Yakima Health District BULLETIN

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Influenza Update

Inside this issue:

This article will provide a summary of the 2009-2010 H1N1influenza pandemic, lessons learned from the experience, and an outline of public health priorities and recommendations for the upcoming influenza season.

Background

The first documented outbreak of "swine flu" (i.e., novel swine origin influenza A[2009 H1N1] virus) occurred in April 2009 in Mexico. The first case reported in the state of Washington occurred the week of April 27, 2009. The World Health Organization (WHO) declared a pandemic in June 2009, when similar cases of influenza had been confirmed in over 50 countries. The National Institutes of Health (NIH) and pharmaceutical companies expedited research and development of vaccine against the A(2009 H1N1) influenza virus. The great fear was that the pandemic would match or exceed that of 1918. Local and state surveillance efforts attempted to capture every confirmed or suspected case of influenza or influenza-like illness. Virologists and infectious diseases practitioners struggled to understand cases of influenza illness that enigmatically ravaged the organ systems of patients who were perceived to be healthy hosts, including children, young adults and pregnant women. By all measures—outpatient influenza-like illness visits, pediatric influenza mortality, and pneumonia-and-influenza mortality in cities—the 2009-2010 season was among the heaviest in recent history. Fortunately, the pandemic was less severe than initially anticipated and, on August 10, 2010, Director General Margaret Chan of the WHO declared an end to the A(2009 H1N1) pandemic globally.

State and Local Data

From April 2009 through May 2010, 1,667 severe cases of influenza A(2009 H1N1) virus occurred in Washington state (annual rate of 25 per 100,000), including 98 fatalities (1.5 per 100,000). In Yakima County, 82 severe cases and 6 deaths occurred (34 and 2.5 per 100,000, respectively).

In its analysis of statewide influenza activity, the Washington State Department of Health (DOH) identified three groups of cases for specific analyses: all cases reported during April and May 2009, severe cases reported during April through August 2009, and all cases reported from September 2009 through May 2010. In summary, the "first wave" of moderate epidemic transmission occurred during April-May 2009, followed by an accelerated phase during September-December 2009 (the "second wave").

First Wave

Case rates were higher in the western part of the state during the first wave. Yakima County was the sole county east of the Cascades to have significant morbidity in the first wave (14 cases, rate: 5.9/100,000). Cases in this first wave were concentrated among individuals under 25 years of age (15.7 and 21.1/100,000 for age groups 0-4 and 5-24, respectively, vs <5/100,000 for all other ages). Almost no infections were detected among individuals over 65 years of age.

Second Wave

During the second wave, A(2009 H1N1) influenza accounted for 99% of sub-typed influenza isolates. Whereas the western part of the state had higher rates during the first wave, eastern Washington counties had higher rates during the second wave. Another interesting trend was that the median age of fatal cases rose from 39 years during the first wave to 52 years in the second.

Among fatal influenza cases, 70% had a medical condition predisposing them to severe disease or complications (e.g., pregnancy; chronic pulmonary, hepatic, renal, or cardiovascular disease; cognitive, neurologic/neuromuscular, endocrine, metabolic, and blood disorders; immunosuppression).

Lessons learned

Just a few key conditions--asthma, other chronic lung disease, diabetes, heart disease and pregnancy—accounted for the predisposing factor in over 75% of severe cases. These and other medically compromised groups are the highest priority for annual immunization efforts that are now underway.

One of the more powerful lessons learned from the first wave of the pandemic was improved delivery of antiviral therapy to pregnant women. The proportion of severe influenza cases in pregnant women who received antiviral treatment increased from 78% in the first wave to 98% in the second wave.

The 2009-2010 H1N1 influenza pandemic provided many sobering moments to healthcare practitioners including development of oseltamivir resistance (8 cases) and severe influenza among pregnant women (101 cases with two deaths).

The Present and Looking Ahead

As of the time of this writing, influenza activity is at very low levels in Washington State, with only two laboratory confirmed cases of influenza reported in October (1 A-not typed, 1 B). In Yakima County, four unconfirmed cases of influenza B and one influenza A detected by on-site rapid antigen testing were reported by primary care clinics in October.

