

29 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 #80

1. U.S. TROOPS USE THE INFECTIGUARD HAND SANITIZER: *"The line of hand sanitizer products known for effectively killing germs without harsh drying effects to the hands will be offered at all Army and Airforce bases across the globe, just in time for what experts promise will be a particularly early and difficult cold and flu season."*

2. PATHOGENESIS AND TRANSMISSION OF SWINE-ORIGIN 2009 A(H1N1) INFLUENZA VIRUS IN FERRETS: *"These data suggest that the 2009 A(H1N1) influenza virus has the ability to persist in the human population, potentially with more severe clinical consequences.."*

3. FLU BOOSTS HEART-ATTACK RISK, SAYS STUDY: *"Heart problems may account for a huge share of deaths from influenza, according to a study published on Tuesday that recommends cardiac patients be vaccinated against flu."*

4. PREPANDEMIC H5N1 INFLUENZA VACCINE ADJUVANTED WITH AS03: A REVIEW OF THE PRE-CLINICAL AND CLINICAL DATA: *"The AS03-adjuvanted prepandemic H5N1 influenza vaccine allows for antigen sparing, has a good safety and acceptable reactogenicity profile, induces an immune response that not only meets all European Committee for Medicinal Products (CHMP) and FDA requirements for the vaccine strain but also generates neutralizing antibodies that broadly cross-react against H5N1 drift strains, and finally conveys protection in a ferret model against lethal challenges with homologous and heterologous H5N1 viruses."*

5. COMBINING MOLECULAR DYNAMICS WITH BAYESIAN ANALYSIS TO PREDICT AND EVALUATE LIGAND-BINDING MUTATIONS IN INFLUENZA HEMAGGLUTININ: *"Our analysis of ligand dissociation provides a means to evaluate mutants prior to experimental mutagenesis and testing and constitutes an important step toward understanding the determinants of ligand binding by H5N1 influenza'."*

6. HAND GEL REMOVED AFTER PRISONERS MAKE HOOCH: *"Inmates at HMP The Verne on the Isle of Portland in Dorset were drinking the gel for its alcohol content after it was put on a wing to stop the spread of swine flu."*

7. AMA CREATES NEW CPT CODES FOR H1N1 FLU IMMUNIZATIONS: *"With both seasonal influenza and H1N1 influenza circulating this flu season, the American Medical Association (AMA) today announces it has expedited the publication of a new code specific to vaccine administration and revised existing code 90663 to include the H1N1 vaccine."*

8. WHO: CERTAIN H1N1 CASES MAY PREDICT ANTIVIRAL RESISTANCE: *"While antiviral-resistant H1N1 influenza viruses remain rare, clinicians should watch for two particular kinds of H1N1 cases that seem more likely to give rise to viruses resistant to oseltamivir (Tamiflu), the World Health Organization (WHO) said today."*

9. OFFICIALS PONDER DISCONNECTING VENTILATORS FROM SOME PATIENTS IN SEVERE FLU OUTBREAK: *"The plans have been drawn up to give doctors specific guidelines for extreme circumstances, and they include procedures under which patients who weren't improving would be removed from life support with or without permission of their families."*

CB Daily Report

Chem-Bio News

U.S. TROOPS USE THE INFECTIGUARD HAND SANITIZER

The Medical News
September 28, 2009

“Combating germs just took on a whole new meaning. Infectiguard Hand Sanitizer from Dr. Fresh Inc. has begun active duty as hand sanitizer to U.S. troops worldwide. The line of hand sanitizer products known for effectively killing germs without harsh drying effects to the hands will be offered at all Army and Airforce bases across the globe, just in time for what experts promise will be a particularly early and difficult cold and flu season.”

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“Infectiguard Hand Sanitizer does double duty killing germs and counterbalancing the drying effects of alcohol with moisturizing botanicals and vitamins. It contains 62% alcohol to effectively kill germs, along with aloe vera, vitamin E and other moisturizing ingredients. Unlike other hand sanitizers that have harsh and drying effects on hands, the pH neutral formula leaves hands hydrated, but never sticky. The base stores will carry a wide variety of Infectiguard sizes and formats, ranging from pump bottles, individually wrapped wipes, and portable sprays with carabineer clips, perfect for duty in the field.”

