Communicable Disease & Immunization Update

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Tacoma-Pierce County Health Department
Healthy People in Healthy Communities

Flu Season 2015-2016

The 2014-2015 influenza season took us on a wild ride. It started early, ended late, and caused a higher number of deaths and facility outbreaks than any other season since 2004. In addition, the predominant strain of influenza that circulated last season was not represented in the vaccine. The challenges of last season and the unpredictability of influenza in general underscore the importance of preparation, paying attention to current surveillance information and staying abreast of vaccine and treatment recommendations.

Recap of 2014-2015 Season

The 2014-2015 season was the most severe influenza season in several years. Influenza A-H3N2 was the predominant virus to circulate, representing over 99% of influenza A viruses subtyped at CDC reporting laboratories. Nationally and locally, persons age 65 and older accounted for the majority of hospitalizations and deaths. The most common underlying conditions for persons that were hospitalized were cardiovascular disease and diabetes. The hospitalization rate in people 65 years and older was 322.8 per 100,000, which is the highest hospitalization rate recorded since data collection on laboratory-confirmed influenza-associated hospitalization in adults began during the 2005-2006 season. Previously, the highest recorded hospitalization rate was 183.2 per 100,000, which was the cumulative hospitalization rate for people 65 years and older for the 2012-2013 season. (The 2012-2013 season was the last H3N2-predominant season.)

Deaths from influenza have been reportable in Washington since 2009 only; this year marked the highest number of deaths per season since 2009 (see chart). One of the deaths in Pierce County was a young child; most occurred in seniors age 65 and over.

Influenza Associated Deaths		
Season	**Washington**	**Pierce County**
2014–2015	157	25
2013–2014	79	10
2012–2013	54	4
2011–2012	18	1
2010–2011	36	3
2009–H1N1 pandemic	98	13

The 2014-2015 flu season was also unusually long. Last season we saw higher flu activity than normal well into spring, with nursing home outbreaks and 2 deaths occurring in May.

Flu Vaccine for 2015–2016

The vaccine formulation this season is different from last season.[1] The vaccine strains in 2015–16 formulation are:

- A/California/7/2009 (H1N1) pdm09-like virus
- A/Switzerland/9715293/2013 (H3N2)-like virus
- B/Phuket/3073/2013-like virus. (This is a B/Yamagata lineage virus)

Some of the 2015–2016 flu vaccine is quadrivalent vaccine and also protects against an additional B virus (B/Brisbane/60/2008-like virus This is a B/Victoria lineage virus). More vaccine this season will be quadrivalent. All of the live-attenuated nasal spray (LAIV Flumist®) and the intradermal vaccine will be quadrivalent.

Annual influenza vaccination is currently recommended for everyone 6 months of age and older, unless the person has had anaphylaxis to a previous flu vaccine. Egg allergy is no longer an absolute contraindication to flu vaccine; see the full guidance and an easy to read algorithm for immunization of egg-allergic people at www.cdc.gov/mmwr/preview/mmwrhtml/mm6430a3.htm?s_cid=mm6430a3_e.

Last season, just under 148 million doses of flu vaccine were distributed; for the upcoming season the forecast is for 151 to 156 million doses.

Children 6 months through 8 years of age who have not received at least 2 doses of seasonal influenza vaccine during their lifetime should receive 2 doses of the 2015-16 seasonal influenza vaccine (a minimum of 4 weeks apart). Last season, based on several previous studies that indicated better effectiveness of live attenuated flu vaccine (LAIV, Flumist®) for young children, CDC issued a preferential recommendation for LAIV over injectable vaccine for kids age 2-7. However last season, LAIV was *less* effective than the injectable and the 2015-2016 guidelines state that there is **no longer a preference for LAIV** over injectable vaccine for young children.

Fluzone High Dose® has been available for people age 65 yrs and older for the past several seasons. In large double-blind population studies, the high dose vaccine was found to be 24.2% more effective than the standard preparation (95% CI, 9.7 to 36.5).[2] For the same study population, it was recently reported that a high dose vaccine is 17.7% more effective than standard dose in overall serious flu-related events (death, hospitalization or prolonged hospitalization).[3] In addition, the high dose vaccine was found to be 39.8%

more effective in preventing serious pneumonia. The Centers for Disease Control and Prevention (CDC) has not expressed a preference for this vaccine over any other influenza preparation for seniors.

Flu Vaccine Uptake

Influenza vaccine is one of our most underutilized vaccines. Last season at the end of November, coverage for adults was 39.7% and for children 42%4. Because they are at greater risk for influenza-related complications and hospitalization, pregnant women are a high-priority for vaccine. Yet by the end of November 2014, 43.5% of pregnant women in a CDC internet panel survey reported receiving a flu vaccine. Women who received a recommendation for and an offer of vaccination from a health care professional were more likely to be vaccinated. They were over two times more likely to be vaccinated than women who received only a recommendation for vaccination but no offer of vaccination (65.2% vs. 25.5%) and eleven times more likely to be vaccinated as women who did not receive a recommendation for vaccination (65.2% vs. 5.8%).

Health care personnel are at high risk for contracting and transmitting influenza to vulnerable patients, and should be vaccinated. Last season, the annual internet panel survey showed that 78% of hospital workers, 66% of ambulatory care, and 54% of long-term care personnel were vaccinated. Many studies show that the highest levels of immunization occur in facilities that require their employees to be immunized.

Influenza Treatment

Last season, because of the severity of the flu season and low effectiveness of the influenza A/H3N2 component of the vaccine, CDC issued strong recommendations for antiviral use. In our surveillance of hospitalized patients, we found that almost 100% of hospitalized patients in Pierce County for whom the information was available, received antiviral treatment. Antiviral treatment is recommended for all hospitalized patients and those who are at higher risk for influenza complications (hospitalized or outpatient). Antivirals can also be given as prophylaxis to household contacts of confirmed cases, or for residents of congregate settings during influenza outbreak.

For full antiviral recommendations and prescribing information, see www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm.

Influenza Surveillance

We monitor influenza testing at local laboratories, emergency room activity, influenza hospitalizations, school absenteeism and outbreaks in facilities. A weekly influenza update for Pierce County, which includes state and national summaries and links can be found on our website www.tpchd.org/providers-partners/influenza-medical-providers.

To stay current on local influenza activity, you may sign up to receive our health alerts here; www.tpchd.org/email.php. Check on the box for Health Advisories and Disease Alerts.

Sources

1. Prevention and Control of Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices, United States, 2015–16 Influenza Season. MMWR August 7, 2015 / 64(30);818-825.
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3. C.A. DiazGranados, A.J. Dunning, M. Kimmel, D. Kirby, J. Treanor, A. Collins, et al.Efficacy of high-dose versus standard-dose influenza vaccine in older adults. N Engl J Med, 371 (7) (2014), pp. 635–645.
4. CDC FluVaxView www.cdc.gov/flu/fluvaxview/

Antibiotic Prescriptions for Diarrhea in Pierce County

Matthew Rollosson, RN, MPH&TM

Campylobacteriosis, salmonellosis, and Shigatoxin producing *E. coli* (STEC) infections are nationally notifiable conditions. Tacoma-Pierce County Health Department (TPCHD) epidemiology staff investigate cases of notifiable diseases and collect epidemiologic and clinical data on all confirmed, probable, and suspect cases residing in Pierce County. The purpose of this public health work is to detect outbreaks, control spread of communicable diseases within households and social groups in the community, investigate potential sources of infection and to characterize disease trends. In the course of our investigations, we found that many campylobacteriosis, salmonellosis, and STEC cases had been prescribed one or more antibiotics for treatment of their diarrheal illnesses.

Methods

In an effort to quantify the proportion of cases receiving antibiotics, we retrieved data for all cases of campylobacteriosis, salmonellosis, and STEC in Pierce County from January 1, 2010 through December 31, 2014. For campylobacteriosis and salmonellosis, we limited our analysis to adults ages 19 to 45 years to exclude pediatric patients and older adults who are more likely to have chronic, pre-existing conditions. Because antibiotic therapy can increase the risk of hemolytic-uremic syndrome (HUS) in children with STEC, we included all ages in our analysis. We then reviewed medical records of cases of campylobacteriosis and salmonellosis for evidence that one or more antibiotic had been prescribed. