Ontario
Agency for Health Protection and Promotion

480 University Avenue, Suite 300
Toronto, ON M5G 1V2
T 647.260.7100 F 647.260.7600
www.oahpp.ca

WEEKLY SYNTHESIS OF SURVEILLANCE INFORMATION, LITERATURE & GOVERNMENT UPDATES

(WEEK ENDING SEPTEMBER 4, 2009)

HOSPITALIZATION & DEATH COUNTS:

The WHO will no longer issue the global tables showing the numbers of confirmed cases for all countries. Thus, the reported cases presented in this table will severely underestimate the true incidence in the country and will not be comparable to counties still recommending laboratory tests of all suspected influenza cases. The following table provides global updates on H1N1-associated deaths. Please see hyperlinks in table for most up to date counts.

COUNTRIES/PROVINCES	DEATHS	HOSPITALIZATIONS*
CANADA (PHAC)	**72**	**1,454**
- BC	4	42
- AB	7	127
- SK	4	23
- MB	7	221
- ON**	**23**	**366**
- QC	25	591
- NB	0	2
- NS	1	17
- PEI	0	1
- NL	0	3
- Yukon	0	0
- NWT	0	4
- Nunavut	1	62
U.S. (CDC)	**593**	**9,079**
E.U. and EFTA (ECDC)	120	
Mexico	199	
Chile	130	
Argentina	465	
Australia	161	4,548
New Zealand	17	
TOTAL	**3,315**	

Note: PHAC numbers updated last at 11:00pm (EST) on September 3; CDC numbers updated last at 09:00 am on September 3; ECDC numbers updated last at 5:00 pm (CEST) on September 4 2009.
** Source: PHAC Flu Watch, week ending August 29 2009.*
*** Source: Ontario Influenza Bulletin as of September 4, 2009.*

DEATHS AMONG NOVEL H1N1 INFLUENZA A VIRUS, APRIL 13-SEPTEMBER 3, 2009

- 23 deaths have been reported among confirmed cases.
- Almost all of these fatalities were hospitalized prior to death (83%).
- Age of fatal cases ranged from 6 to 81 years of age; median is 56 years and the average age is 54 years.
- Among confirmed cases that have died, 20 or 87% had underlying chronic medical conditions compared to 66% of hospitalized cases.

HOSPITALIZATIONS AMONG NOVEL H1N1 INFLUENZA A VIRUS CASES

As of September 3, 2009 in Ontario:

- 366 confirmed cases have been hospitalized to date for greater than 24 hours to date.
- Of these, 347 cases have been discharged.
- The average length of stay range from less than 1 day to 80 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
- Of the 19 cases are currently hospitalized, a total of 12 were placed on a ventilator and/or were admitted to ICU.

HOSPITALIZATION STATUS	VENTILATOR AND/OR ICU	NOT IN ICU AND NOT ON VENTILATOR	TOTAL
Number of Currently Hospitalized	12	7	19
Number of Hospitalized and Discharged	62	285	347
Total hospitalized to date	74	292	366*

Source: MOHLTC Ontario Influenza Bulletin, iPHIS data as of 8:30 am, September 3, 2009.
***** Excludes case with a length of stay of less than 24 hours

AGE GROUP	HOSPITALIZATIONS	RATE/100,000	DEATHS	RATE/100,000
<1	20	14.93	0	0.00
1-4	48	8.79	0	0.00
5-19	107	4.43	3	0.12
20-49	106	1.89	4	0.07
50-64	50	2.08	9	0.37
65+	35	2.03	7	0.41
Total	**366**	**2.83**	**23**	**0.18**

Source: Ontario Influenza Bulletin (surveillance week 34) MOHLTC, iPHIS data as of 8:30 am, September 3, 2009; Ontario population projections for 2008 PHPDB as of February, 12 2009.

GOVERNMENT UPDATES

CENTRE FOR DISEASE CONTROL (CDC)

September 4, 2009: CDC H1N1 Flu Surveillance Update.
http://www.cdc.gov/h1n1flu/update.htm

Weekly Flu View Map and Surveillance Report for Week Ending August 29, 2009.
http://www.cdc.gov/flu/weekly/
Map includes both seasonal flu and H1N1 flu activity. During week 34, (August 23-29 2009), influenza activity decreased in the US, however there are still higher levels of ILI than is normal for this time of year. Approximately 97% 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 deaths were reported and both were associated with novel influenza A (H1N1) virus infection

CDC Guidance on helping child care and early childhood programs respond to influenza during the 2009-2010 influenza season (September 04, 2009)
http://www.cdc.gov/h1n1flu/childcare/guidance.htm
This document provides guidance to help decrease the spread of influenza (flu) among children in early childhood programs and among early childhood providers during the 2009–2010 flu season.

