1 September 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 #76

1. LIPOPEPTIDE VACCINES ILLUSTRATE THE POTENTIAL ROLE OF SUBTYPE-CROSSREACTIVE T CELLS IN THE CONTROL OF HIGHLY VIRULENT INFLUENZA: *"Vaccinated mice are not only protected from death but remain active, indicative of less severe disease despite significant weight loss.."*

2. MORTALITY BURDEN OF THE 1918-1919 INFLUENZA PANDEMIC IN EUROPE: *"Our study highlights the synchrony of the mortality waves in the different countries, which pleads against a European origin of the pandemic, as was sometimes hypothesized.."*

3. CDC TO TAP SOCIAL MEDIA TOOLS TO SPREAD H1N1 FLU VIRUS INFORMATION: *"Janice Nall, director of CDC's e-health marketing division, said the agency will put information on other Web sites, rather than requiring people to visit CDC's Web site."*

4. SWINE FLU SHOT PROTECTION? MAYBE BY THANKSGIVING: *"Here's why: Health officials believe most people will need two shots, spaced three weeks apart, and it will take a week or two after the second dose before immunity kicks in. That's five or six weeks in all."*

5. EXPERIMENTAL DRUG HELPS SAVE CRITICAL SWINE FLU VICTIM: *"With an intravenous drip the only way of getting medication into Mr Luong, the team decided to try a liquid form of flu drug Relenza – a highly experimental formula not registered anywhere in the world, which had to be flown in from the U.S. where it had been produced for clinical trials unrelated to swine flu."*

6. HK RESEARCHERS PROPOSE HARVESTING CONVALESCENT PLASMA TO FIGHT NEW FLU: *"A team of researchers from the University of Hong Kong on Wednesday proposed harvesting convalescent plasma from recovered patients to treat patients with severe infections of influenza A/H1N1."*

7. DEFENSE OFFICIALS PREPARE FOR H1N1 FLU: *"While the Health and Human Services Department works out plans for immunizing millions of Americans against the H1N1 flu virus, Defense officials are working on a parallel track to protect service members and mitigate the flu's effect on military operations."*

8. H1N1 VACCINE TAKES OFF: *"Atlanta based AeroClinic announced it will start offering the H1N1 flu shot to travellers at a series of concourse based kiosks at Hartsfield Jackson International Airport."*

9. PANDEMIC VIRUS COULD GET NASTIER IN YEAR TWO: *"The swine flu is unlikely to become more virulent as it spreads through the northern hemisphere this winter, but could re-emerge a year later in a more deadly form, a top expert said Thursday."*

10. ADJUVANT IS NECESSARY FOR A ROBUST IMMUNE RESPONSE TO A SINGLE DOSE OF H1N1 PANDEMIC FLU VACCINE IN MICE: *"These data support including MF59 in pandemic flu vaccines to rapidly protect young adults and children, who may have little or no previous exposure to influenza infection or immunization."*

11. COLOMBIAN PRESIDENT HAS SWINE FLU: *"South American leaders who met the Colombian President, Alvaro Uribe, at a summit on Friday have been advised that he has swine flu."*

CB Daily Report

LIPOPEPTIDE VACCINES ILLUSTRATE THE POTENTIAL ROLE OF SUBTYPE-CROSSREACTIVE T CELLS IN THE CONTROL OF HIGHLY VIRULENT INFLUENZA
Vaccine Weekly
August 26, 2009

“The best form of protection against influenza is high-titred virus-neutralizing antibody specific for the challenge strain. However, this is not always possible to achieve by vaccination due to the need for predicting the emerging virus, whether it be a drift variant of existing human endemic influenza type A subtypes or the next pandemic virus, for incorporation into the vaccine."

