distribution began in October 2009 and became the central response strategy. However, initial limited supplies required prioritizing populations and public sector control of vaccine supplies until January 2010 when supplies were sufficient to meet the public's demand. Management of the vaccine supply was a coordinated effort between the federal government which managed the distribution logistics, the state which managed the provider registration and orders, and local health departments which made distribution recommendations to the state and interfaced with local providers and the public. Over one million doses of vaccine were distributed in Orange County and HCA coordinated administration of over 80,000 vaccinations.

Reports of new cases significantly dropped off after the second wave which peaked in early November. Vaccine became widely available and an increasing proportion of the population had already acquired H1N1 or been vaccinated. The World Health Organization (WHO) declared the

### **H1N1 by the Numbers**

- From May 2009 to May 2010, the Public Health Laboratory tested 4,204 influenza specimens
- Five one-day mass vaccination clinics provided H1N1 flu vaccine to almost 10,000 high risk individuals
- More than 30,000 people were vaccinated at the 17th Street Clinic during the response period
- Over one million doses of vaccine were distributed in Orange County
- It is estimated by the CDC that about 57 million people were infected with the disease in the United States over a 12 month period
- Of these approximately 274,000 required hospitalization and 12,000 died
- In Orange County, there were 226 cases of severe illness and 57 deaths associated with H1N1 through August 9, 2010.

H1N1 pandemic over on August 10, 2010. Vaccine for H1N1 has been included in the trivalent seasonal influenza vaccine being distributed for the 2010-11 influenza season and no additional H1N1-specific activities are anticipated for the upcoming influenza season.

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## **Health Care Agency Response Highlights**

H1N1 influenza provided Orange County's health care delivery system the opportunity to strengthen existing partnerships, forge new ones and test plans and capabilities. It also taught HCA important lessons about flexibility and provided opportunity for expanding competencies and capacities.



### **Incident Command Structure and Communications**

Throughout the response period HCA operated under an Incident Command Structure. Consistently adhering to a coordinated response with the Operational Area (OA) allowed the Sheriff's Emergency Management Bureau to assist in communications, particularly important during the early days when protection of their work force was of utmost importance to public safety.

- HCA established an Incident Command Structure that immediately leveraged the resources of multiple service areas in HCA and provided coordination with the Operational Area (OA)
  - ▶ HCA Public Health served in the Incident Command role with HCA Health Disaster Management in full partnership
  - ▶ The structure included use of a policy group and internal technical advisors to assist in decision making
- HCA staff was reassigned into roles to support surveillance, vaccination activities, inventory management, and public information
  - ▶ A team of 4 public health nurses was created to liaison with community partners, particularly schools and clinics
  - ▶ The Medical Reserve Corps, a network of volunteer health professionals, contributed 2,860 volunteer hours, providing surge capacity in critical areas such as Epidemiology and Assessment, school vaccination and mass vaccination clinics
- HCA established a "kitchen cabinet" communications group with

weekly conference calls with The Hospital Association of Southern California, The Orange County Department of Education, and the Coalition of Orange County Community Clinics to keep partners updated and share information

- A communications protocol was set up in coordination with the OA during the first few weeks of the response to establish a conference call for cities with initial cases
- The Sheriff's Emergency Management Bureau staff organized daily conference calls with public agencies and quickly acquired an expanded telephone bridge capability to ensure all interested parties could participate
- Public Health's Medical Officer was available on daily conference calls to provide cities and public agencies with immediate access to accurate information

## Public Information

Accurate, consistent and timely communication with the public, media and community stakeholders was increasingly important as the number of cases continued to grow. HCA utilized frequent web page updates, press releases, and written updates to the Board of Supervisors to keep key stakeholders apprised of the most up-to-date information as the event evolved.



- Provision of accurate and timely information to the public, providers, partners and the Board of Supervisors was a priority
  - ▶ Dedicated H1N1 web pages were designed and maintained
  - ▶ Regular letters were provided to the Board of Supervisors and posted on the HCA home page
  - ▶ The HCA Health Referral Line was significantly expanded and handled thousands of calls on some days
  - ▶ Electronic listservs were established to push information out to targeted medical providers, hospitals, schools, etc.
  - ▶ Eye on Influenza, a regular publication of the Public Health Epidemiology and Assessment program, became the source for current information on H1N1
  - ▶ A team of multi-lingual Public Health experts was trained to speak to the media and community groups about H1N1

- HCA established a contract with a risk communications firm in or-



der to proactively work with the media, enabling HCA to use the media to push important information out to the public and maintain an open and effective relationship with the media throughout the incident

- ▶ The Public Health Services Medical Officer acted as the designated agency spokesperson, providing a consistent and credible resource to the media
- Despite the fact that a significant amount of information was available from the CDC and CDPH, the local community expected that information to be localized by HCA. To assist with this, Public Health dedicated a Public Health nurse to development of localized information in the form of fliers, letters, web page updates, etc.