PUBLIC HEALTH AGENCY OF CANADA (PHAC)

FluWatch Week 34 (August 23-29, 2009)
The overall influenza activity decreased this week; the national ILI consultation rate is nearly within the range of expected range at this time of the year. The peak period of pH1N1 occurred between weeks 22 to 24. The intensity of pH1N1 in the population is low with only a few number of hospitalized cases (n=13) and one death reported this week. Children under 2 years of age, pregnant women, persons under 65 years of age with underlying medical conditions and Aboriginal populations have higher rates of hospitalizations and greater risk of severe outcomes (ICU admissions and deaths). Aboriginal communities experience severe pH1N1 cases compared to the general Canadian population.
http://www.phac-aspc.gc.ca/fluwatch/08-09/w34_09/pdf/fw2009-34-eng.pdf

Canada well-positioned to provide flu vaccine on time (September 2, 2009)
http://www.phac-aspc.gc.ca/media/nr-rp/2009/2009_0827-eng.php
As public health officials, intensive care specialists, and medical experts from Canada and abroad gathered in Winnipeg today to discuss how to treat severe cases of H1N1 flu virus, Health Minister Leona Aglukkaq reinforced the important work the Government is doing to prepare for a major H1N1 vaccination campaign this fall.

Deaths Associated with Influenza A (H1N1) as of September 03, 2009
http://www.phac-aspc.gc.ca/alert-alerte/h1n1/surveillance-eng.php
The Public Health Agency of Canada (PHAC) is committed to sharing information about the impact of the H1N1 flu virus in Canada. Every Tuesday and Thursday at 4 p.m., the Agency will issue national updates on H1N1-associated deaths. In addition, PHAC will issue special reports on any unusual cases or clusters.

ONTARIO- MOHLTC

H1N1 flu in Ontario Report, MOHLTC (September 3, 2009). A report by Ontario's Chief Medical Officer of Health. The report discusses the current situation in Ontario and provides an outline of the current plan for fall 2009.
http://www.health.gov.on.ca/en/ccom/flu/h1n1/pro/docs/oh9100_report.pdf

WORLD HEALTH ORGANIZATION (WHO)

September 04, 2009: In temperate regions of the northern hemisphere, there are wide geographical variations in the level of influenza activity being reported. In Japan, influenza activity continues to increase past the seasonal epidemic threshold, indicating an early beginning to the annual influenza season. In Canada & the US, influenza activity remain low overall, however regional increases are being detected in the Southeastern United States.
http://www.who.int/csr/don/2009_09_04/en/index.html

September 04, 2009: **Weekly Epidemiological Record, vol. 84, 36 (pp 361-372)**
http://www.who.int/wer/2009/wer8436.pdf

WHO supports fair access to pH1N1 vaccine. An interview with Marie-Paule Kieny (September 4, 2009)
http://www.who.int/bulletin/volumes/87/9/09-030909/en/index.html

EUROPEAN CENTRE FOR DISEASE PREVENTION & CONTROL (ECDC)

September 04, 2009: ECDC situation report (daily surveillance report).
http://ecdc.europa.eu/en/healthtopics/Documents/090904_Influenza_AH1N1_Situation_Report_1700hrs.pdf

First report of transmission of the pandemic A(H1N1) 2009 influenza virus from humans to birds / ECDC (*September 2, 2009)*
http://ecdc.europa.eu/en/activities/sciadvice/Lists/ECDC%20Reviews/ECDC_DispForm.aspx?List=512ff74f%2D77d4%2D4ad8%2Db6d6%2Dbf0f23083f30&ID=645

On August 29 Chile's health ministry confirmed that the strain of H1N1 2009 influenza pandemic found in turkey farms was the same as that currently circulating in humans in the Southern hemisphere.

HEALTH/SURVEILLANCE BULLETINS:

Global Information

The highest hospitalization rates in many countries are reported among young children less than 5 years of age. Tropical regions of South and Southeast Asia continue to experience widespread influenza activity. Many countries in the region are reporting increasing or sustained high levels of respiratory disease, and a few (Thailand and Brunei Darussalam) have begun to report a decline in the level of respiratory diseases.