The full article can be found at: <http://www.news-medical.net/news/20090928/US-troops-use-the-Infectiguard-Hand-Sanitizer.aspx>

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PATHOGENESIS AND TRANSMISSION OF SWINE-ORIGIN 2009 A(H1N1) INFLUENZA VIRUS IN FERRETS

Biotech Week
September 16, 2009

“Replication of seasonal A(H1N1) virus was confined to the nasal cavity of ferrets, but the 2009 A(H1N1) influenza virus also replicated in the trachea, bronchi, and bronchioles. Virus shedding was more abundant from the upper respiratory tract for 2009 A(H1N1) influenza virus as compared with seasonal virus, and transmission via aerosol or respiratory droplets was equally efficient.”

“These data suggest that the 2009 A(H1N1) influenza virus has the ability to persist in the human population, potentially with more severe clinical consequences..”

The full article can be found at: (V.J. Munster, et. al., “Pathogenesis and Transmission of Swine-Origin 2009 A(H1N1) Influenza Virus in Ferrets”. Science, 2009;325(5939):481-483). Link not available.

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FLU BOOSTS HEART-ATTACK RISK, SAYS STUDY

Physorg.com
September 21, 2009

“Heart problems may account for a huge share of deaths from influenza, according to a study published on Tuesday that recommends cardiac patients be vaccinated against flu.”

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“The paper, published in the journal The Lancet Infectious Diseases, reviews mortality figures for acute myocardial infarction -- a sudden heart attack -- and cardiovascular disease during outbreaks of flu

between 1932 and 2008.

The current pandemic H1N1 virus was not included in the snapshot.

Between 35 and 50 percent of the increase in deaths recorded during influenza outbreaks could be attributed to cardiovascular problems, it says.

The authors, led by infectious disease epidemiologists Charlotte Warren-Gash and Andrew Hayward at University College London, say the flu virus causes inflammation and acts on the molecular pathways that control blood coagulation.

These effects could destabilise fatty deposits that line the arterial wall and cause clots that block coronary arteries, they say.

Only a few investigations have been carried out into whether flu vaccination helps protect cardiac patients, but the little evidence available suggests it does, the paper says.

"We believe influenza vaccination should be encouraged wherever indicated, especially in those people with existing cardiovascular disease," it says."

The full article can be found at: <http://www.physorg.com/news172779555.html>

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PREPANDEMIC H5N1 INFLUENZA VACCINE ADJUVANTED WITH AS03: A REVIEW OF THE PRE-CLINICAL AND CLINICAL DATA

Medicine & Law Weekly
September 25, 2009

"The AS03-adjuvanted prepandemic H5N1 influenza vaccine allows for antigen sparing, has a good safety and acceptable reactogenicity profile, induces an immune response that not only meets all European Committee for Medicinal Products (CHMP) and FDA requirements for the vaccine strain but also generates neutralizing antibodies that broadly cross-react against H5N1 drift strains, and finally conveys protection in a ferret model against lethal challenges with homologous and heterologous H5N1 viruses."

The full article can be found at: (G. Lerouxroels, et. al., "Prepandemic H5N1 influenza vaccine adjuvanted with AS03: a review of the pre-clinical and clinical data". Expert Opinion on Biological Therapy, 2009;9(8):1057-1071). Link not available.

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COMBINING MOLECULAR DYNAMICS WITH BAYESIAN ANALYSIS TO PREDICT AND EVALUATE LIGAND-BINDING MUTATIONS IN INFLUENZA HEMAGGLUTININ

Virus Weekly
September 29, 2009

"Influenza virus attaches to and infects target cells via binding of cell-surface glycans by the viral hemagglutinin. This binding specificity is considered a major reason why avian influenza is typically poorly transmitted between humans, while swine influenza is better transmitted due to glycan similarity between the human and swine upper respiratory tract."

