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WEEKLY SYNTHESIS OF SURVEILLANCE INFORMATION, LITERATURE & GOVERNMENT UPDATES

(WEEK 27- ENDING IN JULY 17, 2009)

CASE COUNTS:
As of July 20, 2009, over 120 countries have officially reported 139,566 cases of influenza A (H1N1) infection, including 781 deaths. Please see hyperlinks in table for most up to date case counts.

COUNTRIES/PROVINCES	CASE COUNTS	DEATHS	HOSPITALIZATIONS
CANADA (PHAC)	**10,156**	**45**	**1,115**
- BC	382	1	**14**
- AB	1,348	3	87
- SK	859	3	11
- MB	831	6	201
- ON	**3,636**	**15**	**266**
- QC	2,259	17	488
- NB	42	0	1
- NS	330	0	8
- PEI	5	0	1
- NL	44	0	0
- Yukon	1	0	0
- NWT	14	0	0
- Nunavut	405	0	38
U.S. (CDC)	**40,617**	263	
E.U. and EFTA (ECDC)	16,969	33	
Mexico	13,646	125	
Chile	10,926	40	
Argentina	**3,056**	**137**	
Australia	13,178	32	
New Zealand	2,368	10	
TOTAL	**139,566**	**781**	

Note: PHAC numbers updated last at 3:00pm (EST) on July 15; CDC numbers updated last at 11:00 am on July 17; ECDC numbers updated last at 5:00 pm (CEST) on July 20 2009.

NOTE: Testing parameters are influenced by the most current knowledge of the H1N1 virus and risk groups. Therefore, the frequency of laboratory tests conducted and the risk groups that are being tested may change over time.

DEATHS AMONG NOVEL H1N1 INFLUENZA A VIRUS, APRIL 13-JULY 13, 2009

- 16 deaths have been reported, representing a population-based mortality rate of 0.1 deaths per 100,000 population.
- Almost all of these fatalities were hospitalized prior to death (81%).
- Age of fatal cases ranged from 6 to 81 years of age; median is 58 years and average is 54 years.
- Among confirmed cases that have died, 13 or 81% had underlying chronic medical conditions compared to 53% of hospitalized cases.

HOSPITALIZATIONS AMONG NOVEL H1N1 INFLUENZA A VIRUS CASES

As of July 16, 2009 in Ontario:

- 277 confirmed cases have been hospitalized to date, also representing a population-based hospitalization rate of 2.1 hospital admissions per 100,000 population in Ontario.
- Of these, 233 cases have been discharged.
- The average length of stay was less than 24 hours to 41 days.
- Among cases that are currently or have previously been hospitalized, a number of complex medical conditions have been reported (for example, COPD, kidney disease, heart disease diabetes, etc).
- 89% of cases that were discharged had a length of stay of at least 2 days
- 44 cases are currently hospitalized

Hospitalization Status	Ventilator and/or ICU	Not in ICU and not on ventilator	Total
Number of Currently Hospitalized	24	20	44
Number of Hospitalized and Discharged	17	215	232
Total hospitalized to date	41	235	276*

Source: MOHLTC Ontario Influenza Bulletin, iPHIS data as of 8:30 am, July 16, 2009.
* Excludes case with a length of stay of less than 24 hours

Hospitalization Status	Hospitalized Cases*	Non-hospitalized Cases	Total Cases
Less than 20 years	140	2112	2252
Greater than or equal to 20 years	136	1405	1541
Total	276	3517	3793

Source: MOHLTC, iPHIS data as of 8:30 am, July 16, 2009. Age was unknown for 11 cases

MOHLTC: Ontario Influenza Bulletin 2008-2009 Season. Surveillance Week 27 (July 05-July 11, 2009).
http://www.health.gov.on.ca/english/providers/program/pubhealth/flu/flu_08/bulletins/flu_bul_01_20090711.pdf

Government Updates

Centre for Disease Control (CDC)

July 17, 2009: CDC H1N1 flu surveillance update. 40,617 confirmed cases and 263 deaths. The site can be found at:
http://www.cdc.gov/h1n1flu/update.htm