In Europe and Central and Western Asia, although little influenza activity is being reported, a few countries are reporting widespread influenza activity. pH1N1 continues to be the predominant circulating virus of influenza, both in the northern and southern hemisphere. *Source: WHO as of September 4, 2009.*

Southern Hemisphere

Most countries in the southern hemisphere (Chile, Argentina, New Zealand, Australia) appear to have passed their peak influenza activity, but others (South Africa and Bolivia) continue to experience high levels of influenza activity. Countries in the equatorial and tropical regions of South America (represented by Ecuador, Venezuela, Peru, and parts of Brazil) continue to experience widespread influenza activity, with many reporting an increasing trend in the level of respiratory diseases.

Although many countries in temperate regions of the southern hemisphere (Chile, Argentina, Australia, and New Zealand) have passed the peak of their winter influenza epidemic, sustained influenza activity continues to be reported in South Africa and in the Southern and Western parts of Australia. *Source: WHO as of August 4, 2009.*

Australia

As of September 04, 2009, total confirmed cases are 35,444; Total deaths associated with pandemic H1N1 influenza are 161. Currently, there are 375 hospitalized cases of pandemic H1N1 and 71 of these are in ICUs. The total number of hospitalizations in Australia since H1N1 Influenza was identified is 4548.

Australia Influenza Surveillance Summary Report, No. 16, 2009, reporting period: August 22-28 2009.
http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/ozflucurrent.htm

Overall, the current national influenza activity appears to be decreasing. Most jurisdictions have reported that pandemic H1N1 2009 activity has peaked and is starting to decrease. Pandemic H1N1 activity varies across geographical areas. In general, most jurisdictions are reporting that ILI presentations to ED are decreasing. Absenteeism rates remained steady in the last week and are below levels seen at the same time in 2007.

The number of people with confirmed H1N1 requiring hospitalization is stabilizing. As of August 28th, 4515 people are hospitalized and 83 are in ICU, with a total of 4398 people who are hospitalized. Highest hospitalization rate occurred in young children less than 5 years of age (34.6 per 100, 000 population). 4% of the hospitalized cases have been reported as pregnant. During the month of July, pregnant women accounted for 32% of all hospitalized women were confirmed cases aged between 25-29 years.

Indigenous Australians are approximately 5 times more likely than non-Indigenous Australians to be hospitalized for Pandemic (H1N1) 2009, representing 13.8% of all hospitalizations. Most cases had underlying medical conditions, including cancer, diabetes mellitus and morbid obesity.

With a 20% clinical attack rate and no intervention; it has been projected by the end of winter 1 in 5 Australians. NOTE: Currently the number of hospitalizations and deaths are tracking below these estimations, suggesting that efforts to protect the vulnerable are effective.

Australia, New South Wales: Weekly Summary (as of September 2, 2009)
http://www.emergency.health.nsw.gov.au/swineflu/resources/pdf/case_statistics_020909.pdf

New Zealand

September 4, 2009: New Zealand now has 3143 laboratory-confirmed pH1N1 cases. The level of illness would be much higher than the number of laboratory-confirmed cases reported daily. Testing is now done only in the management of severe cases. The number of deaths associated with pandemic H1N1 is 17.
http://www.moh.govt.nz/moh.nsf/indexmh/influenza-a-h1n1-update-147-040909

New Zealand: Weekly Summary (August 24 - 30, 2009)
http://www.surv.esr.cri.nz/PDF_surveillance/Virology/FluWeekRpt/2009/FluWeekRpt200935.pdf

There has been a slight increase in consultations for influenza-like illness through sentinel surveillance in week 35 (August 24-30, 2009). However, the weekly ILI consultation rate is still higher than previous years for the same week. So far, the highest ILI consultation rates have been reported among children and teenagers aged 0 to 19 years. As of August 30 2009, weekly ILI consultation rates have decreased, but the rate is still higher than previous years for the same week.

