

**WEEKLY SYNTHESIS OF SURVEILLANCE INFORMATION, LITERATURE &
 GOVERNMENT UPDATES**

(WEEK 26- ENDING IN JULY 10, 2009)

CASE COUNTS:

As of July 13, 2009, over 120 countries have officially reported 116, 948 cases of influenza A (H1N1) infection, including 580 deaths. Please see hyperlinks in table for most up to date case counts.

Countries/Provinces	Case counts	Deaths	Hospitalizations
CANADA (PHAC)	9,855	39	902
- BC	360	0	12
- AB	1256	3	71
- SK	855	3	11
- MB	787	5	94
- ON	3636	14	240
- QC	2192	14	426
- NB	33	0	1
- NS	282	0	8
- PEI	5	0	1
- NL	42	0	0
- Yukon	1	0	0
- NWT	13	0	0
- Nunavut	393	0	38
U.S. (CDC)	37,246	211	
E.U. and EFTA (ECDC)	13, 796	16	
Mexico	11,699	121	
Chile	9,024	19	
Argentina	2,677	82	
Australia	9,050	18	
New Zealand	1,779	7	
TOTAL (ECDC)	116,948	580	

Note: PHAC numbers updated last at 3:00pm (EST) on July 13; CDC numbers updated last at 11:00 am on July 10; ECDC numbers updated last at 5:00 pm (CEST) on July 13 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.

HOSPITALIZATIONS AMONG NOVEL H1N1 INFLUENZA A VIRUS CASES

As of July 09, 2009 in Ontario:

- 240 confirmed cases have been hospitalized to date
- Of these, 201 cases have been discharged.
- The average length of stay was 5.4 days, ranging from under 24 hours to 42 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).
- 86% of cases that were discharged had a length of stay of at least 2 days
- 39 cases that are currently hospitalized

Hospitalization Status	Ventilator and/or ICU	Not in ICU and not on ventilator	Total
Number of Currently Hospitalized	18	21	39
Number of Hospitalized and Discharged	12	189	201
Total hospitalized to date	30	210	240

Source: MOHLTC Ontario Influenza Bulletin, iPHIS data as of 8:30 am, July 09/09.

GOVERNMENT UPDATES

CENTRE FOR DISEASE CONTROL (CDC)

Weekly Flu View Map and Surveillance Report for Week Ending July 4, 2009

Map includes both seasonal flu and H1N1 flu activity. During week 26, (June 28—July 4 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. Five influenza-associated pediatric deaths were reported and all five deaths were associated with pandemic influenza A (H1N1) virus infection.

<http://www.cdc.gov/flu/weekly/>

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>

CDC Recommendations for State and Local Planning for a 2009 Novel H1N1 Influenza Vaccination Program.

July 08 2009: The purpose of this document is to describe planning scenarios for state and local governments to target high-priority populations for vaccination in order to reduce the health and societal impact of the novel H1N1 influenza virus.

<http://www.cdc.gov/h1n1flu/vaccination/statelocal/planning.htm>

July 08 2009 (UPDATE) Home care guidance document

This new guidance should be considered the most up-to-date and supersede previously issued guidance. Content related to masks and respirators on this web page will be updated to reflect the new guidance in the near future.

http://www.cdc.gov/h1n1flu/guidance_homecare.htm/?breaknews

July 06 2009: Considerations Regarding Novel H1N1 Flu Virus in Obstetric Settings

This document has been developed to provide guidance for prevention and management of novel H1N1 flu infection in inpatient and out-patient obstetric settings. Severe illnesses among pregnant woman and infants have been reported in this outbreak, although the epidemiology and spectrum of illness among pregnant woman and infants are not fully understood at this time and are under investigation.

<http://www.cdc.gov/h1n1flu/guidance/obstetric.htm>

PUBLIC HEALTH AGENCY OF CANADA (PHAC)**Pregnancy and H1N1 (July 2009): Information guide on basic infection control and education for pregnant mothers**

<http://www.phac-aspc.gc.ca/alert-alerte/swine-porcine/pregnancy-grossesse-eng.php>

New Release, July 2 2009: International meeting advances global response to H1N1 Canada continues to play a leadership role.