Weekly Flu View Map and Surveillance Report for Week Ending July 11, 2009
Map includes both seasonal flu and H1N1 flu activity. During week 27, (July 05—July 11 2009), influenza activity decreased in the US, however there are still higher levels of ILI than is normal for this time of year. Approximately 99% of all influenza A subtyped viruses being reported to CDC this week are influenza A H1N1 virus. The proportion of deaths attributed to pneumonia and influenza (P&I) was below the epidemic threshold. One influenza-associated pediatric death was reported and was associated with novel influenza A (H1N1) virus infection. The proportion of outpatient visits for influenza-like illness (ILI) was below national and region-specific baseline levels.
http://www.cdc.gov/flu/weekly/

July 16, 2009: CDC Home Care Guidance: Physician Directions to Patient or Parent
http://www.cdc.gov/h1n1flu/guidance_homecare_directions.htm

July 14, 2009: 10 Steps You Can Take: Actions for Novel H1N1 Influenza Planning and Response for Medical Offices and Outpatient Facilities.
It is critical to assure that medical offices and other outpatient facilities (e.g., outpatient/ambulatory clinics, outpatient surgery centers, urgent care centers, physical therapy/rehabilitation offices or clinics) that provide routine, episodic, and/or chronic healthcare services can manage an increased demand for services in the midst of a novel H1N1 influenza outbreak. The CDC has provided steps in planning and responding to the novel H1N1 influenza.
http://www.cdc.gov/h1n1flu/10steps.htm

July 09, 2009: CDC Health Alert Network (HAN) Info Service Message: Three Reports of Oseltamivir Resistant Novel Influenza A (H1N1) Viruses
http://www.cdc.gov/h1n1flu/HAN/070909.htm

Public Health Agency of Canada (PHAC)

July 17, 2009: Canada releases new H1N1 outbreak guidelines for closed facilities.
Minister of Health Leona Aglukkaq, and Canada's Chief Public Health Officer, Dr. David Butler-Jones, announced that new guidelines on outbreaks of H1N1 in closed facilities have been posted and distributed to stakeholders. Closed facilities include long term care facilities and correctional facilities for young adults. The Public Health Agency of Canada has also released updated guidelines on clinical care in primary care facilities such as hospitals and clinics.
http://www.phac-aspc.gc.ca/media/nr-rp/2009/2009_0717-eng.php

FluWatch Week 27 (July 05-11, 2009)
The overall influenza activity level remains high for this time of the year, but has been decreasing compared to the previous weeks (for the fourth consecutive week). There was almost a 21% increase in the reported number of hospitalized Pandemic (H1N1) 2009 cases this week.
http://www.phac-aspc.gc.ca/fluwatch/08-09/w27_09/index-eng.php

WORLD HEALTH ORGANIZATION (WHO)

July 16, 2009: Changes in reporting requirements for pandemic (H1N1) 2009 virus infection.
The WHO will no longer issue the global tables showing the numbers of confirmed cases for all countries. However, as part of continued efforts to document the global spread of the H1N1 pandemic, regular updates will be provided describing the situation in the newly affected countries. WHO will continue to request that these countries report the first confirmed cases and, as far as feasible, provide weekly aggregated case numbers and descriptive epidemiology of the early cases.
http://www.who.int/csr/disease/swineflu/notes/h1n1_surveillance_20090710/en/index.html

July 10, 2009: Interim WHO guidance for the surveillance of human infection with A(H1N1) virus
http://www.who.int/csr/disease/swineflu/WHO_case_definition_swine_flu_2009_04_29.pdf

EUROPEAN CENTRE FOR DISEASE PREVENTION & CONTROL (ECDC)

July 20, 2009: Managing schools during the current A(H1N1) 2009-10 pandemic – Reactive and proactive school closures in Europe
Proactive school closures, that is, closing schools ahead of a pandemic arriving in an area, is a public health measure that has been commonly suggested for mitigating the impact of pandemics.
http://ecdc.europa.eu/en/health_content/phdev/090720_ph.aspx

July 20, 2009: ECDC Interim Risk Assessment
The interim ECDC risk assessment for Europe is that the 2009 pandemic influenza A (H1N1) virus will continue to spread, but many uncertainties remain. Though it seems that most of those infected in the US and in Europe experience a mild and self-limiting infection, this picture is still unclear as there has not been enough transmission to judge the effects, especially in those more at risk.
http://ecdc.europa.eu/en/files/pdf/Health_topics/090720_Influenza_A(HINI)_Risk_Assessment.pdf