CENTER FOR INFECTIOUS DISEASE RESEARCH AND POLICY (CIDRAP)

September 4, 2009: Tiered epidemic plans could improve response. The public health measures taken in response to swine fly may be seen as alarmist, overly restrictive, or even unjustified, says a US expert. Calibrated responses based on four types of risk assessments that take into account disease distribution and severity could build public trust and engage the public's attention to warning messages.
http://www.eurekalert.org/pub_releases/2009-09/bmj-wtp090309.php

September 3, 2009: Institute of Medicine (IOM) affirms existing federal CDC guidelines that healthcare workers caring for pH1N1 infected patients should wear fit-tested N95 respirators, not just surgical masks, to protect them from the virus.
http://www.cidrap.umn.edu/cidrap/content/influenza/biz-plan/news/sep0309iom.html

September 2, 2009: Study- H1N1 likely to dominate, not mix with, seasonal flu. When scientists infected ferrets with the pandemic virus and one of two seasonal flu strains, the pandemic virus multiplied faster than the seasonal strain, caused more severe disease, and spread more easily to other ferrets. The team found no signs that the strains reassorted (mixed) to create new hybrids.
http://www3.niaid.nih.gov/news/newsreleases/2009/H1N1Advantage.htm

September 2, 2009: New York City offer kids free pandemic flu shots. New York City's school district it will offer free novel H1N1 flu vaccine to all its students. Hundreds of US school districts will provide vaccinations in schools as the vaccine becomes available, projected to occur next month.
http://news.yahoo.com/s/ap/20090901/ap_on_he_me/us_swine_flu_nyc

September 1, 2009: Openness was Mexico's most effective tactic against H1N1. Mexican health officials who are examining what worked and what didn't in fighting the first wave of H1N1 flu say that rapid notification of the public about the virus was the most effective step, though it cost the economy billions of tourist dollars. Rapid diagnosis, treatment, and quarantine, along with hand-washing, also were helpful. Ineffective steps included travel bans, school closures, and widespread use of surgical masks. http://www.miamiherald.com/news/americas/story/1211487.html

JOURNALS SCANNED:

- American Journal of Public Health
- British Medical Journal
- Canadian Medical Association Journal CMAJ (*added this week*)
- Clinical Infectious Diseases
- Emerging Infectious Diseases
- Eurosurveillance
- Journal of Clinical Microbiology (*added this week*)
- Journal of Infectious Diseases
- Lancet
- MMWR
- Nature
- New England Journal of Medicine
- PLoS One
- PLoS Currents (new this week)
- Science

AMERICAN JOURNAL OF PUBLIC HEALTH

-Nothing new on H1N1 this week

BRITISH MEDICAL JOURNAL

1) Monitoring the emergence of community transmission of influenza A/H1N1 2009 in England: a cross sectional opportunistic survey of self sampled telephone callers to NHS Direct *(Alex J Elliot, et al., August 27, 2009)*
http://www.bmj.com/cgi/content/abstract/339/aug27_2/b3403

This study evaluated the ascertainment of the onset of community transmission of pH1N1 in England during the early phase of the pandemic by comparing two surveillance systems: NHS direct telephone health line and regional laboratory results on patients who tested for pH1N1. Trends in the proportion of patients with influenza A/H1N1 2009 across regions detected through clinical management were mirrored by the proportion of NHS Direct callers with laboratory confirmed infection. The authors suggest that the reports from HPA regional laboratories could be used to recognize the extent to which local community transmission was occurring.

2) Tom Nolan: The swine flu will be back after the break *(Juliet Walker, September 1, 2009)*
http://blogs.bmj.com/bmj/2009/08/27/tom-nolan-the-flu-will-be-back-after-the-break/

With everything seemingly back to normal it's tempting to forget all about swine flu. But we shouldn't get too comfortable: this time should be used to prepare for the next wave of flu. But what more can be done? We've already had a dress rehearsal this summer and clinicians' knowledge, skills and organisation regarding swine flu are now fine-tuned. Perhaps the best thing people can do is take a hard earned break to recharge the batteries for the winter ahead.

CANADIAN MEDICAL ASSOCIATION JOURNAL CMAJ (*added this week*)

1) Editorial: The H1N1 vaccine race: Can we beat the pandemic? *(Paul C. Hébert and Noni MacDonald, August 31, 2009)*
http://www.cmaj.ca/earlyreleases/31aug09_editorial.shtml

The article discusses the possibility in providing a fast-track standard vaccine to high-risk groups be protected in a timely way, while the general public awaits the arrival of the

adjuvant vaccine. Without an immediate change in policy, high-risk groups in Canada will be waiting for protection, while their US and European counterparts are vaccinated. The author recommends that health professionals have access to standard vaccines by early October and to adjuvant vaccine no later than mid-November to protect the public.