Canada continues to make a significant contribution to the international response to the H1N1 flu virus. Minister Aglukkaq state's "Canada's planning efforts, operational implementation, communications with the public, and cutting edge science are being recognized and studied by numerous countries". The international meeting focused on Canada-U.S. collaboration on H1N1, opportunities for further collaboration with Mexico, planning for the fall flu season.

http://www.phac-aspc.gc.ca/media/nr-rp/2009/2009_0702-eng.php

FluWatch Week 26 (June 28 to July 04 2009)

The overall influenza activity level remains high for this time of the year, but has been decreasing in week 26, for the third consecutive week. There was almost a 25% increase in the reported number of hospitalized Pandemic (H1N1) 2009 cases this week. Based on a proportion of hospitalized cases, 80% of the cases had one or more underlying medical conditions.

http://www.phac-aspc.gc.ca/fluwatch/08-09/w26_09/index-eng.php

WORLD HEALTH ORGANIZATION (WHO)**July 13 2009: WHO recommendations on pandemic (H1N1) 2009 vaccines**

http://www.who.int/csr/disease/swineflu/notes/h1n1_vaccine_20090713/en/index.html

July 02 2009: Influenza A(H1N1): lessons learned and preparedness

http://www.who.int/dg/speeches/2009/influenza_h1n1_lessons_20090702/en/index.html

EUROPEAN CENTRE FOR DISEASE PREVENTION & CONTROL (ECDC)**The Influenza A (H1N1) ECDC situation report from July 13, 2009.**

Cumulative number of cases in EU and EFTA countries are now 14,041 including 16 deaths. The majority of all cases have been found in Spain and the UK.

http://ecdc.europa.eu/en/files/pdf/Health_topics/Situation_Report_090713_1700hrs.pdf

July 09 2009: ECDC Threat Assessment Re-assortment seasonal influenza virus and swine influenza virus in Saskatchewan, Canada

http://www.ecdc.europa.eu/en/files/pdf/Health_topics/TA_Swine_influenza_Canada-090709.pdf

HEALTH/SURVEILLANCE BULLETINS:

Southern Hemisphere

Australia

July 13 2009: Total confirmed cases as of 1200 AEST are 9050; Total deaths associated with pandemic H1N1 influenza is 18. Currently, there are 95 hospitalized cases of pandemic H1N1 and 26 of these are in ICUs. The total number of hospitalizations in Australia since H1N1 Influenza was identified is 984.

July 08 2009: Pandemic H1N1 research projects fast-tracked

The federal Minister for Health and Ageing announced that funding would be provided to 41 Australian medical research projects that will help ensure the Australian Government's response to the evolving threat of H1N1 Influenza is based on the most up-to-date information available.

<http://www.healthemergency.gov.au/internet/healthemergency/publishing.nsf/Content/news-080709-1>

July 03 2009: GPs are major players in pandemic influenza A H1N1 response

The statement discusses that doctors, especially GPs, are bearing the brunt of this disease with a huge influx of patients who are worried about having H1N1, and as the pandemic phases have changed, doctors have had to keep up with the new testing and antiviral policies that have changed from CONTAIN phase to PROTECT phase

South America & the Americas

As of July 10 2009: Chile has 9,717 confirmed cases and 39 deaths.

Argentina has 2,677 confirmed cases and 82 deaths.

July 09 2009: Thailand, Argentina launch community mitigation measures

Thailand's government has ordered more than 1,000 schools to close for 15 days starting Jul 13 and has asked Internet cafes, popular with youth, to close during the time to curb the spread of pandemic flu. On the other side of the globe, Argentina will close financial markets and banks tomorrow to slow the spread of the virus, Reuters reported yesterday. It encouraged private businesses to do the same.