July 17, 2009: Protocols for cohort database studies to measure influenza vaccine effectiveness in the EU and EEA Member States
The generic study protocols presented in this document summarize all relevant methodological issues related to conducting cohort database studies aimed at measuring vaccine effectiveness for seasonal and A(H1N1)v influenza. All protocols were developed as part of an ECDC project entitled I-MOVE (Influenza Monitoring of Vaccine Effectiveness). Based on these protocols, a number of specific studies will be

conducted during the current influenza A (H1N1)v virus pandemic.
http://www.ecdc.europa.eu/en/files/pdf/Publications/Measuring_influenza_vaccine_effectiveness_Protocol_cohort_database_studies.pdf

July 17, 2009: Protocols for case-control studies to measure influenza vaccine effectiveness in the EU and EEA Member States
This publication presents the core European protocol for a series of proposed influenza vaccine effectiveness studies. The protocol includes a proposed plan for pooled analysis and has recently been adapted to measure vaccine effectiveness for the pandemic vaccine in 2009-10.
http://www.ecdc.europa.eu/en/files/pdf/Publications/Measuring_influenza_vaccine_effectiveness_Protocol_case_control_studies.pdf

HEALTH/SURVEILLANCE BULLETINS:

Countries reporting first case(s) of pandemic H1N1

July 17, 2009: Sudan - Sudan's health ministry yesterday reported the country's first pandemic H1N1 influenza cases, Reuters reported. The patients are two Sudanese men who arrived on a flight from Britain on Jul 13. They are reportedly recovering from their illnesses.
http://www.reuters.com/article/africaCrisis/idUSHEA670400

July 16, 2009: Haiti - Haiti has confirmed its first three novel H1N1 flu cases. Two cases are in Chilean soldiers serving in the United Nations Stabilization Mission for Haiti, and the third involves a 23-year-old Haitian who has not been outside the country. The two soldiers entered Haiti early this month. All three patients were in stable condition. Samples from 61 people are being tested in foreign laboratories, stated by Health Minister Alex Larsen.
http://news.xinhuanet.com/english/2009-07/16/content_11716451.htm

July 15, 2009: Tonga - The South Pacific archipelago of Tonga has reported its first two cases of novel H1N1 flu. Blood tests conducted in Australia confirmed the illness in two women, one a resident and the other a visitor from Brisbane, Australia.
http://www.radioaustralianews.net.au/stories/200907/2626692.htm?desktop

Southern Hemisphere

Australia

July 20, 2009: Total confirmed cases as of 1200 AEST are 13,178; Total deaths associated with pandemic H1N1 influenza is 32. Currently, there are 224 hospitalized cases of pandemic H1N1 and 95 of these are in ICUs. The total number of hospitalizations in Australia since H1N1 Influenza was identified is 1454.

Australia, New South Wales: Weekly Summary (as of July 15, 2009)
The latest 7-day count of 1200 presentations with ILI is nearly four times higher than the highest seasonal peak of the last 6 years. There was a 4-fold increase in the

presentations in ILI in the age groups 5-16 and 17-34 years compared with peak seasonal influenza activity in recent years. Australia has moved their pandemic planning phase to "Protect", in which testing parameters have changed to testing those with more severe illness who require hospitalization. As of July 15 2009, highest number of confirmed cases of pandemic H1N1 is in children aged 10-14 years. As of July 15, 2009, there were 412 confirmed H1N1 hospitalized cases, 61 of those cases required ICU admission, and 36 o those have required mechanical ventilation.
http://www.emergency.health.nsw.gov.au/swineflu/resources/pdf/case_statistics_150709.pdf

New Zealand: Weekly Summary (July 06-12, 2009)
The report describes the continuing sharp increase in ILI through the sentinel surveillance. The highest ILI consultation rates have been reported among children and teenagers between the ages of 0-19 years. The current ILI rate of influenza is higher than at the same time last year. A total of 26 Influenza A H1N1 viruses have been tested for oseltamivir-resistant by ether phenotypic assay or a molecular assay and all 26 have come back positive.
http://www.surv.esr.cri.nz/PDF_surveillance/Virology/FluWeekRpt/2009/FluWeekRpt200928.pdf