CLINICAL INFECTIOUS DISEASES

1) Virologically Confirmed Population-Based Burden of Hospitalization Caused by Influenza A and B among Children in Hong Kong *(Susan S. Chiu et al., September 1, 2009)*
http://www.journals.uchicago.edu/doi/full/10.1086/605570

This study examined the virologically confirmed hospitalization rates associated with influenza virus infection among Hong Kong children. Patients <18 years of age who lived on Hong Kong Island (a separate island within Hong Kong) and were admitted to either of the only 2 public hospitals for a febrile acute respiratory infection from October 2003 through September 2006 were prospectively recruited. All cases of influenza A during 2003–2004 were caused by H3N2 virus, whereas 85.7% of cases during 2004–2005 were due to H3N2 virus, and 93.5% during 2005–2006 were due to H1N1 virus. This population-based study of hospitalizations due to virologically confirmed influenza demonstrated a very high burden of disease among young children in Hong Kong. The morbidity varied with virus type, subtype, and antigenic variants.

2) Editorial: The Burden of Influenza in Children: Time for Prevention *(Kathryn M. Edwards, September 1, 2009)*
http://www.journals.uchicago.edu/doi/full/10.1086/605571

The CDC funded a network to specifically define the rates of hospitalization for influenza virus infection among young children in the United States and to measure the impact of vaccination on these rates. A team of investigators established a population-based laboratory surveillance network, the New Vaccine Surveillance Network (NVSN), for children <5 years of age in 3 geographically distinct regions in the United States.

3) Neuraminidase Inhibitor Resistance after Oseltamivir Treatment of Acute Influenza A and B in Children *(Iain Stephenson, September 1, 2009)*
http://www.journals.uchicago.edu/doi/full/10.1086/596311

This study investigates the emergence of drug-resistant infection in children treated with a tiered weight-based dosing regimen. Clinical NP samples were analyzed before and after oseltamivir therapy. The viruses were isolated, tested for drug resistance with use of fluorescence-based neuraminidase inhibition assay, performed neuraminidase gene sequencing, and quantitative viral loads. The researchers found drug resistance emerging at a higher rate in influenza A subtype H1N1 virus than in influenza A H3N2 or influenza B after tiered weight-based oseltamivir therapy. Surveillance for patterns of drug resistance is essential for determination of antiviral treatment strategies and for composition of pandemic preparedness stockpiles.

EMERGING INFECTIOUS DISEASES

1) Lack of Airborne Transmission during Outbreak of Pandemic (H1N1) 2009 among Tour Group Members, China, June 2009 *(Ke Han, et al., August 31, 2009)*
http://www.cdc.gov/eid/content/15/10/pdfs/09-1013.pdf

This article investigates mode of transmission and risk factors of an outbreak of pH1N1 cases among member of a tour group in China. This is a retrospective cohort design, in which index case status was identified and secondary cases were traced during the

follow-up investigation. This outbreak was apparently caused by droplet transmission during coughing or talking. That airborne transmission was not a factor is supported by lack of secondary cases among fellow bus and air travelers. The authors suggest the need to prevent transmission by droplet and fomites during a pandemic.

EUROSURVEILLANCE

1) Assessment of secondary attack rate and effectiveness of antiviral prophylaxis among household contacts in an influenza A(H1N1)v outbreak in Kobe, Japan, May–June 2009 *(F Odaira, et al., August 31, 2009)*
http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19320

This study describes the assessment of the secondary attack rate (SAR) and the effectiveness of post-exposure antiviral prophylaxis among household contacts in the first domestic outbreak of a novel influenza A(H1N1)v between mid-May and early June 2009 in Kobe city, Japan. The authors could not conclude whether antiviral prophylaxis was effective or not. However, among close contacts with underlying disease who received prophylaxis, none of those individuals developed a severe form of the disease.

2) Epidemiological analysis of the influenza A(H1N1)v outbreak in Bolivia, May-August 2009 *(A Gianella, et al., August 25, 2009)*
http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19323

This short report presents the epidemiological characteristics of the early stage of the pH1N1 outbreak in Bolivia, from 5 May - 2 August 2009, on the basis of data collected by CENETROP. After the first imported cases from the United States and Peru, the locally acquired infections predominated (90%). The number of cases was highest in the age group of 10 to 29 year-olds, and 89.6% of cases were observed in people less than 40 years of age. Symptoms of those with pH1N1 are similar to those of seasonal influenza, and many people in Bolivia would not usually consult at healthcare clinic for such symptoms. The volume of medical consultations has overwhelmed the CENETROP laboratory which succeeded in managing the extraordinary work load but experienced a shortage in reagents after only a few weeks. This study highlights the difficulty, with regard to local resources, of managing an epidemic surveillance system at a high level and for a long time.