<http://www.abc.net.au/news/stories/2009/07/09/2621801.htm?section=justin>

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 for more information.

http://new.paho.org/hq/index.php?option=com_content&task=view&id=1574&Itemid=1167

CENTER FOR INFECTIOUS DISEASE RESEARCH AND POLICY (CIDRAP)

July 12: US to spend another \$1 billion on H1N1 vaccines

The United States will order another \$1 billion worth of pandemic H1N1 influenza vaccine, stated Health and Human Services (HHS) Secretary Kathleen Sebelius.

<http://www.reuters.com/article/scienceNews/idUSTRE56669020090712?rpc=401&>

July 10: Obesity may be risk factor for severe H1N1 illness

In a series of 10 cases of severe illness with the pandemic H1N1 virus in Michigan, nine patients were obese, suggesting that very overweight people may be particularly vulnerable to life-threatening H1N1 infections, the Centers for Disease Control and Prevention (CDC) reported (MMWR) today.

Article:

<http://www.cidrap.umn.edu/cidrap/content/influenza/swineflu/news/jul1009obesity.html>

CDC Report: <http://www.cdc.gov/mmwr/preview/mmwrhtml/mm58d0710a1.htm>

July 10: US warns that China may quarantine children traveling alone

The US State Department yesterday said parents planning to send unaccompanied children to China should consider postponing such trips until China changes its quarantine policies or the H1N1 flu pandemic subsides. Some unaccompanied minors, including some under 10 years old, have been quarantined on arrival in China. It is nearly impossible to predict which travelers might be quarantined, and the US continues to receive reports of poor quarantine conditions.

http://travel.state.gov/travel/cis_pa_tw/pa/pa_4238.html

July 6: ACEP unveils plan to manage fall pandemic wave

The American College of Emergency Physicians (ACEP) recently released a plan to help emergency departments, first responders, and public health departments manage a surge in pandemic flu cases that many experts predict will happen this fall.

<http://www.acep.org/pressroom.aspx?id=45828>

Also see ACEP national novel H1N1 influenza strategy:

<http://www.acep.org/WorkArea/DownloadAsset.aspx?id=45781>

JOURNALS SCANNED:

- American Journal of Public Health
- British Medical Journal
- Canadian Medical Association Journal (new this week)
- Clinical Infectious Diseases
- Emerging Infectious Diseases
- Eurosurveillance
- Infection Control and Hospital Epidemiology (new this week)
- Journal of Infectious Diseases
- Lancet
- MMWR

- New England Journal of Medicine
- PLoS One
- Science

AMERICAN JOURNAL OF PUBLIC HEALTH

1) Real-Time Public Health Surveillance for Emergency Preparedness (*Jean-Paul Chretien, Nancy E. Tomich, Joel C. Gaydos, and Patrick W. Kelley*)
<http://www.ajph.org/cgi/content/abstract/99/8/1360>

The current pandemic influenza A H1N1 has motivated supplementary approaches to traditional surveillance methods based on physician and laboratory reporting, also called “syndromic” surveillance systems because they focus on syndromes recorded before diagnosis, which capture real-time health data and scan for abnormalities suggesting an outbreak. The authors explain that syndromic surveillance holds promise for public health, although these systems have previously been shown unreliable for detecting natural epidemics. If redesigned to reliably perform beyond outbreak detection, syndromic systems could demonstrate unprecedented capabilities in responding to public health emergencies.

BRITISH MEDICAL JOURNAL

1) Canada has world's highest rate of confirmed cases of A / H1N1, with Aboriginal people hardest hit (*Kermode-Scott, Barbara. July 6, 2009*)
http://www.bmj.com/cgi/content/extract/339/jul06_2/b2746

Canadian researcher, Alan Davidson, has called on Canada's federal and provincial governments to be more active about the evidence that suggests that Aboriginal people are disproportionately affected by the pandemic than the general population. For example, the differences within Canada are five cases per 100 000 in British Columbia versus more than 60 in Saskatchewan. Davidson suggests that Aboriginal people are most affected by the pandemic H1N1 due to underlying social and economic factors, as well as differences in public health preparedness.