South America & the Americas

Highlights of the high-level Cancun H1N1 meeting, from PAHO
High-level officials including health ministers from Mexico, the United States, Canada, and 40 other countries discussed pandemic preparedness and lessons learned from the 2009 Influenza pandemic at a summit hosted by Mexican President Felipe Calderon in Cancun July 2-3.
http://new.paho.org/hq/index.php?option=com_content&task=view&id=1577&Itemid=1

PAHO Pandemic H1N1 epidemiology summary last updated July 10, 2009.
As of July 10, 2009; 76,761 confirmed cases of Influenza A H1N1 2009 infection, including 505 deaths, have been notified in 31 countries of the Americas.
See PAHO link for more information.
http://new.paho.org/hq/index.php?option=com_content&task=view&id=1574&Itemid=1167

July 16, 2009: South American health ministers meet to coordinate pandemic response. Health ministers from six South American countries met yesterday in Buenos Aires, Argentina, to coordinate responses to the H1N1 pandemic. Besides Argentina, the meeting included Bolivia, Brazil, Chile, Paraguay, and Uruguay. Ministers said the countries need to share medicine and supplies, and they voiced concern about access to vaccines. Argentina has had 137 deaths, second highest toll after the United States.
http://www.terradaily.com/reports/South_American_nations_meet_on_stemming_swine_flu_999.html

July 15, 2009: Pandemic forces postponement of surgeries in Chile
Five thousand surgeries were postponed in Chile last week to free up hospital beds for patients with H1N1 flu. The number of delayed procedures could rise to 20,000 over the next few weeks as the country continues to battle the pandemic.

http://www.santiagotimes.cl/santiagotimes/index.php/2009071016649/news/health-science-news/swine-flu-delays-5000-operations-in-chile.html

July 2009: White paper on H1N1, from Massachusetts Institute of Technology (MIT) *(John M. Barry)*

This paper provides a relatively in-depth understanding of the problem and the issues of the pandemic H1N1 virus and the current developments.
http://esd.mit.edu/wps/2009/esd-wp-2009-07.pdf

CENTER FOR INFECTIOUS DISEASE RESEARCH AND POLICY (CIDRAP)

July 20, 2009: Security guards to protect Tamiflu depots in Britain
Security guards will be used to protect oseltamivir (Tamiflu) supplies when more than 100 distribution centers are set up in the United Kingdom this week. The location of the centers will be kept secret until they are set to open. Richard Hampton of the National Health Service said there is concern about theft and the safety of workers at the centers.
http://www.metro.co.uk/news/article.html?Guards_to_protect_swine_flu_drug_depots&in_article_id=705817&in_page_id=34&ito=newsnow

July 20, 2009: Air carriers list restrictions on suspected H1N1 patients
Two British air carriers, British Airways and Virgin Atlantic, announced they would increase restrictions on passengers with suspected H1N1 infections. If a customer looks sick, the airport staff can call in a medical team for advice, the story said. If the medical team is concerned, the customer will be asked to produce a "fit-to-fly" certificate from a doctor or hospital.
http://www.abc.net.au/news/stories/2009/07/20/2630350.htm

July 17, 2009: Australian ob-gyn group urges pregnant women to wear mask**.**
The Royal Australian and New Zealand College of Obstetricians and Gynaecologists urged pregnant women to wear masks in public and "wash themselves scrupulously" after coming into contact with others. Ted Weaver, president of the group, said pregnant women should work at home if possible. "If it's not essential to go out, stay home," he said. The story said six pregnant women were fighting for their lives in intensive care units in Sydney.
http://www.theage.com.au/lifestyle/wellbeing/pregnant-women-told-to-don-masks-as-swine-flu-outbreak-worsens-20090717-dn9p.html