"By activating additional arms of the immune system to provide heterosubtypic immunity, that is immunity active against all viruses of type A influenza regardless of subtype or strain, it should be possible to provide significant benefit in situations where appropriate antibody responses are not achieved. Although current inactivated vaccines are unable to induce heterosubtypic CD8(+) T cell immunity, we have shown that lipopeptides are particularly efficient in this regard. To examine the role of vaccine-induced CD8(+) T cells in altering the course of disease due to highly virulent H1N1 influenza virus in the mouse model. The induction of influenza-specific CD8(+) T cells following intranasal inoculation with lipopeptide vaccine was assessed by intracellular cytokine staining (ICS) and the capacity of these cells to reduce viral loads in the lungs and to protect against death after viral challenge was determined. We show that CD8(+) T cells are induced by a single intranasal vaccination with lipopeptide, they remain at substantial levels in the lungs and are efficiently boosted upon challenge with virulent virus to provide late control of pulmonary viral loads.”

"Vaccinated mice are not only protected from death but remain active, indicative of less severe disease despite significant weight loss.."

The full article can be found at: (W.C. Ng, et. al., “Lipopeptide vaccines illustrate the potential role of subtype-crossreactive T cells in the control of highly virulent influenza”. Influenza and Other Respiratory Viruses, 2009;3(4):177-182). Link not available.
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MORTALITY BURDEN OF THE 1918-1919 INFLUENZA PANDEMIC IN EUROPE
Health Risk Factor Week
August 25, 2009

"The origin and estimated death toll of the 1918-1919 epidemic are still debated. Europe, one of the candidate sites for pandemic emergence, has detailed pandemic mortality information.”

"To determine the mortality impact of the 1918 pandemic in 14 European countries, accounting for approximately three-quarters of the European population (250 million in 1918). We analyzed monthly all-cause civilian mortality rates in the 14 countries, accounting for approximately three-quarters of the European population (250 million in 1918). A periodic regression model was applied to estimate excess mortality from 1906 to 1922. Using the 1906-1917 data as a training set, the method provided a non-epidemic baseline for 1918-1922. Excess mortality was the mortality observed above this baseline. It represents the upper bound of the mortality attributable to the flu pandemic. Our analysis suggests that 2 64 million excess deaths occurred in Europe during the period when Spanish flu was circulating. The method provided space variation of the excess mortality: the highest and lowest cumulative excess/predicted mortality ratios were observed in Italy (+172%) and Finland (+33%). Excess-death curves showed high synchrony in 19181919 with peak mortality occurring in all countries during a 2-month window (Oct-Nov 1918). During the Spanish flu, the excess mortality was 1.1% of the European population.”

"Our study highlights the synchrony of the mortality waves in the different countries, which pleads

against a European origin of the pandemic, as was sometimes hypothesized.."

The full article can be found at: (S. Ansart, et. al., "Mortality burden of the 1918-1919 influenza pandemic in Europe". Influenza and Other Respiratory Viruses, 2009;3(3):99-106). Link not available.
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CDC TO TAP SOCIAL MEDIA TOOLS TO SPREAD H1N1 FLU VIRUS INFORMATION
iHealthBeat.org
August 25, 2009

"Janice Nall, director of CDC's e-health marketing division, said the agency will put information on other Web sites, rather than requiring people to visit CDC's Web site. Nall noted that videos on the H1N1 flu virus on CDC's site received about 100,000 page views, but the same videos received more than two million views on YouTube.

Health officials say that social media is an effective way to reach young adults. The H1N1 flu is expected to be hit young adults particularly hard, compared with other flus.

CDC's electronic H1N1 strategy includes:

* Targeting independent bloggers that can help spread important information;
* Sending e-mail updates and alerts to government e-mail list subscribers;
* Distributing graphical buttons that people can embed on social networking sites, such as MySpace and Facebook;
* Using text messages to provide health alerts;
* Using several Twitter feeds to release relevant health information; and
* Providing widgets and content syndication from CDC that people can embed on their own Web sites.

CDC also is looking into using games and virtual worlds to spread H1N1 flu information (Wagner, InformationWeek, 8/24)."

The full article can be found at: http://www.ihealthbeat.org/Articles/2009/8/25/CDC-To-Tap-Social-Media-Tools-To-Spread-H1N1-Flu-Virus-Information.aspx
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SWINE FLU SHOT PROTECTION? MAYBE BY THANKSGIVING
WHDH.com
August 25, 2009

"It will likely be Thanksgiving before a significant number of Americans who get the swine flu vaccine are protected, health officials said Monday.