"Predicting mutations that control glycan binding is thus important to continued surveillance against new pandemic influenza strains. We have designed a molecular-dynamics approach for scoring potential mutants with predictive power for both receptor-binding-domain and allosteric mutations similar to those identified from clinical isolates of avian influenza. We have performed thousands of simulations of

17 different hemagglutinin mutants totaling >1 ms in length and employ a Bayesian model to rank mutations that disrupt the stability of the hemagglutinin-Ligand complex. Based on our simulations, we predict a significantly increased $k(\text{off})$ for seven of these mutants. This means of using molecular dynamics analysis to make experimentally verifiable predictions offers a potentially general method to identify ligand-binding mutants, particularly allosteric ones."

"Our analysis of ligand dissociation provides a means to evaluate mutants prior to experimental mutagenesis and testing and constitutes an important step toward understanding the determinants of ligand binding by H5N1 influenza'."

The full article can be found at: (P.M. Kasson, et. al., "Combining Molecular Dynamics with Bayesian Analysis To Predict and Evaluate Ligand-Binding Mutations in Influenza Hemagglutinin". Journal of the American Chemical Society, 2009;131(32):11338+). Link not available.

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HAND GEL REMOVED AFTER PRISONERS MAKE HOCH

By Lesley Richardson
The Independent (UK)
September 24, 2004

"Hand gel was banned from a prison after inmates got high and started a fight, it was revealed today.

Inmates at HMP The Verne on the Isle of Portland in Dorset were drinking the gel for its alcohol content after it was put on a wing to stop the spread of swine flu.

Peter McParlin, area representative for the Prison Officers Association (POA), said they were making "hooch" from it.

He criticised senior management at the prison for giving inmates access to the alcoholic gel.

"They would have been advised to listen to the local POA committee in the first place who raised concerns as to whether it was wise to put this gel with an alcoholic content within access to the inmates," he said.

"It was most unwise. The local committee at The Verne raised this specific point with senior management at The Verne, including the Governor.

"We raised concerns whether prisoners would be able to adulterate it and add fruit and water and sugar to make it into what is known in prison parlance as "hooch".

"The local committee were assured senior management had looked into this and that could not happen but clearly their advice was wrong."

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"Dorset County Hospital in Dorchester removed the gels from the entrance after vagrants were caught drinking from dispensers."

The full article can be found at: <http://www.independent.co.uk/news/uk/crime/hand-gel-removed-after-prisoners-make-hooch-1792594.html>

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AMA CREATES NEW CPT CODES FOR H1N1 FLU IMMUNIZATIONS

Infection Control Today Magazine

September 28, 2009

“With both seasonal influenza and H1N1 influenza circulating this flu season, the American Medical Association (AMA) today announces it has expedited the publication of a new code specific to vaccine administration and revised existing code 90663 to include the H1N1 vaccine.”

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“In consultation with the U.S. Department of Health and Human Services, the AMA CPT Editorial Panel created code 90470 to report H1N1 immunization administration and counseling. Code 90663 was revised by the CPT Editorial Panel to refer specifically to the H1N1 vaccine product. Both, revised code 90663 and Category I CPT Code 90470 are effective immediately.”

The full article can be found at: <http://www.infectioncontroltoday.com/hotnews/cpt-codes-for-h1n1-influenza.html>

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WHO: CERTAIN H1N1 CASES MAY PREDICT ANTIVIRAL RESISTANCE

By Robert Roos

CIDRAP News (Center for Infectious Disease Research & Policy – University of Minnesota)

September 25, 2009

“While antiviral-resistant H1N1 influenza viruses remain rare, clinicians should watch for two particular kinds of H1N1 cases that seem more likely to give rise to viruses resistant to oseltamivir (Tamiflu), the World Health Organization (WHO) said today.