July 16, 2009: Canada says it can meet its own vaccine needs.
When vaccination against the novel H1N1 virus begins, Canada will be able to fill all of its vaccine needs within its borders, the Canadian Press reported yesterday. In 2001, Canada signed a contract with a vaccine maker that is now owned by GlaxoSmithKline that requires the company to be able to make pandemic vaccine for Canadians whenever needed. The contract was prompted by an incident during the 1976 swine flu outbreak, when Canada never got the vaccine it ordered from the United States.
http://www.google.com/hostednews/canadianpress/article/ALeqM5gHmjskDrW9P8WGnQ2XHa64Zs56CA

July 14, 2009: The California Nurses Association yesterday detailed the complaints of nurses at a Vallejo hospital about inadequate respiratory protection to care for patients with novel flu. They said the hospital had too few N95 masks, and the masks were not

properly fitted. Also, they said they were asked to reuse masks repeatedly and to wear surgical masks over the N95s. A hospital official told the Associated Press that only one employee had confirmed H1N1 flu and that the masks could be safely reused.
http://www.calnurses.org/media-center/press-releases/2009/july/nurses-file-cal-osha-complaint-after-hospital-refuses-to-supply-swine-flu-masks-for-units-with-infected-patients.html

JOURNALS SCANNED:

- American Journal of Public Health
- British Medical Journal
- Clinical Infectious Diseases
- Emerging Infectious Diseases
- Eurosurveillance
- JAMA (new this week)
- Journal of Infectious Diseases
- Lancet
- MMWR
- Nature
- New England Journal of Medicine
- PLoS One
- Proceedings of the National Academy of Sciences (new this week)
- Science

AMERICAN JOURNAL OF PUBLIC HEALTH

1) Pandemic Influenza and Pregnant Women: Summary of a Meeting of Experts *(Sonja A. Rasmussen et al. June 18, 2009)*
http://www.ajph.org/cgi/reprint/AJPH.2008.152900v2

Pandemic Influenza: Special Considerations for Pregnant Women was a meeting convened by the Centers for Disease Control and Prevention in 2008 to obtain input from experts and key partners regarding clinical management of pregnant women and related public health actions to be taken during a pandemic. The meeting focused on four main topics: prophylaxis and treatment with influenza antiviral and other medications, vaccine use, nonpharmaceutical interventions and health care planning, and communications. A review of available evidence to guide actions in each of these four areas was conducted, with recommendations for future research.

2) Pandemic Influenza and Pregnancy: An Opportunity to Reassess Maternal Bioethics *(Ruth M. Farrell and Richard H. Beigi. Jun 18, 2009)*
http://www.ajph.org/cgi/reprint/AJPH.2008.140780v2

Authors reviewed the important ethical challenges presented by pregnant women and highlighted the considerations for all vulnerable groups when planning for a pandemic at both the local and the national level.

BRITISH MEDICAL JOURNAL

1) Healthcare workers should get top priority for vaccination against A/H1N1 flu, WHO says *(John Zarocostas July 15, 2009)*
http://www.bmj.com/cgi/content/full/339/jul15_1/b2877

On the July 13th 2009, the WHO said that it is necessary that health workers be vaccinated against the H1N1 virus as "first priority" followed by high risk or vulnerable groups,as initially there will not be enough A/H1N1 vaccine for everyone.

2) Data on flu deaths are potentially misleading, say researchers *(Zosia Kmietowicz. July 15, 2009)*
http://www.bmj.com/cgi/content/full/339/jul15_1/b2881

Early data indicate that the A/H1N1 virus causes mild disease and has a case fatality ratio of around 0.5%. Researchers suggest three reasons why this ratio may not be accurate. Possible reasons include underestimation of the total number of deaths, the total number of cases may be underestimated as only the more severe cases are reported and the calculation of the case fatality ratio does not take account the time between infection and death.

3) Blog. Tom Nolan: Feeling the strain of swine flu *(Juliet Walker. July 16, 2009)*
http://blogs.bmj.com/bmj/2009/07/16/tom-nolan-feeling-the-strain-of-swine/

NHS Direct, the health hotline designed to take some of the strain away from GPs, received over 9,000 calls about swine flu on Tuesday – a swine flu record. One of the problems is that hundreds of well people are still calling the service with their questions about swine flu, despite there being another telephone number for this purpose.

