28 October 2008

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 Supplement #33

1. HIGH-DOSE INFLUENZA VACCINE SHOWS INCREASED IMMUNE RESPONSE AMONG ADULTS 65 YEARS OF AGE AND OLDER: *"Sanofi Pasteur, the vaccines division of sanofi-aventis Group, announced today that an investigational high-dose influenza vaccine demonstrated increased immune responses among adults 65 years of age and older compared with the standard influenza vaccine."*

2. WHO'S DRAFT PANDEMIC FLU GUIDANCE REVISES PHASES: *"The World Health Organization (WHO) has drafted a revised pandemic influenza preparedness plan that updates the definitions of pandemic phases and puts more emphasis on the social and economic effects of a global epidemic, among other changes."*

3. THE H5N1 INFLUENZA VARIANT FUJIAN-LIKE HEMAGGLUTININ SELECTED FOLLOWING VACCINATION EXHIBITS A COMPROMISED FURIN CLEAVAGE: *"We hypothesize that the double hemagglutinin mutations in vFJ may result in viruses with less processed hemagglutinin, thereby providing a mechanism for evading immune neutralization."*

4. MASKS, HANDWASHING PREVENT SPREAD OF FLU-LIKE SYMPTOMS BY UP TO 50 PERCENT: *"In a first-of-its-kind look at the efficacy of non-pharmaceutical interventions in controlling the spread of the flu virus in a community setting, researchers at the University of Michigan School of Public Health studied more than 1,000 student subjects from seven U-M residence halls during last year's flu season."*

5. DRUG-RESISTANT FLU VIRUSES CAUSE GROWING CONCERN: *"Health officials worldwide are becoming increasingly concerned about influenza viruses' resistance to antiviral drugs, which can shut down a flu infection or mitigate symptoms."*

6. GENETIC EVIDENCE FOR AVIAN INFLUENZA MOVEMENT FROM ASIA TO NORTH AMERICA VIA WILD BIRDS: *"Wild migratory birds may be more important carriers of avian influenza viruses from continent to continent than previously thought, according to new scientific research that has important implications for highly pathogenic avian influenza virus surveillance in North America."*

CB Daily Report

Chem-Bio News

HIGH-DOSE INFLUENZA VACCINE SHOWS INCREASED IMMUNE RESPONSE AMONG ADULTS 65 YEARS OF AGE AND OLDER
Medical News Today
October 27, 2008

“Sanofi Pasteur, the vaccines division of sanofi-aventis Group, announced today that an investigational high-dose influenza vaccine demonstrated increased immune responses among adults 65 years of age and older compared with the standard influenza vaccine. The candidate high-dose intramuscular formulation of the influenza vaccine is being developed by sanofi pasteur.

The results were reported today at the 48th Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC)/Infectious Diseases Society of America (IDSA) 46th annual meeting.”

“The Phase III study of almost 4,000 people 65 years of age and older compared the high-dose influenza vaccine with the standard inactivated influenza vaccine formulated for the 2006-2007 season. The key finding is that the new high-dose vaccine increased the immune responses to all three influenza strains compared with standard vaccine in the study population. An important additional observation was that the increased immune response was also observed in the potentially more vulnerable subset of study participants who had no measurable circulating protective antibodies before receiving their annual influenza vaccine.”

The full article can be found at: http://www.medicalnewstoday.com/articles/126940.php

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WHO'S DRAFT PANDEMIC FLU GUIDANCE REVISES PHASES
By Robert Roos
CIDRAP News (Center for Infectious Disease Research & Policy – University of Minnesota)
October 24, 2008

“The World Health Organization (WHO) has drafted a revised pandemic influenza preparedness plan that updates the definitions of pandemic phases and puts more emphasis on the social and economic effects of a global epidemic, among other changes.

The plan, intended to replace the existing one published in 2005, aims to present "simpler and more precise definitions" of the six pandemic phases and groups them to emphasize planning and preparedness considerations. The draft also defines "post-peak" and "possible new wave" phases.”

“The draft guidance has six main pandemic phases, like the 2005 version. "However, the grouping and description of pandemic phases have been revised to be simpler, more precise and based upon verifiable phenomena rather than inference," the document states.

Changes in the phase definitions are clearest for phases 1, 5, and 6, with lesser changes in the other phases. In the existing guidance, phase 1 is defined as a time when, though no new flu viruses have been found in humans, a flu virus that has caused human infection "may be present in animals," but the risk of human infection is considered low. In the new draft, the phase 1 definition states simply: "No animal influenza virus known to have caused infection in humans has been identified in animals."

Phase 3 as defined in the current guidance—the phase the WHO puts us in now—is described as "human infections with a new subtype, but no human-to-human spread, or at most rare instances of spread to a close contact." In the draft, this changes to: "An animal or hybrid animal-human influenza virus has caused sporadic cases or small clusters of disease in people but has not resulted in human-to-human transmission sufficient to cause community level outbreaks."

