

12 January 2010

This supplement has been prepared to present scientific and technical news items that may be of more interest to technical personnel at RDT&E activities and the labs, or the medics rather than the broader readership of the basic CB Daily. Due to the nature of the material, the articles, if available online, are usually only available through subscription services thus making specific links generally unavailable. Thus, usually only the bibliographic citation is available for use by an activity's technical library.

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Chem-Bio News - Pandemic Influenza Edition #94

1. PRESIDENTIAL PROCLAMATION- NATIONAL INFLUENZA VACCINATION WEEK:

"NOW, THEREFORE, I, BARACK OBAMA, President of the United States of America, by virtue of the authority vested in me by the Constitution and the laws of the United States, do hereby proclaim the week of January 10-16, 2010, as National Influenza Vaccination Week."

2. LABORATORY SURGE RESPONSE TO PANDEMIC (H1N1) 2009 OUTBREAK, NEW YORK CITY METROPOLITAN AREA, USA:

"The ability of System laboratories to rapidly increase to high-volume comprehensive diagnostics, including influenza A subtyping, provided key epidemiologic information for local and state public health departments."

3. ONLY ONE STATE STILL SEES WIDESPREAD PANDEMIC FLU: *"Only one state, Alabama, still had widespread pandemic H1N1 influenza activity last week, down from four the week before, and most other flu indicators were down as well, the Centers for Disease Control and Prevention (CDC) said today."*

4. A LIVE ATTENUATED H1N1 M1 MUTANT PROVIDES BROAD CROSS-PROTECTION AGAINST INFLUENZA A VIRUSES, INCLUDING HIGHLY PATHOGENIC A/VIETNAM/1203/2004, IN MICE:

"Our study suggests an alternative approach to attenuate wt influenza viruses for the development of a pandemic vaccine with broad cross-protection."

5. LABORATORY SURGE CAPACITY AND PANDEMIC INFLUENZA: *"The Centers for Disease Control and Prevention has developed a software tool called FluLabSurge (<http://www.cdc.gov/flu/tools/flulabsurge>), which is designed to assist laboratory directors in planning for a surge in demand for testing."*

CB Daily Report

Chem-Bio News

PRESIDENTIAL PROCLAMATION- NATIONAL INFLUENZA VACCINATION WEEK

“Since the first United States cases were identified in April of last year, our Nation has witnessed the worldwide spread of the H1N1 influenza virus. To date, tens of millions of Americans have contracted this virus. While the vast majority of those affected have recovered without incident, an unusually high proportion of children and younger adults have developed serious complications, resulting in hospitalization or even death. We know that influenza vaccination is the best way to protect ourselves against the flu, and my Administration moved swiftly to respond to this threat by assisting in the development of a vaccine, which is now widely available and has shown to be both safe and effective.

Every American has a role to play in fighting the H1N1 flu. Expectant mothers, children, young adults, and all those under the age of 65 with chronic health conditions are at high risk for H1N1 flu-related complications and should get the vaccine as soon as possible. Those not at high risk can protect themselves and prevent the virus from spreading to more vulnerable members of their families and communities by getting vaccinated as well.

This week presents a window of opportunity for us to prevent a possible third wave of H1N1 flu in the United States. I strongly encourage those who have not yet received the H1N1 flu vaccine to do so. Visit flu.gov to find vaccination sites in communities across our country and to stay informed. Together, we can all fight the H1N1 flu and help protect our families, friends, and neighbors.

NOW, THEREFORE, I, BARACK OBAMA, President of the United States of America, by virtue of the authority vested in me by the Constitution and the laws of the United States, do hereby proclaim the week of January 10-16, 2010, as National Influenza Vaccination Week. I encourage all Americans to observe this week by getting the H1N1 flu vaccine if they have not yet done so, and by asking their families, friends, and co-workers to do the same.

IN WITNESS WHEREOF, I have hereunto set my hand this eighth day of January, in the year of our Lord two thousand ten, and of the Independence of the United States of America the two hundred and thirty-fourth.”

The full article can be found at: <http://www.whitehouse.gov/the-press-office/presidential-proclamation-national-influenza-vaccination-week>

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LABORATORY SURGE RESPONSE TO PANDEMIC (H1N1) 2009 OUTBREAK, NEW YORK CITY METROPOLITAN AREA, USA

By James M. Crawford, Robert Stallone, Fan Zhang, Mary Gerolimatos, Diamanto D. Korologos, Carolyn Sweetapple, Marcella de Geronimo, Yosef Dlugacz, Donna M. Armellino, and Christine C. Ginocchio

US Centers for Disease Control and Prevention - Emerging Infectious Diseases
January 2010

"The North Shore–Long Island Jewish Health System Laboratories serve 15 hospitals and affiliated regional physician practices in the New York City metropolitan area, with virus testing performed at a central reference laboratory. The influenza A pandemic (H1N1) 2009 outbreak began in this area on April 24, 2009, and within weeks respiratory virus testing increased 7.5 times. In response, laboratory and client service workforces were increased, physical plant build-out was completed, testing paradigms were converted from routine screening tests and viral culture to a high-capacity molecular assay for respiratory viruses, laboratory information system interfaces were built, and same-day epidemiologic reports were produced. Daily review by leadership of data from emergency rooms, hospital facilities, and the Health System Laboratories enabled real-time management of unfolding events. The ability of System laboratories to rapidly increase to high-volume comprehensive diagnostics, including influenza A subtyping, provided key epidemiologic information for local and state public health departments."