2) Public perceptions, anxiety, and behaviour change in relation to the swine flu outbreak: cross sectional telephone survey (*G. James Rubin, et al*)
http://www.bmj.com/cgi/content/abstract/339/jul02_3/b2651

The study assesses whether perceptions of the pandemic H1N1 outbreak predicted behavior among the public in the United Kingdom. Authors conducted a telephone survey using random digit dialing. The main behavior outcome measure was hand hygiene (i.e. hand-washing, surface cleaning) and avoidance behavior (i.e. public transport, large crowds). Anxiety about the outbreak was low and behavior changes were also limited in relation to the H1N1 pandemic hype. The results support efforts to inform the public about specific actions that can reduce the risks from swine flu and to communicate about the government's plans and resources. The results suggest public perception that the outbreak has been over-reacted. Additional research is required into examining different reactions to the outbreak among ethnic groups.

3) WHO to call on nations with high rates of swine flu to move away from testing all suspected cases (*John Zarocostas*)

http://www.bmj.com/cgi/content/full/339/jul09_2/b2798

The WHO stated on July 7 2009, that new guidelines for nations with large infection rates are advised to move away from laboratory testing all suspected cases and to focus instead on monitoring big trends in spread of disease. The issue of anti-viral resistance was addressed in the interview; Dr. Fukuda, WHO's interim assistant director general oseltamivir resistance remain sporadic cases, thus there is no evidence of widespread movement of resistant viruses. The shift in the guidelines will put the focus on tracking larger, national indicators of the disease (including flu), such as illnesses or pneumonia cases, and mutations.

4) Patients and doctors are asked to report antivirals' side effects as swine flu spreads (*Zosia Kmietowicz*)

http://www.bmj.com/cgi/content/extract/339/jul07_3/b2780

The UK Medicines and Healthcare Products Regulatory Agency (MHRA) has set up a dedicated web page for the public and health professionals to report suspected side effects to antiviral drugs used to treat swine flu.

5) UK government predicts 100,000 new A / H1N1 flu cases a day by September (*Daniel Henderson*)

http://www.bmj.com/cgi/content/full/339/jul03_2/b2721

The UK government is planning for a rapid rise in the number of cases of A/H1N1 flu and is limiting provision of antiviral drugs to people with symptoms, while excluding asymptomatic contacts of infected people. This public health measure was brought on by the revelation that up to 100 000 new cases of the infection could emerge each day by the end of August. Andy Burnham, the health secretary, warned that conventional risk groups (people aged over 65 or under 5 years, immunocompromised people, and pregnant women) should be dealt with more urgently. Members of the general public have been advised to call their GP or the national flu helpline if they experience flu-like symptoms.

6) Who should receive Tamiflu for swine flu? (*Christopher Ellis, Ruth McEwen*)

http://www.bmj.com/cgi/content/full/339/jul06_1/b2698

In summary, can we readily identify the minority of patients who will develop severe disease and treat them in time to stop progression? If so, we can safely abandon chemoprophylaxis when cases in a given community are arising unpredictably, with most having no known exposure to a contact—the point when containment is no longer feasible.

7) Letter to the Editor: Call for flu research under way (*Wom Walley*)

http://www.bmj.com/cgi/content/extract/339/jul08_3/b2731

The National Institute for Health Research (NIHR) is currently commissioning research studies as part of the national response to the emerging flu pandemic. See the NIHR web site (www.nihr.ac.uk) for more details. The NIHR also has an urgent open call for proposals on pandemic flu which is not restricted to particular study designs, provided that they produce evidence that will be useful to patients and the NHS during the current pandemic.

8) Letter to the Editor: Policy on antiviral drugs needs to be revised ... (*Peter M. English et al.*)

http://www.bmj.com/cgi/content/extract/339/jul08_3/b2728

The author described the limited evidence to base the UK swine flu policy which recommends antiviral agents for febrile patients with two or more flu-like symptoms for up to 7 days from onset. The author discusses the risk of generating antiviral drug resistance if we treat what is currently a mild form of flu, so that when more virulent form of flu presents the drugs may no longer be effective.