JOURNAL OF CLINICAL MICROBIOLOGY (*added this week*)

1) Rapid Multiplex Reverse Transcription-PCR Typing of Influenza A and B Virus, and Subtyping of Influenza A Virus into H1, 2, 3, 5, 7, 9, N1 (Human), N1 (Animal), N2, and N7, Including Typing of Novel Swine Origin Influenza A (H1N1) Virus, during the 2009 Outbreak in Milwaukee, Wisconsin *(Jie He, et al., September 2009)*
http://jcm.asm.org/cgi/content/full/47/9/2772

The authors had recently developed a rapid multiplex reverse transcription-PCR enzyme hybridization assay (FluPlex) to determine the type (A or B) and subtype of influenza viruses. Comparisons of the FluPlex results with results from multiple validated in-house molecular assays, CDC-validated FDA-approved assays, and gene sequencing demonstrated positive agreement for the typing of influenza A and B viruses, subtyping of H1N1 (animal), H1N1 (human), and H3N2 (human) viruses, and identification of negative clinical samples and 100% negative agreement for all viruses tested except H1N1 (human) (97.7%). The FluPlex is a rapid, inexpensive, sensitive, and specific method for the typing and subtyping of influenza viruses and demonstrated outstanding utility during the first 2 weeks of a swine-origin influenza virus (S-OIV) infection outbreak.

2) Rapid Semiautomated Subtyping of Influenza Virus Species during the 2009 Swine Origin Influenza A H1N1 Virus Epidemic in Milwaukee, Wisconsin *(Michael E. Bose et al., September 2009)*
http://jcm.asm.org/cgi/content/full/47/9/2779

The Midwest Respiratory Virus Program laboratory developed a semiautomated real-time multiplex reverse transcription-PCR assay (Seasonal), employing the NucliSENS easyMAG system and a Raider thermocycler, that typed influenza A virus, influenza B virus, and respiratory syncytial virus (RSV) and subtyped influenza A virus into the currently circulating H1 and H3 subtypes, as well as a similar assay that identified H1 of S-OIV. This study has demonstrated the use of a semiautomated system for sensitive, specific, and rapid detection of influenza A and B viruses and RSV and subtyping of influenza A virus. This assay/system performed well in clinical testing of regular seasonal influenza virus subtypes and was outstanding during the 2009 Milwaukee S-OIV infection outbreak.

3) Rapid Method To Support Diagnosis of Swine Origin Influenza Virus Infection by Sequencing of Real-Time PCR Amplicons from Diagnostic Assays *(R. J. Hall, M. Peacey, Q. S. Huang, and P. E. Carter, September 2009)*
http://jcm.asm.org/cgi/content/full/47/9/3053?etoc

Nonspecific detection of S-OIV was made with a primer/probe set that targets a highly conserved region of the matrix gene of seasonal influenza A strains. An additional primer/probe set designed to subtype H1 and H3 seasonal influenza strains was unable to detect S-OIV. Therefore, a probable diagnosis of S-OIV was based upon the detection of influenza A virus that could not be subtyped as H1 or H3. To add confidence to this test result, the authors have determined that sequencing of the real-time PCR matrix gene amplicon can distinguish between human seasonal A/H1N1 and S-OIV.

4) Influenza A Virus Subtyping: Paradigm Shift in Influenza Diagnosis *(Michael Vinikoor, Jane Stevens, John Nawrocki, and Kamaljit Singh, September 2009)*
http://jcm.asm.org/cgi/content/full/47/9/3055?etoc

The authors introduced influenza virus reverse transcription-PCR (RT-PCR) testing in our laboratory using the Luminex xTAG respiratory viral panel (RVP) during the 2007 to 2008 season, but, following reports of oseltamivir resistance, the authors started reporting both influenza type A virus and subtypes H1 and H3 to allow for more accurate selection of antiviral therapy. At the end of April 2009, the authors identified their first cases of pandemic A/H1N1 influenza virus, which typed as influenza A but were unsubtypeable (negative for subtype H1 or H3) using RVP which allowed easy discrimination from seasonal influenza A/H1N1 and A/H3N2 viruses. In this article, they describe the results of influenza A virus subtype identification using the RVP during the 2007 to 2008 and 2008 to 2009 influenza seasons.

