2 June 2009

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 # 63

1. NEW FLU VIRUS MAY BRING SUMMER OF DISCONTENT: *"With summer temperatures settling in across the United States, health authorities are conceding that the novel H1N1 flu virus may continue circulating through the summer, rather than quieting down as seasonal flu strains do."*

2. H1N1 INFECTION STILL VIABLE; HANDWASHING IS A KEY PRECAUTION: *"With a full 80 percent of infections spread through hand contact, taking the time to properly wash hands can help prevent the spread of H1N1, as well as other viruses."*

3. HHS AWARDS MEDIMMUNE CONTRACT TO MANUFACTURE LIVE ATTENUATED NASAL SPRAY VACCINE FOR NOVEL INFLUENZA A (H1N1): *"MedImmune announced today that the U.S. Department of Health and Human Services (HHS) has awarded the company a contract to manufacture monovalent (single-strain) live attenuated influenza vaccine for Novel Influenza A (H1N1) to vaccinate priority populations identified by HHS in the National Strategy for Pandemic Influenza."*

4. MANAGING AND REDUCING UNCERTAINTY IN AN EMERGING INFLUENZA PANDEMIC: *"There is a brief window of opportunity to take measures to reduce the uncertainty. Serologic studies in the tropics during the Northern Hemisphere summer and at higher latitudes in both hemispheres will permit estimation of the extent of spread of mild infection."*

5. PERFORMANCE OF A SYNDROMIC SYSTEM FOR INFLUENZA BASED ON THE ACTIVITY OF GENERAL PRACTITIONERS, FRANCE: *"The sensitivity and specificity of SOS Médecins for early outbreak detection showed the value of these data in monitoring influenza activity."*

CB Daily Report

Chem-Bio News

NEW FLU VIRUS MAY BRING SUMMER OF DISCONTENT
By Maryn McKenna
CIDRAP News (Center for Infectious Disease Research & Policy – University of Minnesota)
May 29, 2009

“With summer temperatures settling in across the United States, health authorities are conceding that the novel H1N1 flu virus may continue circulating through the summer, rather than quieting down as seasonal flu strains do.

That could pose major challenges for surveillance of the new flu's spread, because some important disease indicators, such as school absenteeism, cannot be used during the summer. It will also tug research on the strain toward an aspect of flu that is not well understood despite years of inquiry: why influenza is a seasonal infection.

The Centers for Disease Control and Prevention (CDC) signaled yesterday that it does not expect the novel virus to mimic seasonal flu's usual summer hiatus.”

“Influenza's seasonality has been attributed to winter behaviors such as crowding into shared indoor air space; to winter climate changes, such as less sunlight to stimulate Vitamin D production, which boosts immunity; and to winter physiology, from cracked lips and noses that allow viruses into mucous membranes, to slow-moving bronchial cilia that fail to expel them from the lungs.

In a paper published in March, atmospheric scientist Jeffrey Shaman, PhD, of Oregon State University proposed that an important influence is absolute humidity, or the measure of how much water is present in the air regardless of the ambient temperature. "The environment strongly modulates how long the flu virus can remain viable in (an exhaled) water droplet once it is expelled from the body, and it is absolute humidity that is doing it," Shaman said in an interview. The lower the absolute humidity, the more likely flu viruses are to survive and spread—and in temperate regions, absolute humidity is lowest in winter.

Earlier studies, including experimental work on guinea pigs published in 2007, found more flu transmission in situations of low relative humidity, a separate measure of water content of air at particular temperatures. That is true in laboratory studies as well, said Walter Dowdle, PhD, the former director of the World Health Organization's Influenza Collaborating Center at the CDC.

"It always struck me that the virus is highly sensitive to high relative humidity," he said in an interview. "At 30% relative humidity and lower temperatures it will survive 3 and 4 days as an aerosol. But increase it to 75 degrees and 60% relative humidity and survivability drops down to about 8 hours."

The full article can be found at: http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news/may2909seasonality.html

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H1N1 INFECTION STILL VIABLE; HANDWASHING IS A KEY PRECAUTION
Infection Control Today Magazine
June 01, 2009

“As H1N1 influenza infections continue, people around the world can take proactive steps to protect themselves. While wearing face masks and stocking up on over-the-counter flu medication can help you avoid this disease, the Centers for Disease Control and Prevention (CDC) is recommending a simpler measure -- frequent, thorough handwashing. With a full 80 percent of infections spread through hand contact, taking the time to properly wash hands can help prevent the spread of H1N1, as well as other viruses.

“Handwashing is always important, but particularly after coughing, sneezing or blowing your nose, using the restroom, eating or preparing food or touching an animal,” says Eileen Lantier, RN, PhD, associate dean of human ecology at Syracuse University. Lantier also notes viruses can be transferred by shaking hands, social contact and in public places. “To effectively and thoroughly clean hands, pump an antibacterial soap into hands and lather aggressively for at least 20 seconds. After rinsing and drying, use a towel to turn off the faucet and open doors,” she says.