Given the evidence for higher incidence and severe illness among pregnant women and infants during the recent A(2009 H1N1) influenza pandemic, more attention must be paid to ensuring both vaccination and early treatment against influenza in pregnant women. Studies have demonstrated fewer influenza-like illnesses among newborns of vaccinated women.

Unlike last year, this year's effective A(H1N1) antigen component is incorporated into the trivalent seasonal influenza vaccine product. CDC's Advisory Committee on Immunization Practices made the following recommendations for 2010:

- annual influenza immunization among all persons >6 months of age for the 2010-11 season;
- two doses of influenza vaccine at least 4 weeks apart among children aged 6 months-8 years unless they are known to have received at least two previous influenza vaccinations (including at least one dose of the A[2009 H1N1] monovalent vaccine);
- use of a newly approved, high-dose vaccine for persons aged ≥65 years (Fluzone High Dose).

To find out where influenza vaccination is available in Yakima County, go to http://yakimahealthdistrict.org/commhealth/flushots.htm

Chemoprophylaxis and Chemotherapy

National laboratory surveillance during the 2009-2010 season demonstrated universal (≥99%) resistance to the adamantanes (amantadine and rimantidine) among A(H3N2) and A(2009 H1N1) isolates. These agents should not be used for treatment of influenza.

The mainstay of treatment for suspected and confirmed influenza A and B virus infections is the neuraminidase inhibitor class of antivirals: oseltamivir and zanamivir. Resistance to oseltamivir was demonstrated in just 1% of A(2009 H1N1) isolates; resistance appears to be mediated by a common mutation. Most cases of resistance were associated with patients who had received prior chemoprophylaxis or who were immunosuppressed. Zanamivir inhalation powder should be used cautiously or not at all in patients at risk for bronchospasm; nor should it be reconstituted in diluent and then administered via nebulizer. Peramivir may again become available for investigational treatment of patients hospitalized with influenza A(2009 H1N1).

In general, treatment with an antiviral agent, when indicated, should begin as soon as possible after the onset of typical influenza-like symptoms--ideally within 48 hours. In settings where a reliable rapid test for influenza is available, the results of that test can be used to supplement clinical judgment in guiding decisions about empiric therapy. Priority candidates for empiric therapy include pregnant women, children <2 years of age, patients ≥65 years of age, and individuals with any of the chronic medical conditions mentioned above or listed in Table 14 of the *Bulletin* insert.

Indications for chemoprophylaxis generally include exposure to a confirmed case during their infectious period (24 hours prior to fever onset until 24 hours after fever resolves) and presence of one or more of the following: pregnancy, medical conditions predisposing to severe or complicated illness, or healthcare employment. Please note that CDC guidelines in the A (2009 H1N1) pandemic emphasized that a preferred alternative to chemoprophylaxis for healthy vaccinated persons following an exposure is early recognition of illness and, if appropriate, treatment. Chemoprophylaxis is also recommended for residents and staff of long-term care facilities where an influenza outbreak is occurring. It should be considered in other congregate living settings with influenza outbreaks, as well.

Specific dosing for the neuraminidase inhibitors can be found by going to http://www.cdc.gov/H1N1flu/recommendations.htm and scrolling to Table 1 at the bottom of the document.

Surveillance

The following influenza-related morbidity and mortality is considered a notifiable condition and should be reported to YHD within three working days:

- laboratory-confirmed influenza death in a patient of any age
- pregnant women admitted to an intensive care unit with laboratory-confirmed influenza
- any suspected or laboratory-confirmed infection due to a novel influenza virus (e.g., "avian influenza" A/H5N1). Note that 2009 H1N1 influenza is no longer a novel virus
- outbreaks of influenza-like illness or laboratory-confirmed influenza in an institutional setting (e.g., long term care facility)
- unexplained critical illness or death in persons <50 years of age

To submit a report, please call (509) 249-6541 or send a fax to (509) 249-6628.