Roughly 50 million doses of vaccine are expected to be available by mid-October. But for those who get initial doses right away, that will only mark the beginning of a vaccination process that will take five or more weeks.

Here's why: Health officials believe most people will need two shots, spaced three weeks apart, and it will take a week or two after the second dose before immunity kicks in. That's five or six weeks in all.

That means large numbers of Americans won't be fully immunized until Thanksgiving, said U.S. Health and Human Services Secretary Kathleen Sebelius, speaking to reporters in Atlanta."

The full article can be found at: http://www3.whdh.com/news/articles/national/BO122639/
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EXPERIMENTAL DRUG HELPS SAVE CRITICAL SWINE FLU VICTIM
By Grant McArthur
AdelaideNow
August 19, 2009

"GIVEN virtually no hope of survival, Ivan Luong has stunned doctors after recovering from swine flu with the help of a world-first experimental drug.

As the 20-year-old left intensive care last night following a marathon 38 days – including 31 on breathing machines – a team from Melbourne's The Austin hospital were still coming to terms with how they had saved the chronic asthmatic.

After arriving at the hospital on July 10, Mr Luong's lungs became so full of mucus they were almost solid, going from about 200g to more than 1kg and having no chance of passing oxygen into his blood.

Efforts to sustain him on traditional ventilators literally blew Mr Luong's lungs apart - causing air to fill his chest cavity and place pressure on his heart as well as dangerous pockets of air under his skin.

As his condition worsened an examination of the student's stomach revealed it had shut down, meaning the Tamiflu needed to fight off swine flu could not be digested.

With an intravenous drip the only way of getting medication into Mr Luong, the team decided to try a liquid form of flu drug Relenza – a highly experimental formula not registered anywhere in the world, which had to be flown in from the U.S. where it had been produced for clinical trials unrelated to swine flu."

The full article can be found at: http://www.news.com.au/adelaidenow/story/0,22606,25950004-5006301,00.html
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HK RESEARCHERS PROPOSE HARVESTING CONVALESCENT PLASMA TO FIGHT NEW FLU
Xinhua
August 26, 2009

"A team of researchers from the University of Hong Kong on Wednesday proposed harvesting convalescent plasma from recovered patients to treat patients with severe infections of influenza A/H1N1.

The convalescent plasma contains hyperimmune intravenous immunoglobulin, or H-IVIG, and experience from the 1,918 H1N1 flu pandemic and case reports on the treatment for severe H5N1 infections showed that such plasma was useful, the researchers said.

"Mice experiments also showed that antibody therapy was highly effective in the case of H5N1 infection," the researchers told reporters."

The full article can be found at: http://news.xinhuanet.com/english/2009-08/26/content_11948637.htm
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DEFENSE OFFICIALS PREPARE FOR H1N1 FLU
By Katherine McIntire Peters
GovernmentExecutive.com
August 26, 2009

"While the Health and Human Services Department works out plans for immunizing millions of Americans against the H1N1 flu virus, Defense officials are working on a parallel track to protect service members and mitigate the flu's effect on military operations.

"We'll be getting vaccine the same time the highest priority groups are receiving their vaccine," said Army Lt. Col. (Dr.) Wayne Hachey, director of preventive medicine and surveillance in the Office of the Assistant Secretary of Defense for Health Affairs.

That likely will be in October. In the meantime, military officials are working to contain the virus by isolating infected troops and using antiviral drugs whenever H1N1 is detected. All the services screen personnel before they deploy overseas and when they arrive at their destination. Earlier this summer, several dozen infected troops en route to Iraq were held in isolation in Kuwait until they were no longer contagious, Hachey said."

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"The Defense Department is purchasing its own supply of vaccine through HHS to meet military operational requirements. Department officials have ordered 2.7 million doses, which they expect will enable them to vaccinate 1.35 million people. Health officials estimate individuals will require two doses of vaccine to be protected, although that assumption could change if the virus evolves in unexpected ways or becomes more virulent, Hachey said.