To ensure you’re killing as much potentially harmful bacteria as possible, follow these five tips for effective handwashing:

-- Wash your hands frequently throughout the day

-- Use an antibacterial liquid soap, such as Dial Complete, the No. 1 doctor-recommended brand, for good hand hygiene

-- Make sure to lather vigorously in order to increase the effectiveness of the soap in reducing dirt, germs and bacteria from your hands

-- Lather and rub hands for at least 20 seconds and make sure to clean under fingernails and between fingers before rinsing with warm water

-- After rinsing soap off hands, dry hands with a paper towel or cloth prior to turning off faucet, then use towel to turn off faucet to prevent recontamination. If washing hands in a public restroom, use a paper towel to open door before discarding in garbage can.”

The full article can be found at: http://www.infectioncontroltoday.com/hotnews/h1n1-infection-handwashing-precautions.html

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HHS AWARDS MEDIMMUNE CONTRACT TO MANUFACTURE LIVE ATTENUATED NASAL SPRAY VACCINE FOR NOVEL INFLUENZA A (H1N1)
MedImmune Press Release
June 01, 2009

“MedImmune announced today that the U.S. Department of Health and Human Services (HHS) has awarded the company a contract to manufacture monovalent (single-strain) live attenuated influenza vaccine for Novel Influenza A (H1N1) to vaccinate priority populations identified by HHS in the National Strategy for Pandemic Influenza. An initial order of $90 million of vaccine has been placed, with the potential for additional orders. This project has been funded in whole or in part with the Federal funds from HHS/ASPR/BARDA, under Contract No. HHSO100200900002I.

MedImmune scientists have identified several promising vaccine candidates against the Novel Influenza A (H1N1) strain, and are currently evaluating their growth properties and antigenicity (i.e., their ability to stimulate antibodies) for mass production as part of the vaccine manufacturing process.”

The full article can be found at: http://www.medimmune.com/press/fullstory.asp?reqid=1294399&yr=2009

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MANAGING AND REDUCING UNCERTAINTY IN AN EMERGING INFLUENZA PANDEMIC

By Marc Lipsitch, D.Phil., Steven Riley, D.Phil., Simon Cauchemez, Ph.D., Azra C. Ghani, Ph. D., and Neil M. Ferguson, D.Phil.
New England Journal of Medicine
May 27, 2009

“Mild responses are prescribed for a strain resembling seasonal influenza, which kills perhaps 0.1% of those infected, with higher rates in the very young and elderly, whereas stringent measures are envisioned for a very severe pandemic with a case fatality ratio of 2% or more and deaths concentrated in the middle age groups.

This approach makes sense in theory, but in practice, decisions have had to be made before definitive information was available on the severity, transmissibility, or natural history of the new H1N1 virus. The United States, for example, passed the 1000-case mark on May 4, and the second death was reported on May 5. Crudely speaking, the case fatality ratio thus appeared to be 0.2%, near the upper end of the range for seasonal influenza, and superficially, this statistically uncertain estimate seems remarkably accurate given the data available on May 27, by which point there were 11 deaths and 7927 confirmed cases (a case fatality ratio of 0.14%).

However, two principal sources of uncertainty critically affect severity estimates. The proportion of severe cases is overestimated in settings where many mild cases are not reported or tested, a situation that is becoming more common as public health officials become unable to test a large fraction of suspected cases. In contrast, severity estimates are biased downward when they are calculated as simple ratios of numbers of deaths to numbers of cases, because there is a delay between the onset of illness and death.”

“Paradoxically, uncertainty about this infection's characteristics is likely to increase further as the Northern Hemisphere's summer progresses. The low specificity of clinical signs and symptoms, combined with changes in reporting practices, will make it difficult to interpret apparent incidence trends at the national level. Without reliable incidence measures, it is impossible to track the epidemic's growth rate, which makes estimates of transmissibility highly uncertain and subject to biases because of changes in the probability of detection. School absences, a crude measure of epidemic spread, will become less informative once most schools are closed for the summer.”

“There is a brief window of opportunity to take measures to reduce the uncertainty. Serologic studies in the tropics during the Northern Hemisphere summer and at higher latitudes in both hemispheres will permit estimation of the extent of spread of mild infection. If transmission wanes in the north, a late-summer serologic survey will provide baseline information about population immunity that will aid in both vaccine targeting and interpretation of patterns of illness in the fall.”

The full article can be found at: http://content.nejm.org/cgi/content/full/NEJMp0904380

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PERFORMANCE OF A SYNDROMIC SYSTEM FOR INFLUENZA BASED ON THE ACTIVITY OF GENERAL PRACTITIONERS, FRANCE
Health Risk Factor Week
June 2, 2009

"We explored the capacity of SOS Médecins system to identify and follow influenza outbreaks using data from the Sentinel network, considered as being a gold standard for tracking seasonal influenza in France. Data from SOS Médecins were analysed and compared with data from the Sentinel network. The sensitivity and specificity of SOS Médecins system were evaluated for different simulated thresholds. A relationship between the number of visits for influenza from SOS Médecins and the number of influenza cases from the Sentinel network was observed; data from the two systems were highly correlated. We showed the capacity of SOS Médecins system to identify outbreaks with a sensitivity and specificity of 93%."

"The sensitivity and specificity of SOS Médecins for early outbreak detection showed the value of these data in monitoring influenza activity."

The full article can be found at: (G. Gault, et. al., “Performance of a syndromic system for influenza based on the activity of general practitioners”, France. Journal of Public Health, 2009;31(2):286-92). Link not available.

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