To track influenza and respiratory syncitial virus activity in Yakima County throughout the season, visit www.yakimahealthdistrict.org/commhealth/immproviders.htm

For more information on the 2009 H1N1 pandemic, as well as influenza immunization, chemotherapy, and chemoprophylaxis, see:

- Washington State DOH. 2009 H1N1 Influenza in Washington State: A summary of the first year April 2009-May 2010. http://www.doh.wa.gov/notify/nc/influenza.htm
- CDC. The 2009 H1N1 Pandemic: Summary Highlights, April 2009-April 2010. http://www.cdc.gov/h1n1flu/cdcresponse.htm
- CDC. Update: Influenza Activity --- United States, 2009--10 Season. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5929a2.htm?s_cid=mm5929a2_w
- Eick et al. Maternal influenza vaccination and effect on influenza virus infection in young infants. Arch Pediatr Adolesc Med; Epub (E1-8); October 4, 2010.
- CDC. Recommendations of the ACIP on or 2010-11 Influenza Prevention and Control Recommendations see Prevention & Control of Influenza with Vaccines - Recommendations of the Advisory Committee on Prevention and Control of Influenza, 2010. MMWR 2010 Aug 6; 59(RR08):1-62.

Influenza 2009 H1N1 Key Figures & Tables

Courtesy of Washington State DOH (2010)

For a comprehensive review of figures, see - http://www.doh.wa.gov/notify/other/H1N1SummRpt-FigsTabs.pdf

Figure 2. Number of severe 2009 H1N1 influenza cases by region of residence (n=1667)

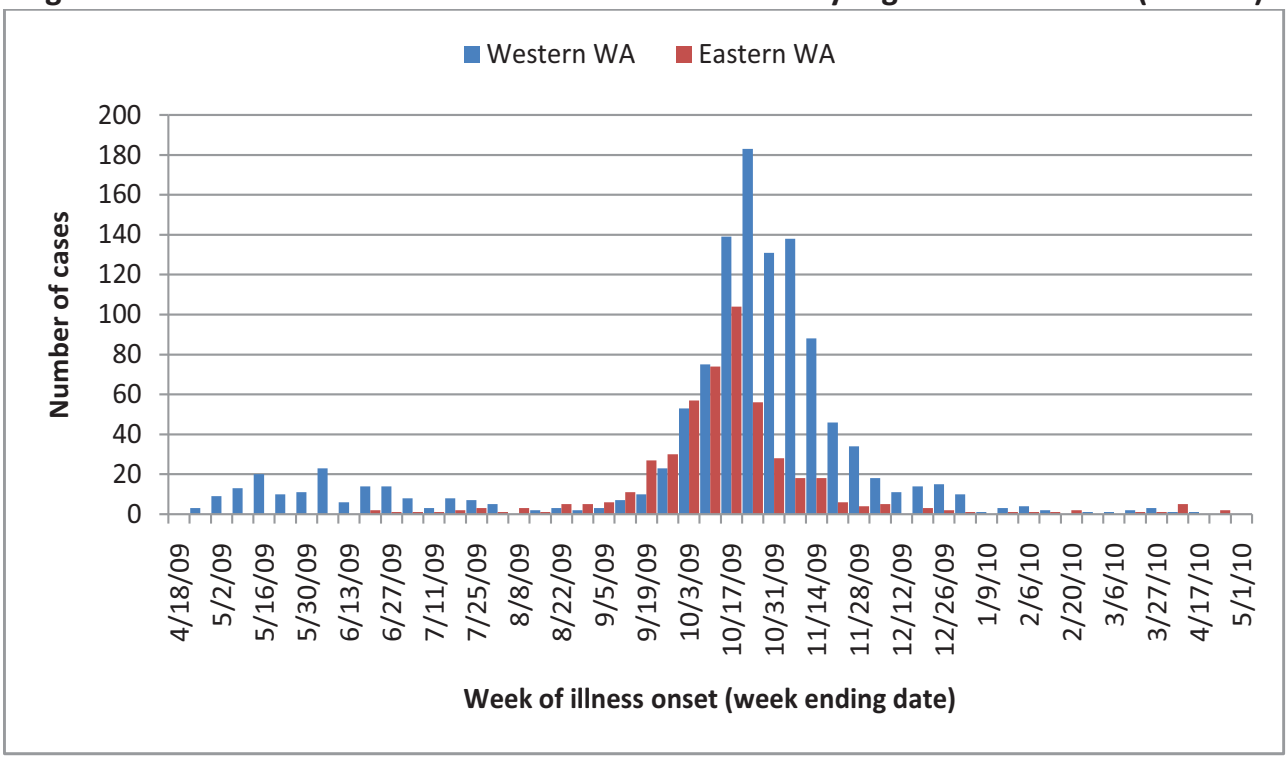

Figure 10. Number of severe influenza A cases by county of residence, September 2009–April 2010 (n=1479)