So far, 28 oseltamivir-resistant viruses have been detected worldwide, the WHO said in today's statement. Twelve of these were linked to use of the drug for postexposure prophylaxis, and 6 were in patients who had severe immunosuppression. Four more cases involved other patients being treated with the drug, and 2 patients were not on the drug.

In view of the findings, the WHO urged clinicians to watch for resistance in:

- * Patients with severely compromised or suppressed immune systems who have prolonged H1N1 illness and have received oseltamivir (especially if for a long time) but still have evidence of viral replication

- * People who receive preventive oseltamivir after exposure to another infected person but then get sick anyway

“In both of these clinical situations, health care staff should respond with a high level of suspicion that oseltamivir resistance has developed,” the WHO said. “Laboratory investigation should be undertaken to determine whether resistant virus is present, and appropriate infection control measures should be implemented or reinforced to prevent spread of the resistant virus.”

The agency also recommended conducting epidemiologic investigations in such situations to find out if a resistant virus has spread to anyone else.”

The full article can be found at:

<http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news/sep2509antiviral.html>

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OFFICIALS PONDER DISCONNECTING VENTILATORS FROM SOME PATIENTS IN SEVERE FLU OUTBREAK

By Sherri Fink

ProPublica.org in The Seattle Times

September 23, 2009

“With scant public input, state and federal officials are pushing ahead with plans that -- during a severe flu outbreak -- would deny use of scarce ventilators by some patients to assure they would be available for patients judged to benefit the most from them.

The plans have been drawn up to give doctors specific guidelines for extreme circumstances, and they include procedures under which patients who weren't improving would be removed from life support with or without permission of their families.

The plans are designed to go into effect if the U.S. were struck by a severe flu pandemic comparable to the 1918 outbreak that killed an estimated 50 million people worldwide. State and federal health officials have concluded that such a pandemic would sicken far more people needing ventilators than could be treated by the available supplies.

Many of the draft guidelines, including those drawn up by the Veterans Health Administration, are based in part on a draft plan New York officials posted on a state web site two years ago and subsequently published in an academic journal. The New York protocol, which is still being finalized, also calls for hospitals to withhold ventilators from patients with serious chronic conditions such as kidney failure, cancers that have spread and have a poor prognosis, or "severe, irreversible neurological" conditions that are likely to be deadly.

New York officials are studying possible legal grounds under which the governor could suspend a state law that bars doctors from removing patients from life support without the express consent of the patient or his or her authorized health agent.

State and federal officials involved with drafting the plans say they have been disquieted by this summer's uproar over whether Medicare should pay for end-of-life consultations with families. They acknowledged that the measures under discussion go far beyond anything the public understands about how hospitals might handle a severe pandemic.”

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“In recent months, New York officials have met three times with physicians, respiratory therapists and administrators to rehearse how their plan might play out in hospitals in a severe epidemic. In one of those "tabletop exercises," participants suggested that the names of triage officers charged with making life and death choices among patients at each hospital should be kept secret. The secrecy would be needed, participants said in interviews, to avoid pressure and blame from colleagues caring for patients who were selected to be taken off life support.

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“Problems were immediately apparent. Dr. Kenneth Prager, a professor of medicine and director of clinical ethics at Columbia University Medical Center, was concerned about the lack of awareness of the plan among the larger public and the majority of the medical community. Societal input "is totally absent," he said. "Maybe society will say, 'We don't agree with your plan. You may think it's ethically OK; we don't.'"

The protocol, he said, would also place a great burden on clinicians charged with selecting which patients would be removed from life support. "We facetiously dubbed them the 'death squad' or the 'guys in the back room'," Prager said. He envisioned family members breaking down and screaming when they found out their loved ones would be disconnected from ventilators. "That's the horror show of it. It really is a nightmare."

Even so, he felt that the plan -- and its effort to save the greatest number of patients -- was ethically appropriate. "If we don't use triage, people will die who would have otherwise been saved," he said, because a number of ventilators are "being used to prolong the dying process of patients with virtually no chance of surviving."

The full article can be found at:

http://seattletimes.nwsourc.com/html/health/2009930043_propublicaflu23.html

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