CLINICAL INFECTIOUS DISEASES

- Nothing new on H1N1 since last week

EMERGING INFECTIOUS DISEASES

- Nothing new on H1N1 since last week

EUROSURVEILLANCE

1) Influenza A (H1N1) virus infections in Belgium, May-June 2009 *(Belgian Working Group on influenza A (H1N1). July 14, 2009)*
http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19270

This document outlines the H1N1 situation in Belgium to date. As of July 14, there were 633 people tested and 130 confirmed cases of H1N1 influenza A. For the first 43 cases, 35 had acquired the virus abroad. Cases of H1N1 influenza A that were acquired in Belgium were close contacts of those who acquired the virus abroad. The most affected group were those aged 20-29, with 16 cases. The most common symptoms were general discomfort and fever. No complications have been reported so far. On July 13, 2009, the Interministerial Influenza Coordination Committee in Belgium announced the switch to a mitigation strategy.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (JAMA) NEW THIS WEEK

1) Serum cross-reactive antibody response to a novel Influenza A (H1N1) Virus after vaccination with a seasonal influenza vaccine.
http://jama.ama-assn.org/cgi/content/full/302/3/249

CDC assessed the level of cross-reactive antibody to the novel influenza A (H1N1) virus in cohorts of children and adults before and after they had been vaccinated with the 2005-06, 2006-07, 2007-08, or 2008-09 influenza season vaccines. Among children and adults aged >60, vaccination for seasonal influenza did not elicit a cross-reactive antibody response. Among adults aged 18-64, vaccination for seasonal influenza resulted in a twofold increase in cross-reactive antibody response to novel influenza A (H1N1). It is unknown if this slight increase would provide protection against novel influenza A (H1N1) infection. These data suggest that receipt of recent (2005-2009) seasonal influenza vaccines is unlikely to elicit a protective antibody response to the novel influenza A (H1N1) virus.

JOURNAL OF INFECTIOUS DISEASES

1) Influenza in Hospitalized Adults: Gaining Insight into a Significant Problem (*Michael G. Ison)*
http://www.journals.uchicago.edu/doi/full/10.1086/600384

The author summarizes the Lee et al. study in this issue of Journal of Infectious Diseases and compares it to other similar retrospective studies regarding influenza among hospitalized adults. Taken together all of these studies help to understand differences between clinical presentation and course of influenza in ambulatory and hospitalized adults.

2) Viral Loads and Duration of Viral Shedding in Adult Patients Hospitalized with Influenza *(Nelson Lee et al.)*
http://www.journals.uchicago.edu/doi/full/10.1086/600383

Study investigators measured viral RNA concentrations prospectively in 147 hospitalized patients with influenza A (H3N2), to determine factors associated with viral loads and viral shedding. Major co-morbidities, advanced age and systemic corticosteroid use were associated with persistent viral RNA detection. Treatment with antiviral medication within the first 4 days of symptoms shortened the duration of viral RNA detection. Viral RNA clearance was associated with a shorter hospital stay.

LANCET

- Nothing new on H1N1 since last week

LANCET INFECTIOUS DISEASES

- Nothing new on H1N1 since last week

MORBIDITY AND MORTALITY WEEKLY REPORT (MMWR)

1) Dispatch - Intensive-Care Patients With Severe Novel Influenza A (H1N1) Virus Infection - Michigan, June 2009.
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm58d0710a1.htm

This report describes the clinical findings of a limited series of patients with novel influenza A (H1N1) virus infection and refractory ARDS admitted to a tertiary-care ICU for advanced mechanical ventilation. This patient group represents the most severely ill subset of persons with novel influenza A (H1N1) virus infection and is notable for the predominance of males, the high prevalence of obesity (especially extreme obesity), and the frequency of clinically significant pulmonary emboli and MODS. All required advanced mechanical ventilator support, reflecting severe pulmonary damage. The pulmonary compromise described in this report suggests that severe pulmonary damage occurred as a result of primary viral pneumonia.