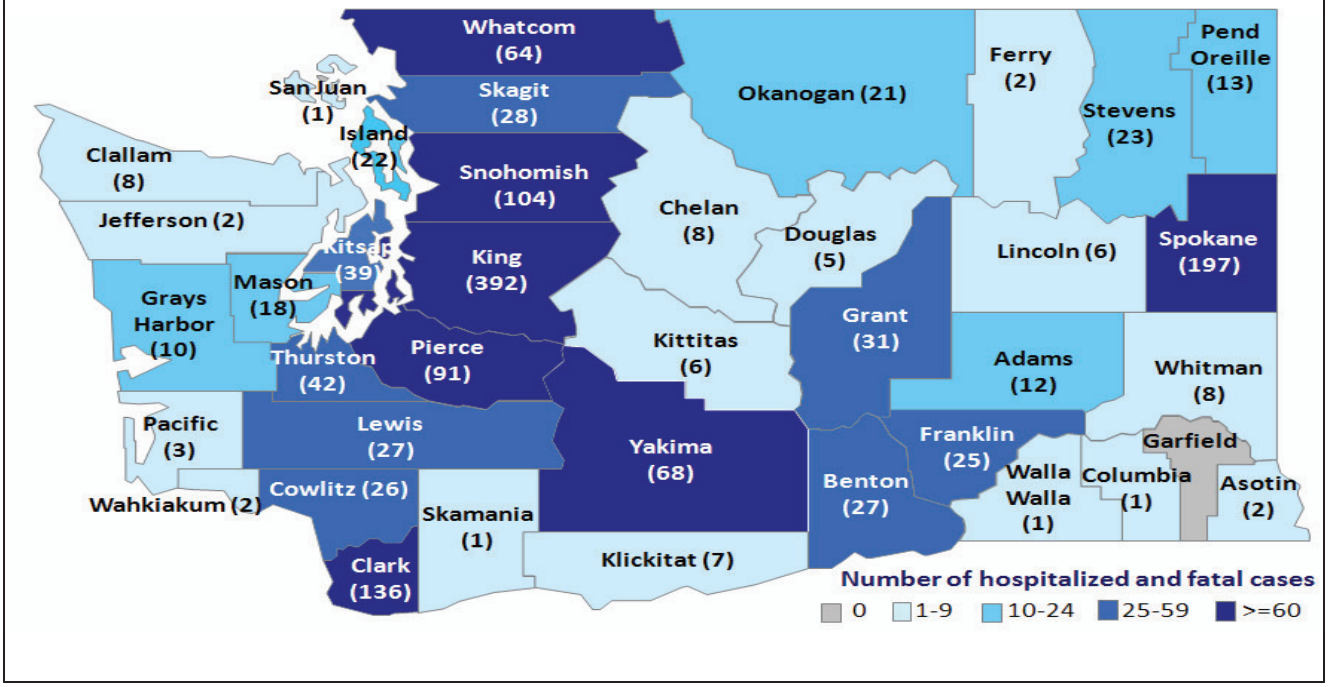

Table 14. Underlying conditions among severe influenza A cases by age, September 2009–April 2010

	Number of Severe Cases (%)		
Condition	All Ages (n= 1258*)	Age 0-17 years (n=369)	Age 18+ years (n=889)
Any ACIP-defined risk factor	883 (70)	213 (58)	670 (75)
Asthma	264 (21)	75 (20)	189 (21)
Chronic lung disease	209 (17)	17 (5)	192 (22)
Diabetes	202 (16)	11 (3)	191 (21)
Heart Disease	156 (12)	15 (4)	141 (16)
Pregnancy	107 (9)	14 (4)	93 (10)
Immunocompromised	143 (11)	23 (6)	120 (13)
Neurologic condition	122 (10)	55 (15)	67 (8)
Chronic Liver	30 (2)	2 (<1)	28 (3)
Chronic Kidney	74 (6)	4 (1)	70 (8)
Hemoglobinopathy	13 (1)	5 (1)	8 (1)
Metabolic	11 (1)	8 (2)	3 (<1)

*Underlying condition data are unknown for 221 cases.

