Communicable Disease & Immunization Update

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Tacoma-Pierce County Health Department
Healthy People in Healthy Communities

Preparing for the 2013–2014 Influenza Season

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Season to season, influenza activity is impossible to predict. To keep you informed, we begin distributing weekly updates starting in October and issue the most current prevention, diagnosis and treatment recommendations throughout the season.

Trivalent Vaccines

On February 27, 2013, the Food and Drug Administration's (FDA's) Vaccines and Related Biological Products Advisory Committee recommended that trivalent influenza vaccines for the 2013–2014 influenza season contain the following:

- One A/California/7/2009 (H1N1)-like virus;
- One (H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011; and
- One B/Massachusetts/2/2012-like virus.

The influenza H3N2 and H1N1 components of the vaccine will remain the same as they were for the 2012–2013 season; however, the B component will be changed for the trivalent vaccine. The committee also recommended that the quadrivalent formulation influenza vaccine contain the previously listed three strains and a B/Brisbane/60/2008-like virus.[1]

Quadrivalent Vaccines

Quadrivalent influenza vaccines will be available for the first time during the 2013–2014 influenza season. These new vaccine preparations have an additional antigen against a second influenza B virus. Each year, the World Health Organization (WHO) recommends the strains to use for next season's influenza vaccine preparation. WHO usually recommends two influenza A strains and one influenza B strain. However, predicting which influenza B strain will be the most predominant is difficult. Five of the ten past seasons' predicted influenza B strain was ultimately not shown to be the common strain in circulation.[2] Currently, the FDA has approved four quadrivalent products:

- Flumist nasal spray live-attenuated influenza vaccine (LAIV) by Medimmune;
- Fluarix Quadrivalent by Glaxo-Smith-Kline;
- FluLaval Quadrivalent by Glaxo-Smith-Kline; and
- Fluzone Quadrivalent by Sanofi.

These quadrivalent vaccines will cover both the Yamagata and Victoria influenza B lineages that have been in circulation since 1986.

The Centers for Disease Control and Prevention (CDC) is not recommending quadrivalent vaccine over the trivalent vaccine for the general population for the 2013–2014 influenza season, as it is expected to be in short supply.[1] On July 31, 2013, the Washington State Department of Health Vaccine Advisory Committee issued clinical guidelines for medical providers regarding the usage of LAIV versus inactivated influenza vaccine. Recent data indicate that LAIV (Flumist) is more effective than inactivated influenza vaccine for children ages 2–7 years old. In a situation where both LAIV and inactivated influenza vaccines are available, medical providers should consider using LAIV for healthy children ages 2–7 years old without a history of asthma or wheezing problems. Vaccination should not be delayed if LAIV is not available.[2]

Cell-based Vaccines: Egg Allergy Alternate

Two other new vaccine products, called cell-based vaccines, will be introduced during the 2013–2014 season. This new technology has the potential to produce influenza vaccine more quickly than the standard egg-based method. Also, these products can be used for people with true severe egg allergy for whom egg-produced influenza vaccine is contraindicated. Flucelvax (by Novartis) uses antigens derived from influenza virus that is grown from mammalian cells instead of chicken eggs and Flublok (by Protein Sciences) uses recombinant DNA technology and insect cells.

Influenza Diagnosis

More than ten rapid influenza diagnostic kits are now FDA-approved. Rapid testing can be very useful as a quick tool for clinical decision-making. However, clinicians must remember that the sensitivity of rapid tests is low, ranging from 50–70%. Test results should be interpreted based on a person's symptoms and influenza prevalence in the community. Positive and negative predictive values vary considerably depending upon the prevalence of influenza in the community. False-positive (and true-negative) influenza test results are more likely to occur when disease prevalence is low, which is generally at the beginning and end of the influenza season. False-negative (and true-positive) influenza test results are more likely to occur when disease prevalence is high, which is typically at the height of the influenza season. A person who has symptoms suggesting influenza and is also at high risk for complications should be treated with antiviral medications, regardless of rapid

Table of Contents

test results. High risk for complications includes a person who is under five years of age, elderly, pregnant, morbidly obese, diabetic or has a chronic health condition. To enhance the detection of influenza, it is best to collect specimens as close as possible to the start of symptoms and no more than 4–5 days later in adults. In very young children, the influenza virus can shed for longer periods than in adults. Therefore, testing for a few additional days may be helpful in detecting the virus.[3]

The Washington Public Health Laboratory would like to receive specimens for testing early in the season to confirm strains of circulating influenza. If more sensitive testing is not available in your facility, please call (253) 798-7671 to inquire about sending a specimen that has tested positive to the lab for confirmation and typing.