While all military personnel on active duty or reservists activated for service will be vaccinated, troops and some key civilians determined most vulnerable will receive the vaccine first, including those deployed on missions overseas, recruits in training, sailors and Marines aboard ships that are at sea, and health workers.

"Any place where we take people and cluster them pretty tightly and put them under stressful conditions, those are the people we want to protect first" because they are subject to the highest rates of transmission, he said.

Military dependents will receive H1N1 vaccine under a separate distribution program managed by HHS through supplies provided to states based on population data. Access to vaccine among military family members living on bases will be the same as it is in civilian communities, with priority given to health care workers and the most vulnerable groups, including pregnant women and children."

The full article can be found at: http://www.govexec.com/story_page.cfm?articleid=43475&dcn=todaysnews
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H1N1 VACCINE TAKES OFF
By David Lewkowict
Foxnews.com
August 28, 2009

"Atlanta based AeroClinic announced it will start offering the H1N1 flu shot to travellers at a series of concourse based kiosks at Hartsfield Jackson International Airport.

AeroClinic will have seven location set-up to offer the vaccine as soon as it becomes available. Starting September 15 the privately held company will begin offering the seasonal flu vaccine."

The full article can be found at: http://liveshots.blogs.foxnews.com/2009/08/28/h1n1-vaccine-takes-off/
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PANDEMIC VIRUS COULD GET NASTIER IN YEAR TWO
Agence France-Presse
August 27, 2009

"The swine flu is unlikely to become more virulent as it spreads through the northern hemisphere this winter, but could re-emerge a year later in a more deadly form, a top expert said Thursday.

"We should get through the winter relatively easily, I don't think the virus will mutate before then," said John Oxford, a professor of virology at Britain's St Bartholomew's and the Royal London Hospital.

"There will be more people in hospital and more deaths, but essentially it will be the same virus we have experienced in the summer, just more of it," he told AFP in an interview.

After winter has passed, however, the pressures of natural selection could favour the emergence of more deadly strains of the A(H1N1) virus, Oxford explained."

The full article can be found at: http://www.france24.com/en/20090827-pandemic-virus-could-get-nastier-year-two
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ADJUVANT IS NECESSARY FOR A ROBUST IMMUNE RESPONSE TO A SINGLE DOSE OF H1N1 PANDEMIC FLU VACCINE IN MICE
By Philip R. Dormitzer, Rino Rappuoli, Daniele Casini, Derek O'Hagan, Celene Runham, et. al.
PloS Currents – Influenza
August 31, 2009

"Pandemic H1N1 influenza vaccine antigens are currently being manufactured. The MF59 adjuvant has an established safety profile in humans and a proven ability to increase responses to some influenza vaccines in humans. To inform initial decisions on the use of these vaccine components to protect human populations, we have immunized mice with MF59-adjuvanted or non-adjuvanted pandemic influenza vaccine. Immunizing unprimed mice with a single dose of MF59-adjuvanted vaccine elicits functional antibody titers equivalent to those associated with protection of humans from seasonal influenza. Without adjuvant, two doses are required for a robust antibody response. Unadjuvanted vaccines with 0.5 and 1 microgram of antigen elicit equivalent titers. These data support including MF59 in pandemic flu vaccines to rapidly protect young adults and children, who may have little or no previous exposure to influenza infection or immunization."

The full article can be found at: http://knol.google.com/k/philip-r-dormitzer/adjuvant-is-necessary-for-a-robust/uhahw99c63lg/1?collectionId=28qm4w0q65e4w.1&position=3
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COLOMBIAN PRESIDENT HAS SWINE FLU
By Vivian Sequera
The Associated Press in The Independent (UK)
September 01, 2009

"South American leaders who met the Colombian President, Alvaro Uribe, at a summit on Friday have been advised that he has swine flu.

Mr Uribe, 57, began feeling ill at the meeting in Bariloche, Argentina. He was confirmed as having swine flu after returning home, Social Protection Minister Diego Palacio said. Mr Uribe, a key US ally, is not considered a high-risk patient and will continue working from his computer."

The full article can be found at: http://www.independent.co.uk/news/world/americas/colombian-president-has-swine-flu-1779894.html
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