JOURNAL OF INFECTIOUS DISEASES

1) What Is a Pandemic? *(David M. Morens, Gregory K. Folkers, and Anthony S. Fauci, August 27, 2009)*
http://www.journals.uchicago.edu/doi/full/10.1086/644537

Simply defining a pandemic as a large epidemic may make ultimate sense in terms of comprehensibility and consistency. The authors of this article suggest that use of the term is best reserved for infectious diseases that share many of the same epidemiologic features discussed above (i.e. wide geographic extension, disease movements, High attack rates and explosiveness, etc.). With respect to influenza, the “rules” of

pandemicity are being extensively rewritten and are likely to be modified further in coming months. The authors expect that improved understanding of the science of influenza—among the most important of the endemic, epidemic, and pandemic diseases—will lead to more-precise and better-understood terminology, as well as to clearer communication.

LANCET

1) Office Test for Oseltamivir-Resistant Pandemic Influenza A(H1N1) Available *(Michele G. Sullivan, August 27, 2009)*
http://www.lancet.com/H1N1-flu/egmn/0c03b3f9

A Montreal biosciences company has developed a genetic assay for in-office use, to identify oseltamivir-resistant pandemic influenza A(H1N1). The test results, available in 2 working days, could be used to help guide patient treatment decisions, said the vice president of Warnex Medical Laboratories Inc. Although physicians shouldn't wait on test results to initiate treatment, the short turnaround time would give quick notice on any need to switch drugs due to resistance. The test uses genetic sequencing to detect the H275Y mutation of the neuraminidase gene, which has been shown to cause resistance to oseltamivir.

LANCET INFECTIOUS DISEASES

1) Possible origin of current influenza A H1N1 viruses *(Hong Zhang, Ling Chen, August 2009)*
http://download.thelancet.com/flatcontentassets/H1N1-flu/virology/virology-39.pdf

Scientists from the US CDC submitted to GenBank (on April 27, 2009) the first set of completed coding sequences for the new influenza A virus. By use of the Basic Local Alignment Search Tool program, the authors compared eight gene segments of this newly isolated virus with hundreds of other available influenza sequences in GenBank. They found that circulating strains of the H1N1 viruses isolated from different countries were essentially identical, and all eight gene segments of the new influenza A virus possibly originated from swine influenza viruses. Sequence analysis also suggests that six gene segments of circulating H1N1 viruses probably came from swine influenza H1N2 viruses circulating in the USA from 1999 to 2001 and two gene segments possibly originated from swine influenza H1N1 viruses circulating in Europe from 1985–98.

2) Economics of stockpiling for an influenza pandemic *(Praveen Dhankhar, Erik J Dasbach, Elamin H Elbasha, August 2009)*
http://download.thelancet.com/flatcontentassets/H1N1-flu/preparedness/preparedness-58.pdf

Stockpiling of drugs can be an important part of the preparation for the next influenza pandemic. Economic evaluations can help to guide policy makers on the economic feasibility of stockpiling. Extending these studies to account for the probability of a pandemic, shelf life of vaccine or antiviral, management of the stockpile, optimum stockpile inventory, and other pandemic preparation strategies might provide policy makers with additional information to make informed decisions for the use of scarce health-care resources to yield greatest benefits.

3) Influenza in the tropics *(Yee-Sin Leo, David C Lye, Angela Chow, August 2009)*
http://download.thelancet.com/flatcontentassets/H1N1-flu/diagnosis/diagnosis-18.pdf

Influenza infections happen throughout the year in the tropics; most countries report two peaks in the number of infections associated with rainy seasons. Clinical data on disease characteristics and impact on heath-care services are lacking. A recent laboratory project at Tan Tock Seng Hospital in Singapore showed that about 10% of respiratory samples from patients admitted within 48 h period were positive for influenza by PCR assay. None of these patients were diagnosed clinically or isolated during hospitalisation, and 60% fulfilled the case definition for influenza-like illness. This highlights the under-recognition and under diagnosis of influenza in hospitals. Importantly, public health policy on influenza vaccination in the tropics is lacking.

4) Containment abandoned for unstoppable pandemic *(Peter Hayward, August 2009)*
http://download.thelancet.com/flatcontentassets/H1N1-flu/epidemiology/epidemiology-68.pdf

Nearly 140 countries or territories have confirmed cases of novel H1N1, including Africa, the last inhabited continent to be affected. The apparent absence of a dip in infections in the northern hemisphere as summer progresses is causing concern. The disease caused by novel H1N1 remains mild. But as the number of deaths increases, pregnant women, people who are overweight, and people with underlying disorders seem most at risk.