Table 19. Clinical characteristics of pregnant women hospitalized with influenza A during pregnancy, April 2009–January 2010

Clinical Characteristic	No. Cases (%)
Gestational Age*	
First trimester (≤14 weeks)	6 (6)
Second trimester (15–27 weeks)	27 (27)
Third trimester (28–42 weeks)	65 (65)
Postpartum	2 (2)
Any ACIP condition prior to pregnancy**	29 (29)
Any ACIP condition incl pregnancy conditions**	35 (35)
Asthma**	23 (23)
Smoking	11 (11)
Received antiviral treatment	99 (98)
Median Days to antiviral treatment (range)	2 days (0–20 days)
Median length of stay (range)	2 days (1–34 days)

*Gestational age unknown for one patient.

** ACIP high risk conditions at http://www.cdc.gov/h1n1flu/highrisk.htm

Syphilis Morbidity, Testing, and Treatment

Background and Epidemiology

Syphilis is a sexually transmitted disease that is caused by the spirochete *Treponema pallidum*. Many patients infected with syphilis may not develop symptoms immediately. Although transmission occurs primarily in the setting of painless genital ulcers (primary syphilis) or mucosal lesions or rash (secondary syphilis), these signs and symptoms may go largely unnoticed by the infected individual and their sex partner. Thus, transmission may occur from individuals who are unaware of their infection. Unrecognized and untreated infections can lead to delayed personal health problems, including irreversible ocular, cardiovascular, and neurologic damage (late or tertiary syphilis). Public health priorities guiding syphilis control efforts are to prevent congenital transmission from pregnant women and to reduce its prevalence as a co-factor in facilitating transmission of human immunodeficiency virus.

From January 1 through September 30, 2010, five cases of primary and secondary (infectious) syphilis and three cases of latent or late (non-infectious) syphilis have been reported in Yakima County. Most, if not all, of Yakima County's infectious cases have been connected to ongoing endemic transmission among men who have sex with men (MSM) in King County, where161 cases of infectious syphilis have been reported this year through September 30. However, local transmission in Yakima County has not been definitively excluded, and each case in a Yakima resident presents a definite threat to initiate sustained transmission here. Therefore vigilance should remain high for clinical manifestations or behavioral risk factors suggesting syphilis, particularly among MSM.

Laboratory Diagnosis

In addition to *diagnostic* testing among patients presenting with clinical manifestations of syphilis (painless genital ulcers, characteristic palmoplantar rashes or mucous membrane lesions, stroke, uveitis, mental illness, some neurologic conditions), screening should be routinely offered to asymptomatic MSM on a periodic basis (e.g., at least yearly) and to pregnant women. **All suspected and confirmed cases of syphilis should be reported to YHD within three working days.** Call (509) 249-6541 to report a case.

In most settings across the U.S., testing for syphilis traditionally has consisted of initial screening with a nontreponemal test (VDRL or RPR), then re-testing reactive specimens with a more specific treponemal test (TPPA or FTA-ABS). Recently, however, laboratories have begun using *T. pallidum* antibody enzyme immunoassays (TP-EIAs) as the initial screening test. A positive TP-EIA result can indicate either active infection, latent infection, late sequelae, or resolved infection. This new approach to syphilis screening reverses the traditional testing sequence to one of screening first with a qualitative, treponemal test and then re-testing reactive results with a quantitative, nontreponemal test.

This change improves laboratory worker safety by adopting technology that is automated, reducing the amount of manual pipetting within a laboratory. Test performance may also be improved; an evaluation conducted by CDC in 2008 found that this newer approach yielded positive results in an additional 3% of samples that would not have otherwise been detected by the traditional algorithm. Furthermore, in high volume settings, EIA testing is more cost-effective.