9) Letter to the Editor: "...as does policy on antibiotics" (*Barlow and Ross*)

http://www.bmj.com/cgi/content/full/339/jul08_3/b2738

The UK Department of Health recently published guidelines for hospital management of pandemic H1N1 for adults. The guidelines set out a pathway which recommends that all patients attending hospitals with "flu-like illness" receive an antibiotic regardless of the severity of illness or whether secondary bacterial infection is likely. It is indicated that broad spectrum cephalosporin or quinolone should be considered for inpatients with pneumonia. These recommendations are in stark contrast to the usual management of seasonal flu. The authors explain the potential overuse of antibiotics, which may consequently lead to other infections (*C. diff*, MRSA etc.). The authors address their reservations about the antibiotic recommendations.

CANADIAN MEDICAL ASSOCIATION JOURNAL (CMAJ)

1) Review: Safety of neuraminidase inhibitors against novel influenza A(H1N1) in pregnant and breastfeeding women (*T. Tanaka, et al.*)

<http://www.cmaj.ca/cgi/content/full/181/1-2/55>

This report summarizes information about the safety of neuraminidase inhibitors against novel influenza A H1N1 virus in pregnant and breastfeeding women. Currently, oseltamivir or zanamivir are recommended antiviral treatment and chemoprophylaxis against the novel H1N1 influenza for people at high risk, such as pregnant women and infants. Key points that were addressed in this review is that limited data suggest that oseltamivir is not a major human teratogen. Data suggests that oseltamivir is preferred over zanamivir during pregnancy. Also, both drugs are considered compatible with breastfeeding. Authors recommend further studies to assess the use of oseltamivir and zanamivir.

CLINICAL INFECTIOUS DISEASES

- Nothing new on H1N1 this week

EMERGING INFECTIOUS DISEASES

- Nothing new on H1N1 this week

EUROSURVEILLANCE

1) Epidemiology and control of Influenza A (H1N1) V in the Netherlands: the first 115 cases (*Hahné et al.*)

<http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19267>

The Netherlands have developed enhanced surveillance and infection control since the introduction of the pandemic H1N1 virus. Approximately 44% of the reported cases are acquired by their indigenous people. The study found a point estimate of the effective reproductive number (R_e) was below one for the initial phase of the influenza A(H1N1)v epidemic in the Netherlands. Given that the R_e estimate is based on a small number of indigenous cases and a limited time period, it needs to be interpreted cautiously.

2) Enhanced epidemiological surveillance of Influenza A (H1N1)V in Italy (C. Rizzo *et al.*)

<http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19266>

As of 7 July 2009, a total of 158 laboratory-confirmed cases of pandemic influenza A (H1N1) virus were reported in Italy. To date all cases have had symptoms consistent with seasonal influenza and no severe or fatal cases have been reported. An active surveillance of cases has been set up in Italy in order to undertake appropriate measures to slow down the spread of the new virus. This report describes the routine and enhanced surveillance currently ongoing in Italy.

3) An outbreak of Influenza A (H1N1) V in a boarding school in southeast England, May-June 2009 (A. Smith *et al.*)

<http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19263>

An outbreak of influenza A H1N1 virus was confirmed in May and June 2009 in a boarding school in South East England involving 102 symptomatic cases with influenza-like illness. 62 pupils were laboratory-confirmed by PCR and one staff.

Control measures were implemented as soon as a case was confirmed and included school closure, active case finding and treatment as well as post-exposure prophylaxis offered to the entire school population. The results suggest had the outbreak been detected earlier, the school closed earlier and prophylaxis commenced after the initial cases were detected, lower levels of transmission may have been seen.

4) Preliminary descriptive epidemiology of a large school outbreak of Influenza A (H1N1) V in the West Midlands, United Kingdom, May 2009 (Health Protection Agency West Midlands H1N1v Investigation Team)

<http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=19264>

This report describes the preliminary results from the investigation of a large school outbreak of influenza A H1N1 virus in Birmingham, United Kingdom in May 2009. 64 confirmed cases were symptomatic pupils and members of staff. Initial findings in this study suggest that the symptoms were mild and similar to those of seasonal influenza, with a clinical illness attack rate of nearly one third, which is higher than the average attack rate of 24% reported for the outbreaks of seasonal influenza in UK schools during 2005-2009 influenza season.