For phase 5, the draft guidance uses a more specific geographic criterion than the existing document. The existing guidance speaks of larger case clusters but ones still confined to a localized area, suggesting that the virus is not yet fully transmissible. The draft document defines phase 5 as featuring a virus that "has established human-to-human transmission in two or more non-contiguous countries in one geographical region."

Similarly, the new phase 6 definition uses a specific geographic criterion, this one signaling intercontinental spread. Whereas the existing guidance defines this phase only as "increased and sustained transmission among the general population," the draft defines it as featuring a virus that "has caused clusters of disease in at least two of the following geographical regions: Africa, Asia, Europe, Americas, and Oceania."

The full article can be found at: http://www.cidrap.umn.edu/cidrap/content/influenza/biz-plan/news/oct2408who.html

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THE H5N1 INFLUENZA VARIANT FUJIAN-LIKE HEMAGGLUTININ SELECTED FOLLOWING VACCINATION EXHIBITS A COMPROMISED FURIN CLEAVAGE
Pharma Investments, Ventures & Law Weekly
October 26, 2008

"We synthesized 14mer peptides mimicking the processing site of Fujian-like strains. We found that the peptide with the vFJ sequence is less cleaved as compared to the parent FJ-derived peptide by furin at either neutral or acidic pH values."

"We hypothesize that the double hemagglutinin mutations in vFJ may result in viruses with

less processed hemagglutinin, thereby providing a mechanism for evading immune neutralization."

The full article can be found at: (A. Pasquato, et. al., “The H5N1 influenza variant Fujian-like hemagglutinin selected following vaccination exhibits a compromised furin cleavage”. Journal of Molecular Neuroscience, 2008;35(3):339-343). Link not available.

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MASKS, HANDWASHING PREVENT SPREAD OF FLU-LIKE SYMPTOMS BY UP TO 50 PERCENT
Infection Control Today Magazine
October 27, 2008

“In a first-of-its-kind look at the efficacy of non-pharmaceutical interventions in controlling the spread of the flu virus in a community setting, researchers at the University of Michigan School of Public Health studied more than 1,000 student subjects from seven U-M residence halls during last year's flu season.

"The first-year results (2006-2007) indicate that mask use and alcohol-based hand sanitizer help reduce influenza- like illness rates, ranging from 10 to 50 percent over the study period," said Allison Aiello, co-principal investigator and assistant professor of epidemiology at the U-M SPH. Dr. Arnold Monto, professor of epidemiology, is also a principal investigator of the study.”

The full article can be found at: http://www.infectioncontroltoday.com/hotnews/preventing-spread-of-influenza.html

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DRUG-RESISTANT FLU VIRUSES CAUSE GROWING CONCERN
By Maryn McKenna
CIDRAP News (Center for Infectious Disease Research & Policy – University of Minnesota)
October 27, 2008

“Health officials worldwide are becoming increasingly concerned about influenza viruses' resistance to antiviral drugs, which can shut down a flu infection or mitigate symptoms.”

“But speaking at a major infectious-disease meeting here Sunday, Dr. Nila Dharan of the Centers for Disease Control and Prevention (CDC) disclosed that 12.6% (142 of 1,124) of H1N1 isolates sent to the CDC from around the United States during the 2007-08 season were resistant to oseltamivir, versus less than 1% before 2007.

And in a troubling addition, the CDC found that none of the patients who gave the isolates had taken oseltamivir, casting doubt on the widely held belief that oseltamivir resistance,

when it occurs, is not transmissible. 1. (Dharan NJ, Gubareva L, Klimov A, et al. Oseltamivir-resistant influenza A [H1N1] in the United States, 2007-2008 [Abstract V-918])"

"And in an example of unintended consequences, Dr. Philip Polgreen of the University of Iowa reported a newly recognized statistical association between influenza outbreaks and the incidence of Clostridium difficile–associated disease, a severe diarrheal illness that can be drug-resistant and that occurs after antibiotics wipe out the normal bacterial inhabitants of the gut."

The full article can be found at: http://www.cidrap.umn.edu/cidrap/content/influenza/panflu/news/oct2708resist.html

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GENETIC EVIDENCE FOR AVIAN INFLUENZA MOVEMENT FROM ASIA TO NORTH AMERICA VIA WILD BIRDS
EurekaAlert
October 27, 2008

"Wild migratory birds may be more important carriers of avian influenza viruses from continent to continent than previously thought, according to new scientific research that has important implications for highly pathogenic avian influenza virus surveillance in North America.

As part of a multi-pronged research effort to understand the role of migratory birds in the transfer of avian influenza viruses between Asia and North America, scientists with the U.S. Geological Survey (USGS), in collaboration with the U.S. Fish and Wildlife Service in Alaska and the University of Tokyo, have found genetic evidence for the movement of Asian forms of avian influenza to Alaska by northern pintail ducks.

In an article published this week in Molecular Ecology, USGS scientists observed that nearly half of the low pathogenic avian influenza viruses found in wild northern pintail ducks in Alaska contained at least one (of eight) gene segments that were more closely related to Asian than to North American strains of avian influenza."

The full article can be found at: http://www.eurekalert.org/pub_releases/2008-10/usgs-gef102708.php

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