The full article can be found at: <http://www.cdc.gov/eid/content/16/1/8.htm>

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ONLY ONE STATE STILL SEES WIDESPREAD PANDEMIC FLU

By Robert Roos

CIDRAP News (Center for Infectious Disease Research & Policy – University of Minnesota)
January 08, 2010

"Only one state, Alabama, still had widespread pandemic H1N1 influenza activity last week, down from four the week before, and most other flu indicators were down as well, the Centers for Disease Control and Prevention (CDC) said today.

Pandemic activity in the United States has declined steadily since it peaked with widespread cases in 48 states in late October. And seasonal flu viruses have not yet emerged in any numbers to replace the pandemic strain, the CDC reported.

Alabama was back in the "widespread activity" column after reporting regional activity the previous week. Before that, the state had reported widespread activity for several weeks in a row."

The full article can be found at: <http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news/jan0810fluview.html>

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A LIVE ATTENUATED H1N1 M1 MUTANT PROVIDES BROAD CROSS-PROTECTION AGAINST INFLUENZA A VIRUSES, INCLUDING HIGHLY PATHOGENIC A/VIETNAM/1203/2004, IN MICE

Medical Letter on the CDC & FDA
January 10, 2010

"The emergence of novel influenza A H1N1 and highly pathogenic avian influenza (HPAI) H5N1 viruses underscores the urgency of developing efficient vaccines against an imminent pandemic. M(NLS-88R) (H1N1), an A/WSN/33 mutant with modifications in the multibasic motif 101RKLKR105 of the matrix (M1) protein and its adjacent region, was generated by reverse genetics."

"The M(NLS-88R) mutant had in vitro growth characteristics similar to those of wild-type A/WSN/33 (wt-WSN), but it was attenuated in mice. Vaccination with M(NLS-88R) not only fully protected mice from lethal homologous challenges but also prevented mortality caused by antigenically distinct H3N2 and H5N1 viruses. M(NLS-88R)-induced homologous protection was mainly antibody dependent, but cellular immunity was also beneficial in protecting against sublethal wt-WSN infection. Adoptive transfer studies indicated that both humoral and cellular immune responses were crucial for M(NLS-88R)-induced heterologous protection."

"Our study suggests an alternative approach to attenuate wt influenza viruses for the development of a pandemic vaccine with broad cross-protection."

The full article can be found at: (H. Xie, et. al., "A Live Attenuated H1N1 M1 Mutant Provides Broad Cross-Protection against Influenza A Viruses, Including Highly Pathogenic A/Vietnam/1203/2004, in Mice". *Journal of Infectious Diseases*, 2009;200(12):1874-1883). Link not available.

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LABORATORY SURGE CAPACITY AND PANDEMIC INFLUENZA

By Martin I. Meltzer, K. Mills McNeill, and Joseph D. Miller

US Centers for Disease Control and Prevention - Emerging Infectious Diseases

January 2010

"In this issue, Crawford et al. describe their experiences running a clinical diagnostic laboratory during the first 3 weeks of the influenza A pandemic (H1N1) 2009 outbreak (1). During the early weeks of the outbreak, their laboratory, which serves 15 hospitals and affiliated physician practices in the greater New York City metropolitan area, experienced an $\approx 8\times$ increase in respiratory virus testing, reaching a maximum of about 900 samples processed in 1 day.

As part of their outbreak response, the laboratory increased weekly work hours by $\approx 60\%$ and doubled weekend work hours. Physical laboratory space was also rapidly expanded. Equally important to the response plan were 2 decisions to alter testing protocols: cultures were screened 1 time rather than 3, and the use of the Luminex xTAG Respiratory Virus Panel assay (Luminex Molecular Diagnostics, Toronto, Ontario, Canada) was prioritized for testing specimens from hospitalized patients.

The missions of clinical laboratories and public health laboratories (PHL) differ markedly. Clinical laboratories have the primary (almost sole) responsibility of testing samples to aid

clinical decision-making. Although PHLs also test samples to aid clinical decisions, functions like surveillance, strain identification, and tracking of drug resistance are arguably their main priorities. Clinical laboratories often have resources available that allow for rapid expansion, but PHLs typically work on fixed budgets that have little flexibility despite unpredictable changes in demand for services.

In their article, Crawford et al. (1) discuss many lessons they learned that have universal application for all laboratories engaged in influenza surge response planning. First and foremost was that they had an established plan to deal with such an emergency. Equally important, the laboratory leadership understood the plan and how to adapt it to the specific situation at hand. The leadership also was willing to prioritize testing and triage the flow of samples. The laboratory's ability to adapt rapidly was limited most notably by the number of suitably trained and experienced staff who could be brought in to provide surge capacity assistance. To be useful, emergency plans must be more than mere documents; they must be rooted in an adequate assessment of capacity and a realistic understanding of the degree to which capacity can be increased rapidly.

The Centers for Disease Control and Prevention has developed a software tool called FluLabSurge (<http://www.cdc.gov/flu/tools/flulabsurge>), which is designed to assist laboratory directors in planning for a surge in demand for testing. Each laboratory has unique operating characteristics. However, by using FluLabSurge, we determined that the availability of suitably trained laboratory staff is probably the factor that most affects the ability of PHLs to rapidly expand capacity. Thus, public health officials must quickly impose appropriate triage systems at the beginning of public health events, such as an influenza pandemic, to ensure that existing PHL capacity is used effectively and wisely.

Perhaps the most important lessons in the article by Crawford et al. are 1) the need to continually communicate to all clients and stakeholders the need for triaging the flow of clinical samples and 2) the need to explain how testing priorities may change over the course of a pandemic. Such enhanced communication, which clearly explains the limitations of existing laboratory capacity, may help build a constituency that will aid future expansions of PHL capacity."

The full article can be found at: <http://www.cdc.gov/eid/content/16/1/147.htm>

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