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY

1) Feasibility Exercise to Evaluate the Use of Particulate Respirators by Emergency Department Staff during the 2007 Influenza Season (Holly Seale *et al.*)

<http://www.journals.uchicago.edu/doi/full/10.1086/599254>

The feasibility and acceptability of using P2 (N95-equivalent) respirators in the emergency department was evaluated during the winter of 2007. Baseline rates of influenza-like illness among emergency department staff were also determined.

JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

1) Use of Northern Hemisphere Influenza Vaccines by Travelers to the Southern Hemisphere (*July 8, 2009*)

<http://jama.ama-assn.org/cgi/content/full/302/2/140>

The Advisory Committee on Immunization Practices (ACIP) recommends that persons from the northern hemisphere who have not yet received the 2008-09 influenza vaccine should consider being vaccinated (1) before travel to the southern hemisphere during influenza season, (2) before travel to the tropics at any time of year, or (3) when traveling as part of a tour group that includes persons from areas where influenza circulates during April-September. No information is available on the benefits of revaccinating persons before summer travel who already were vaccinated during the preceding fall.

JOURNAL OF INFECTIOUS DISEASES

1) Pneumococcal surface protein A contributes to secondary *Streptococcus pneumoniae* infection after Influenza virus infection (*Quinton O. King, Benfang Lei and Allen G. Harmsen*)

<http://www.journals.uchicago.edu/doi/full/10.1086/600871>

Growth of *Streptococcus pneumoniae* mutants (disruption in the gene for either pneumococcal surface protein A (PspA⁻), neuraminidase A (NanA⁻), or hyaluronidase (Hyl⁻)) was compared to the parental strain in mice with and without prior influenza virus infection. The numbers of total bacteria recovered from mice with prior influenza virus infection were significantly greater than those recovered from mice without prior influenza virus infection. The PspA⁻ mutant exhibited attenuation both in mice with and without prior influenza virus infection when compared to the parental strain. PspA immunization (serotypes 2, 3 and 4 pneumococci) significantly reduced secondary bacterial lung infections and concentrations of markers of lung damage in mice, suggesting that PspA immunization mitigates early secondary pneumococcal lung infections.

LANCET

- Nothing new on H1N1 this week.

LANCET INFECTIOUS DISEASES

- Nothing new on H1N1 this week.

MORBIDITY AND MORTALITY WEEKLY REPORT

-Nothing new on H1N1 this week.

NEW ENGLAND JOURNAL OF MEDICINE

1) Managing and Reducing Uncertainty in an Emerging Influenza Pandemic
(M. Lipsitch and Others)

<http://content.nejm.org/cgi/content/full/361/2/112?query=TOC>

Plans for addressing influenza pandemics offer responses based on the pandemic's severity (measured by the case fatality ratio). In practice, decisions have had to be made before definitive information was available on the severity, transmissibility, or natural history of the new H1N1 virus. Two sources of uncertainty, however, critically affect severity estimates (1) the proportion of severe cases is overestimated in settings where many mild cases are not reported or tested, and (2) severity estimates are biased downward when they are calculated as simple ratios of numbers of deaths to numbers of cases because there is a delay between the onset of illness and death. Uncertainty is likely to increase as low specificity of clinical signs and symptoms, combined with changes in reporting practices, will make it difficult to interpret incidence trends and track the growth of the epidemic. Serologic studies will help estimate the extent of spread of mild infection; other surveillance recommendations are provided.

2) Geographic Dependence, Surveillance, and Origins of the 2009 Influenza A (H1N1) Virus (V. Trifonov and Others)

<http://content.nejm.org/cgi/content/full/361/2/115?query=TOC>

Genomic analysis of the 2009 influenza A (H1N1) virus in humans indicates that it is closely related to common reassortant swine influenza A viruses isolated in North America, Europe, and Asia. In the past few years, there has been a worldwide effort to isolate and sequence the genomes of influenza A viruses, which has led to the depositing of more than 46,000 sequences in the Influenza Virus Resource of the National Center for Biotechnology Information (NCBI). Examination of the database reveals that swine influenza A viruses have not been sampled as efficiently as human influenza A viruses and additionally, there were many swine influenza A viruses from North America, Asia, and Europe, but none from Africa, Oceania, or South America.