Influenza Surveillance and Weekly Updates

Influenza surveillance is generally conducted October through April. Influenza is not reportable on a case-by-case basis; however, influenza deaths, suspicion of a novel influenza virus and outbreak of influenza-like illness in facilities are reportable to the Health Department. We would like to know about very early positive tests for influenza in the community and collect information from local health facilities, laboratories, schools, electronic syndromic information from emergency departments and emergency medical systems. That information is monitored and shared with the medical community and other stakeholders.

It is important for clinicians to get up to date information about influenza circulation in the community. We publish weekly updates on local influenza activity that include links to regional, state and national surveillance. Please sign up for our updates by going to www.tpchd.org/alert. Enter your contact information, select "Health Advisories and Disease Alerts" and click "Submit."

Sources

1. MMWR. Influenza Activity-United States, 2012-13 Season and Composition of the 2013-14 Influenza Vaccine. [Online] June 14, 2013. www.cdc.gov/mmwr/preview/mmwrhtml/mm6223a5.htm.
2. WSDOH. Vaccine Advisory Committee Current Recommendations. [Online] July 31, 2013. www.doh.wa.gov/PublicHealthandHealthcareProviders/PublicHealthSystemResourcesandServices/Immunization/VaccineAdvisoryCommitteeVAC/CurrentRecommendations.aspx.
3. CDC. Rapid diagnostic testing for influenza. [Online] 2013. www.cdc.gov/flu/professionals/diagnosis/rapidlab.htm.

2012–2013 Influenza Season Recap

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Locally and across the country, the 2012–2013 influenza season occurred earlier than usual and was considered to be moderately severe, according to the Centers for Disease Control and Prevention (CDC).[1]

Influenza season is judged to be underway when the proportion of influenza tests that are positive reaches 10%. Nationally, the CDC declared the beginning of the influenza season four weeks early than usual. Influenza activity rose quickly above baseline and remained elevated for 15 consecutive weeks. Locally, influenza tests reported by Laboratories Northwest reached 10% positive during the first week of November, which was early for the Pacific Northwest. Typically, this begins mid-to-late December and peaks in February.

Across Western Washington, influenza outbreaks occurred frequently in nursing homes and in other facilities. Acute care hospitals were at capacity around the peak of the season in January, and hospital emergency departments frequently diverted patients to other facilities. By the end of the season, a total of 112 outbreaks of influenza-like illness (ILI) in health facilities were reported in Washington State.

The predominant influenza strain was A-H3N2, which was well matched with the vaccine preparation. Influenza A-H3N2 is associated with increased severity of illness, especially in the elderly. There was a dramatic increased rate of hospitalization in elderly persons compared to the last four influenza seasons (see Figure 1).[2]

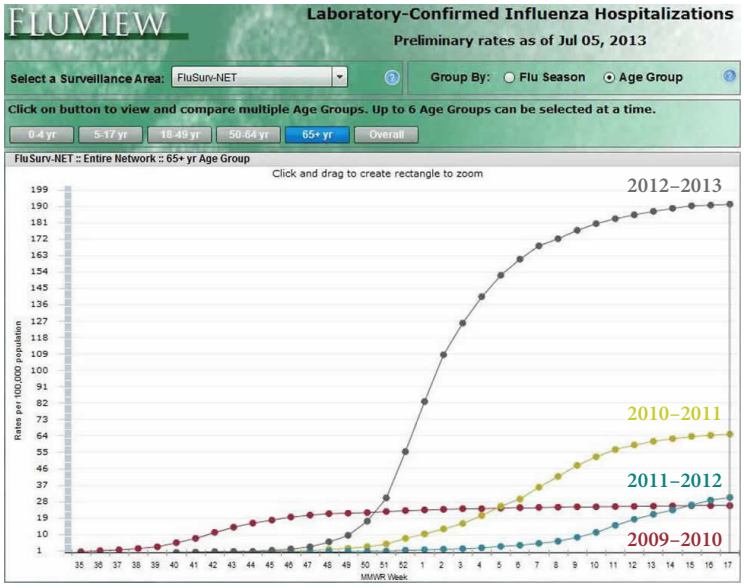

Figure 1. Laboratory-Confirmed Influenza Hospitalization, Age 65 Years or Older, Last Four Seasons

Influenza Deaths

A total of 54 influenza-associated deaths were reported in Washington State during the past season, including four in Pierce County.[3] Influenza deaths became reportable in Washington State during the 2009 influenza A-H1N1 pandemic. Not all states require reporting of influenza deaths; however, pediatric deaths have been nationally notifiable since 2005. Most influenza deaths occur in persons with underlying medical issues; however, influenza is not routinely listed as the cause of death on death certificates. Using statistical models, the CDC estimates the numbers of deaths due to influenza from death certificates that lists pneumonia and influenza (P&I) causes and respiratory and circulatory (R&C) causes. The CDC estimates underlying R&C deaths (including P&I deaths) as the primary outcome in its mortality model. R&C deaths provide an estimate of deaths that include secondary respiratory or cardiac complications that follow influenza.