## Community Capacity Building



Dramatically expanding existing capabilities for surveillance, laboratory testing, public information, and emergency purchasing, storage, and delivery coordination was the most important aspect of HCA's response. Each service area developed tools and techniques to assist in meeting increased demand.

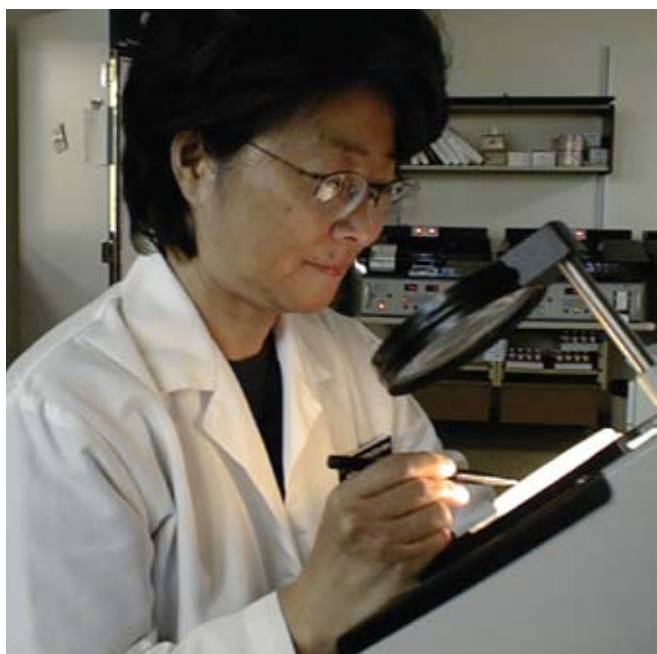
- Family Health's Health Referral Line at one point utilized twelve staff to respond to heavy call volume where there are normally two
- Epidemiology and Assessment utilized cross-trained nurses and Medical Reserve Corps volunteers
- The HCA Public Health Laboratory assigned five to six microbiologists to influenza testing where normally there are two staff assigned
- HCA trained and utilized Medical Reserve Corps and community volunteers, integrating them efficiently into response activities including the Health Referral Line, vaccination clinics and warehouse activities.
- Established a multi-disciplinary response team representing numerous divisions across HCA to coordinate activities
- Created confidence in HCA as the subject matter expert, using HCA's website as the go-to location for updated and comprehensive information
- HCA conducted four table top exercises and an H1N1 Summit during Summer 2009, before the second H1N1 wave began to emerge. The collaborative nature of these meetings served as a platform for sharing community perspectives and lessons learned thus far.

Approximately 460 community partners from diverse disciplines attended these events.

- HCA provided educational presentations on H1N1 to clinicians, ambulance providers, nurses, school nurses, emergency managers, cities, utilities, community clinics, child care providers, law enforcement, and many other community partners

## Surveillance and Laboratory Services

Initially, surveillance and laboratory testing were the two most important Public Health capabilities used to determine who was at risk and what control measures were appropriate for the H1N1 influenza virus. Public Health nurses and Medical Reserve Corps volunteers worked with Epidemiology and Assessment staff to support these expanded surveillance activities.



- Epidemiology and Assessment fielded 975 calls from providers between April 27, 2009 and May 18, 2009
- The OA's Pandemic Preparedness Plan was updated to reflect the experience of H1N1 and expanded to an inclusive Disease Outbreak Response Plan. This plan was approved by the Emergency Management Council on August 11, 2010
- Over 100 public health nurses, data analysts and clerical staff were cross trained for surveillance surge
- New lap tops and software were acquired to support public health nurses investigating disease outbreaks in the community

- Through preexisting relationships, the Public Health Laboratory was able to quickly acquire state-of-the-art equipment and a steady supply of reagents to become one of the first local laboratories in the nation to test for H1N1
- From May 2009 to May 2010, the Public Health Laboratory tested 4,204 specimens for influenza; in a normal year the laboratory tests approximately 400 specimens for influenza
- The Influenza Sentinel Provider program was expanded from 21 providers to 26 providers, creating a more comprehensive assessment of influenza activity in the community for future years. This program helps monitor influenza-like illness in the community through weekly reports and submission of specimens from outpatient clinics.

## Logistics and Supplies

HCA's Health Disaster Management Division requested and received the County's Strategic National Stockpile resources, a cache of antiviral medications and medical supplies supplied to local health departments by the federal government. HCA managed the pre-positioning and supply/resupply of these antiviral medications for the county's health care partners.