2) In vitro and in vivo characterization of new swine-origin H1N1 influenza viruses *(Yasushi Itoh et al.)*
http://www.nature.com/nature/journal/vnfv/ncurrent/pdf/nature08260.pdf

In mice and ferrets, CA04, an isolate of novel influenza A (H1N1) virus, and other swine-origin influenza isolates replicate more efficiently than currently circulating human H1N1. CA04 also replicates efficiently in non-human primates and causes more severe pathological lesions in lungs of infected mice, ferrets and non-human primates. The assessment of human sera from different age groups suggests that infection with human H1N1 viruses antigenically closely related to viruses circulating in 1918 confers neutralizing antibody activity to CA04. Also, CA04 is sensitive to approved and experimental antiviral drugs, suggesting that these compounds could function as a first line of defense against the recently declared novel influenza A (H1N1) pandemic.

NEW ENGLAND JOURNAL OF MEDICINE

1) Perspective: The persistent legacy of the 1918 Influenza virus *(David M. Morens,Jeffery K. Taubenberger, and Anthony S. Fauci. July 16, 2009)*
http://content.nejm.org/cgi/content/full/361/3/225

This article explains evolution of influenza viruses throughout history. The novel pandemic strain of H1N1 influenza A is a descendant of the virus which caused the pandemic of 1918. In the past 90 years, the virus has undergone genetic reassortment with avian and swine influenza viruses. As a result, new strains of the virus are constantly appearing. This constant genetic shift and drift causes mutations that result in new viruses which haven't been encountered by the human immune system before. These viruses then have the capability to cause pandemics in humans.

2) Review article: Historical Perspective — Emergence of Influenza A (H1N1) Viruses (*Shanta M. Zimmer, M.D., and Donald S. Burke, M.D. July 16, 2009)*
http://content.nejm.org/cgi/content/full/361/3/279

In this article, the authors outline the series of evolutionary and epidemiologic events that led to the emergence of the novel H1N1 influenza strain causing the current pandemic. The 1918 pandemic strain of influenza A H1N1 is related to an influenza virus causing a similar sickness in swine during the same time period. The current pandemic strain of influenza A H1N1 is a result of the reassortment of two swine influenza A H1N1 viruses. These viruses were the products of at least four independent avian to mammalian cross-species transmissions, with at least four previous reassortments of gene segments among avian, swine and human-adapted viruses.

PUBLIC LIBRARY OF SCIENCE ONE (PLOS ONE)

- Nothing new on H1N1 since last week

PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES (PNAS) NEW THIS WEEK

1) Dating the emergence of pandemic influenza viruses *(Gavin J. D. Smith et al.)*
http://www.pnas.org/content/early/2009/07/10/0904991106.full.pdf+html

The authors estimate the evolutionary history and inferred introduction to humans. Results indicate that genetic components of the 1918 H1N1 pandemic virus circulated in mammalian hosts, i.e. swine and humans, as early as 1911 and was not likely to be a recently introduced avian virus. Phylogenetic relationships suggest that the A/Brevig Mission/1/1918 virus (BM/1918) was generated by reassortment between mammalian viruses and a previously circulating human strain, either in swine or, possibly, in humans. Furthermore, seasonal and classic swine H1N1 viruses were not derived directly from BM/1918, but their precursors co-circulated during the pandemic.

SCIENCE

1) Don't Blame Birds for 1918 Flu *(Martin Enserink 13 July 2009)*
http://sciencenow.sciencemag.org/cgi/content/full/2009/713/1

It has become almost common wisdom that the virus that caused the 1918 flu pandemic was an avian strain introduced into the human population shortly before the pandemic erupted. But a new study by Smith et al. in Proceedings of the National Academy of Sciences disputes that hypothesis, arguing instead that genes of the 1918 virus had circulated in mammalian hosts, most likely pigs and humans, for several years before 1918. Multiple gene-swapping events brought them together in a single killer strain, say the researchers; improving surveillance in humans and in swine could alert scientists to such events early in the future.

CONFERENCE

What: The H1N1 influenza pandemic is receiving unprecedented attention from media, the public, and governments. As such, The Ministry of Health China, WHO, The Lancet, and The Lancet Infectious Diseases have now joined forces to respond to this global health emergency.

Title: International Symposium on Influenza Pandemic Response and Preparedness,

Where: Beijing, China

When: August 21-22, 2009. The Lancet conference on Influenza in the Asia Pacific will be held at the same venue on August 22-23, 2009.

More Information: http://www.asiaflu.thelancetconferences.com/