As of June 21, 2013, 153 pediatric deaths were reported to the CDC for the 2012–2013 season. Fifty-four percent of these children had an underlying

medical condition. On March 23, 2013, the CDC reported that 90% of pediatric deaths (105 at the time) were in children who did not receive an influenza vaccination. The number of pediatric deaths during regular influenza season has ranged from 34 during 2011–2012 to 122 during 2010–2011 to 348 during the 2009 influenza A-H1N1 pandemic.[4]

Vaccine Effectiveness

At the July meeting of the Advisory Committee on Immunization Practices (ACIP), the committee discussed preliminary results of vaccine effectiveness (VE) for the 2012–2013 season. The ACIP concluded that the influenza vaccine had moderate effectiveness for most age groups against the circulating viruses. Across all populations, VE against influenza A and B viruses was 52%. This estimate was similar to early (62%; 95% CI: 51% to 71%) and mid-season (56%; 95% CI: 46% to 63%) interim estimates. However, lower VE was reported against the A-H3N2 component for children aged 9-17 (24%; 95% CI: -17% to 50%) and adults aged 65 and older (19%; 95% CI: -36% to 52%). For most of the population, the influenza vaccine was shown to reduce the risk of influenza-associated medical visits from influenza A-H3N2 by about one-half (44%; 95% CI: 35% to 52%). Across all populations, Influenza-associated medical visits from influenza B were reduced by about two-thirds (62%; 95% CI: 55% to 68%).[5]

Sources

1. MMWR. Influenza Activity-United States, 2012-13 Season and Composition of the 2013-14 Influenza Vaccine. [Online] June 14, 2013. www.cdc.gov/mmwr/preview/mmwrhtml/mm6223a5.htm.
2. CDC. Laboratory-confirmed influenza hospitalizations. FluView. [Online] July 5, 2013. gis.cdc.gov/GRASP/Fluview/FluHospRates.html.
3. WSDOH. Washington State Influenza Surveillance Report. [Online] 2013. www.doh.wa.gov/portals/1/Documents/5100/fluupdate.pdf.
4. CDC. 2012-2013 Influenza season week 28 ending July 13, 2013. FluView. [Online] July 2013. www.cdc.gov/flu/weekly/.
5. astho.org. Key Points: updated influenza vaccine effectiveness estimates for the 2012-13 flu season. [Online] June 2013. www.astho.org/About/Documents/Influenza-VE-Estimates-June-20/?__taxonomyid=179.

Vibrio parahaemolyticus

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Case Study

A 73 year-old woman complains of an acute onset of watery diarrhea for 18 hours after consuming two raw oysters at a restaurant. She describes having abdominal cramps, nausea, but denied vomiting, fever or blood in stool. Prior to her illness, the patient took omeprazole for gastroesopheal reflux disease (GERD). The microbiology lab isolated *Vibrio parahaemolyticus* from her stool. She was given intravenous rehydration, but no antibiotics. Her illness was self-limited, lasting five days.

Background

V. parahaemolyticus and other *Vibrio* species not commonly seen in the Pacific Northwest inhabit the coastal waters of the United States and Canada, accounting for 34% of all subtypes in this region.[1] Warm temperatures favor *V. parahaemolyticus* multiplication, which is why cases occur primarily during the summer months. Shellfish filtering of seawater further concentrates these bacteria, which explains the frequent history of recent raw oyster consumption in patients with *V. parahaemolyticus* gastroenteritis.

This past summer, both the Food and Drug Administration (FDA) and Washington State Public Health Lab identified *V. vulnificus* in oysters sampled from Washington waters. In addition to acute gastroenteritis, this species causes wound infections when contaminated seawater contacts open wounds. Sepsis may occur, too, especially in the immunocompromised. To date, no such infections have been reported from consumption of Washington seafood or contact Washington waters. If you suspect *V. vulnificus* infection, please alert the microbiology lab and submit a report to the Health Department.

In 1987, vibriosis became notifiable in Washington State. Since 1999, annual reports of vibriosis to the Health Department have ranged from zero to six. In 2013, the Health Department has been notified of eight cases so far, all between May 30 and August 20. Healthcare providers are required to submit a report within 24 hours when they diagnose or suspect a patient that has a disease due to *Vibrio* species. For example, a healthcare provider should report when a patient experiences an acute onset of watery diarrhea, and has consumed raw or undercooked seafood in the past 4 to 96 hours. By promptly reporting to the Health Department, communicable disease investigators are alerted to likely cases several days before being notified by a medical laboratory.