MORBIDITY AND MORTALITY WEEKLY REPORT

1) Surveillance for pediatric deaths associated with 2009 Pandemic Influenza A (H1N1) virus infection – United States, April-August 2009 *(September 4, 2009)*
http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5834a1.htm?s_cid=mm5834a1_x

As of August 8, 2009, CDC had received reports of 477 deaths associated with 2009 pandemic influenza A (H1N1) in the United States, including 36 deaths among children aged <18 years. To characterize these cases, CDC analyzed data from April to August 2009. The results of that analysis indicated that, of 36 children who died, seven (19%) were aged <5 years, and 24 (67%) had one or more of the high-risk medical conditions. Twenty-two (92%) of the 24 children with high-risk medical conditions had neurodevelopmental conditions. Among 23 children with culture or pathology results reported, laboratory-confirmed bacterial coinfections were identified in 10 (43%), including all six children who 1) were aged ≥5 years, 2) had no recognized high-risk condition, and 3) had culture or pathology results reported.

NATURE

1) Pandemic flu: from the front lines *(September 2, 2009)*
http://www.nature.com/news/2009/090902/full/461020a.html

Researchers describe the scientific and public-health challenges they face in battling the H1N1 virus. This article contains an overview of the H1N1 Pandemic in Mexico, Australia, Japan, Argentina, Vietnam, United States, India, and Sub-Saharan Africa.

NEW ENGLAND JOURNAL OF MEDICINE

-Nothing new on H1N1 this week

PLOS ONE

1) Early epidemiological assessment of the virulence of emerging infectious diseases : a case study of an influenza pandemic *(Hiroshi Nishiura, Don Klinkenberg, Mick Roberts, Johan A. P. Heesterbeek, September 2, 2009)*

http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0006852

The authors describe a simple method developed to obtain an unbiased estimate of confirmed CFR (cCFR), using only the confirmed cases as the denominator, at an early stage of epidemic, even when there have been only a few deaths. Their method adjusts the biased cCFR by a factor of underestimation which is informed by the time from symptom onset to death. They examined the approach by analyzing an outbreak of SARS in Hong Kong (2003) with known unbiased cCFR estimate, and then investigate published epidemiological datasets of novel swine-origin influenza A (H1N1) virus infection in the USA and Canada (2009). The maximum likelihood estimate of the unbiased cCFR for influenza may lie in the range of 0.16–4.48%. The estimates for influenza suggest that the virulence is comparable to the early estimate in Mexico.

2) Sources and coverage of medical news on front pages of US newspapers *(William Y. Y. Lai, Trevor Lane, Alison Jones, September 2, 2009)*
http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0006856

Using the online resource *Newseum,* the authors investigated front-page newspaper coverage of four prominent medical stories, and a high-profile non-medical news story as a control, reported in the US in 2007. In total, 1630 front pages were searched. Each medical story appeared on the front pages of 85 to 117 (67.5%–78.7%) ranked newspaper titles that had a cumulative daily circulation of 23.1 to 33.4 million, or 61.8% to 88.4% of all newspapers. In contrast, the non-medical story achieved front-page coverage in 152 (99.3%) newspaper titles with a total circulation of 41.0 million, or 99.8% of all newspapers. Front-page medical stories varied in their sources, but the *Washington Post, Los Angeles Times, New York Times* and the *Associated Press* together supplied 61.7% of the total coverage of target front-page medical stories.

3) Differences in patient age distribution between Influenza A subtypes *(Hossein Khiabanian, Gregory M. Farrell, Kirsten St. George, Raul Rabadan, September 2, 2009)*
http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0006832

Since the spring of 1977, two subtypes of influenza A virus (H3N2 and H1N1) have been seasonally infecting the human population. Here, the authors describe the distribution of patient ages within the populations that exhibit symptomatic disease caused by each of subtype of seasonal influenza viruses. When the information is pooled across multiple geographical locations and seasons, differences emerge between these subtypes. The authors report that the symptomatic flu due to H1N1 is distributed mainly in a younger population relative to H3N2. (The median age of the H3N2 patients is 23 years while H1N1 patients are 9 years old.) These characteristic spectra of age groups are consistent with previous reports from various regional population studies and also findings on the evolutionary dynamics of each subtype.

PLoS Currents

-Nothing new on H1N1 this week

Science

-Nothing new on H1N1 this week