In patients with negative TP-EIA results, no further testing will occur and they are considered negative for syphilis with a reasonably high degree of certainty. Specimens from patients with positive TP-EIAs will undergo reflex testing by RPR. If the RPR is reactive, a quantitative titer will follow. Such patients are considered infected with syphilis and in need of treatment unless they have documentation of or a reliable history of previous adequate therapy. Previously treated patients, however, should be considered re-infected or relapsed if titers are four-fold greater than prior results or if they have clinical findings consistent with syphilis. **For assistance in recovering a patient's prior syphilis treatment or titer history, please contact Lisa Baldoz at (509) 249-6531.**

In the case that a patient has a positive TP-EIA but a negative RPR, testing in most laboratories will reflex to TPPA as a tie-breaker. If the TPPA is positive, they should be treated for late latent syphilis unless they have a history of previous adequate therapy. If, on the other hand, both the RPR and the TPPA are negative, the patient can be considered negative for syphilis with a reasonably high degree of certainty.

Treatment

Treatment for syphilis infections remains the same as it has been for decades. For primary, secondary, and latent syphilis of less than one year's duration, patients should receive benzathine penicillin (2.4 million units intramuscularly) in a single dose. Cases of latent syphilis that are likely to be of greater than one year's duration should receive three doses of benzathine penicillin (2.4 million units IM per dose) at 7-day intervals. Inferior and unproven alternatives for penicillin allergic patients include extended courses of doxycycline or ceftriaxone or large doses of azithromycin. Treatment failure rates with such regimens are higher, warranting close clinical and serologic follow-up and particular discouragement of their use in HIV-infected patients and pregnant women. In general, YHD recommends that penicillin allergic patients be referred for skin testing and desensitization to penicillin rather than being given alternative agents. At a minimum, penicillin allergic patients who do not undergo skin testing and desensitization should be managed by an infectious diseases specialist or other clinician familiar with management of syphilis. Likewise, cases of suspected neurosyphilis and other forms of tertiary syphilis should be managed in consultation with an infectious diseases specialist.

For further information on syphilis epidemiology, clinical presentation, testing and treatment of syphilis, see:

CDC Syphilis Website (http://www.cdc.gov/std/syphilis/default.htm)

PAML Test Update, Screening for syphilis with a treponemal enzyme immunoassay. June 10, 2010. http://www.paml.com/Files/TestUpdates/Syphilis%20PAML.pdf

Centers for Disease Control and Prevention. Syphilis testing algorithm Using Treponemal Tests for Initial Screening --- Four Laboratories, New York City, 2005—2006. MMWR 2008:57(32)872-875. http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5732a2.htm

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	Cases			Total Cases by Year	
Condition *(includes confirmed and probable cases)*	**Jan-Sept**	**Jan-Sept**	**Jan-Sept**	**Total Cases by Year**	**Total Cases by Year**
	2010	**2009**	**2008**	**2009**	**2008**
Campylobacteriosis	100	71	89	101	118
Cryptosporidiosis	3	2	4	3	7
Enterohemorrhagic E. coli	9	10	10	10	11
Giardiasis	20	22	22	26	24
Salmonellosis	42	32	36	40	49
Shigellosis	1	5	5	7	8
Hepatitis A acute	0	2	1	2	2
Hepatitis B acute	0	2	1	2	2
Hepatitis B chronic	2	6	7	9	9
Hepatitis C acute	1	1	0	2	0
Hepatitis C chronic	195	116	127	191	182
Meningococcal	2	1	1	2	1
Pertussis	9	30	18	34	29
Tuberculosis	7	4	10	7	10
HIV/AIDS New	10	12	NA	12	9
HIV/AIDS Deaths	1	8	NA	8	6
HIV/AIDS Cumulative Living	177	168	159	168	159
Chlamydia	842	874	884	1180	1167
Genital Herpes—Initial	43	39	58	57	66
Gonorrhea	17	31	72	39	85
Primary and Secondary Syphilis	5	2	1	2	1

Notifiable Conditions Summary Jan - Sept, 2010