Like all notifiable conditions, only a fraction of cases are reported. Reasons for under-reporting may include a patient not seeking medical care or a healthcare provider not considering the possible diagnosis. *V. parahaemolyticus* can be isolated from stool, wound and/or blood. If vibriosis is suspected, providers should inform the microbiology laboratory when sending a specimen for culture because some labs use special selective media to isolate this bacterium from mixed cultures.

Health Department Response

Two programs at the Health Department respond to vibriosis reports: Communicable Disease (CD) and Food and Community Safety (F&CS). CD initially receives and responds to the *V.*

Summary of *Vibrio parahaemolyticus* Syndrome

Symptoms

- Acute onset of watery diarrhea, with abdominal cramps
- Often occur with fever, nausea, vomiting and headache
- Person-to-person transmission probably does not occur

Duration

- Incubation period averages 12–24 hours but can be 4–96 hours
- Self-limited Illness lasting one to seven days

Diagnosis

- Culture stool, wound and/or blood, as clinically indicated

Treatment

- Treat appropriately with rehydration
- Reserve antibiotics for rare complication of septicemia

Risk Factors

- Consumption of raw or undercooked seafood, especially shellfish
- Host factors include:
  - Low gastric acidity, e.g., from medication
  - Chronic liver disease
  - Diabetes
  - Immunosuppression

parahaemolyticus positive stool culture report from a medical laboratory. They begin the investigation by interviewing the case to determine the source of illness. CD collects information on when, where, and what seafood the case consumed (e.g., type of oyster). Many times, the patient has picked oysters off the beach at low tide, in which case, we notify the Washington State Shellfish Program with information about the location. If the oysters were consumed at a restaurant or purchased from a retailer, F&CS begins a trace-back investigation to identify the seafood distributor and ultimately the harvest location. F&CS may conclude that unsafe seafood handling practices were found among distributors. The Washington State Shellfish Program may temporarily close certain beaches to shellfish harvesting or curtail distribution of suspect product to prevent additional cases of *V. parahaemolyticus* gastroenteritis.

Patient Education

To avoid *V. parahaemolyticus* infection, healthcare providers should instruct patients to not eat undercooked or raw shellfish, especially oysters. Persons with immune compromising conditions should abstain from consuming raw shellfish. Vibriosis wound infection can be prevented by avoiding exposure of skin wounds to warm seawater.

Source

1. CDC. National Enteric Disease Surveillance: COVIS Annual Summary, 2011. [Online] 2011. www.cdc.gov/ncezid/dfwed/PDFs/covis-annual-report-2011-508c.pdf.

Reported Cases of Selected Diseases for August 2013

Preliminary case counts

ENTERIC DISEASES	August 2013	Jan.–Aug. 2013	Jan.–Aug. 2012
Campylobacter	35	182	149
Cryptosporidium	5	18	12
Giardia lamblia	4	31	37
Salmonella	17	52	50
Shigella	0	1	2
Enterohemorrhagic *E. coli*	3	13	6
HEPATITIS			
Hepatitis A (Acute)	0	1	1
Hepatitis B (Acute)	0	1	0
Hepatitis C (Acute)	0	2	1
Hepatitis B (Chronic)	14	95	66
Hepatitis C (Chronic)	65	523	523
INVASIVE DISEASES/BACTERIAL			
Listeriosis	0	1	1
Meningococcal	0	0	3
SEXUALLY TRANSMITTED DISEASES			
Chlamydia	378	2,801	2,919
Gonorrhea	64	619	396
Syphilis-Primary, Secondary & Early Latent	4	25	30
Syphilis, Late & Late Latent	1	10	18
TUBERCULOSIS			
Tuberculosis	5	19	15
VACCINE PREVENTABLE DISEASES			
Measles	0	0	0
Mumps	0	1	0
Rubella	0	0	0
Pertussis	12	105	659
OTHER DISEASES			
Botulism (wound)	0	1	0
Carbapenemase-Resistant Enterobacteracea	0	2	0
Legionellosis	0	2	2
Lyme Disease	1	1	2
Malaria	0	3	3
Typhoid Fever	0	0	0
West Nile Virus	0	1	1

Please remember to report communicable diseases to the Health Department. Accurate reporting helps stop the spread of communicable diseases. Provider and laboratory reporting of specific diseases is required by law.

24-Hour Reporting Line

(253) 798-6534

Confidential Fax Line for Case Reports

(253) 798-7666