3) Letter: Spread of a Novel Influenza A (H1N1) Virus via Global Airline Transportation (Khan, Kamran *et al*)

<http://content.nejm.org/cgi/content/full/361/2/212?query=TOC>

The purpose of this analysis was to show how travelers - and consequently to predict how H1N1 - would disseminate worldwide during the initial wavefront of this epidemic.

PUBLIC LIBRARY OF SCIENCE (PLOS) ONE

1) Self Reported Incidence and Morbidity of Acute Respiratory Illness among Deployed U.S. Military in Iraq and Afghanistan (Bryony W. Soltis *et al.*)

<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0006177>

Deployed U.S. military troops are at high risk of respiratory infections due to close living conditions, stressful work environments and increased exposure to pathogens. Self-reported data collected from troops deployed to Iraq, Afghanistan and the surrounding region, were analyzed for incidence and risk factors for ARI. Overall, 39.5% reported having at least one ARI. Of these, 18.5% sought medical care. Regression analysis found female sex, Navy branch of service and lack of flush toilets to be independently

associated with increased rates of ARI. Deployment to Operation Iraqi Freedom (OIF), increasing age and higher rank were also positively associated with ARI risk.

SCIENCE

1) Transmission and Pathogenesis of Swine-Origin 2009 A(H1N1) Influenza Viruses in Ferrets and Mice (*Taranna R. Maines et al.*)

<http://www.sciencemag.org/cgi/content/abstract/1177238>

2009 A(H1N1) isolates were assessed for their ability to cause disease in mice and ferrets, and compared with a contemporary seasonal H1N1 virus for their ability to transmit by respiratory droplets to naïve ferrets. In contrast to seasonal influenza H1N1 virus, 2009 A(H1N1) viruses caused increased morbidity, replicated to higher titers in lung tissue, and were recovered from the intestinal tract of intranasally inoculated ferrets. Transmission of the 2009 A(H1N1) viruses was further corroborated by characterizing the binding specificity of the viral hemagglutinin to the sialylated glycan receptors (in the human host) using dose-dependent direct receptor binding and human lung tissue binding assays.

2) Pathogenesis and Transmission of Swine-Origin 2009 A(H1N1) Influenza Virus in Ferrets (*Vincent J. Munster et al.*)

<http://www.sciencemag.org/cgi/content/abstract/1177127>

In a ferret pathogenesis and transmission model, the 2009 A(H1N1) virus was found to be more pathogenic than a seasonal A(H1N1) virus, with more extensive virus replication occurring in the respiratory tract. These data suggest that the 2009 A(H1N1) virus has the ability to persist in the human population, potentially with more severe clinical consequences.

3) Pandemic Influenza: Straight From the Pig's Mouth: Swine Research With Swine Influenzas (*Jon Cohen*)

<http://www.sciencemag.org/cgi/content/summary/325/5937/140?rss=1>

Pig studies have taken on a new cachet because of the swine origins of the 2009 A(H1N1) strain that's causing the current pandemic—and the pig flu research community's eerily prescient predictions that something like it was bound to make headway in humans.

4) Antigenic and Genetic Characteristics of Swine-Origin 2009 A(H1N1) Influenza Viruses Circulating in Humans (*Rebecca J. Garten, et al.*)

<http://www.sciencemag.org/cgi/content/full/325/5937/197?rss=1>

Circulation of an influenza A(H1N1) swine-origin virus in humans with an antigenically and genetically divergent HA and a previously unrecognized genetic composition is of concern to public health officials around the world. That this virus appears readily transmissible between humans is further cause for alarm. The evolutionary distances between the gene segments of this virus and its closest relatives indicate a lack of surveillance in swine populations that may harbor influenza viruses with pandemic potential.