- Through the Strategic National Stockpile (SNS) program 243,744 total courses of antiviral medications were received and/or distributed to the county's health care partners. Partners such as the Sheriff assisted in these efforts, providing security and logistical expertise.
- Anticipating the need for additional resources, the Health Care Agency ordered respirators, ventilators and other supplies as market availability allowed, storing them in the HCA's Local Distribution Center
- Cold chain management and tracking of the vaccine are important aspects of pharmaceutical management; vaccine must be maintained between 36°F and 48°F. The initial surge of vaccine supplies resulted in a need for additional cold storage space. HCA used existing partnerships with the Federal Food and Drug Administration (FDA) to temporarily utilize their refrigerated storage space for excess vaccine supplies. HCA used federal funds to acquire expanded cold storage resources, enabling HCA to store vaccine supplies at multiple HCA sites.

## Vaccination Activity

It was originally anticipated that the bulk of the H1N1 vaccine would be distributed directly to private providers and HCA worked closely with CDPH to prioritize that distribution. As shipping delays contributed to a shortage of available vaccine, CDPH opted to direct most of the early shipments directly to HCA. This allowed HCA to hold fast to the target groups identified by the CDC: children, pregnant women, individuals with chronic health conditions and health care workers.

- HCA coordinated the delivery of vaccine among health care providers, partnered with schools to ensure school age children were vaccinated and established mass vaccination and onsite public health vaccination clinics
- HCA worked closely with CDPH to prioritize initial requests from Orange County providers for over 1.5 million doses of vaccine

which occurred through multiple allocations from October to January

- Early in response planning, and knowing limited supplies would require targeted vaccination activities, HCA developed a flexible plan to engage both the public and private sector in vaccination efforts:



- ▶ HCA pushed first supplies of vaccine immediately to community partners and health care providers serving the highest risk individuals – specifically OB/GYNs, pediatricians, and hospitals
- ▶ HCA established an agreement with Maxim Health Systems to provide large scale vaccination clinics and provide nurses on site at Public Health clinics to increase HCA vaccination capacities
- ▶ HCA worked with cities, community colleges, law enforcement, the Medical Reserve Corps and Maxim to provide five mass vaccination clinics in late October and early November 2009, when supplies were limited and public demand was high. Nearly 10,000 people were vaccinated through these clinics.
- ▶ HCA established a master agreement to reimburse community clinics and schools engaged in vaccinating targeted populations
- ▶ Public Health Nurses worked closely with 23 schools to provide education, outreach and onsite vaccination clinics
  - ◆ HCA established standing orders for school nurses to be able to provide vaccinations after completing training from HCA
  - ◆ HCA provided Medical Reserve Corp volunteers to help with school-base vaccination clinics
- HCA established an appointment-based vaccination clinic at the 17th Street Clinic in Santa Ana. This site was able to accommodate approximately one thousand patients per day, five days a week. More than 30,000 patients were vaccinated during the response period at this site.
  - ▶ Appointments were made through the Health Referral Line; most were scheduled within 48 hours
  - ▶ Health Referral Line staff could screen individuals to assure they met the current target population criteria
  - ▶ Utilizing Maxim and Medical Reserve Corps nurses, staffing



could surge each day to meet the need

- ▶ Rarely was there longer than a 30-minute wait to receive a vaccination
- In total, more than 80,000 community members were immunized against H1N1 through HCA's efforts and over 1 million doses of vaccine were delivered to Orange County providers

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## **ACCOMPLISHMENTS**

The Health Care Agency is much better prepared to respond to a Public Health threat than it was a year ago. With federal resources and a great deal of experience behind us we have been able to do the following:

- Develop stronger partnerships with the community – particularly hospitals, health care providers, clinics, schools, cities, and law enforcement
- Develop stronger incident command infrastructure, including stronger ties to the OA
- Develop and implement new strategies for public information and risk communications
- Increase capacities of the HCA Health Referral Line
- Increase laboratory and surveillance capacity and surge through equipment, technologies and training
- Increase readiness of the Medical Reserve Corps
- Increase warehouse capacity for critical medical supplies and mechanisms for receipt and distribution of supplies
- Improve technology of public health nurses working in the community

One interesting conclusion from the H1N1 influenza outbreak is the understanding that preparedness planning needs to incorporate flexibility. It had always been anticipated that a pandemic would take a while to reach the United States; the severity and case-fatality ratio would be high as in H5N1; and school closure might be a key mitigation measure. In fact, H1N1 taught us that the outbreak could originate here in the Western Hemisphere; the disease may not be severe; and different populations may be more vulnerable.

In many respects the nature of H1N1 influenza provided health care professionals with a proving ground to test disease outbreak response efforts. Lessons learned will shape future pandemic planning and certainly provided Orange County with an unprecedented opportunity to implement and evaluate disease outbreak planning and response strategies.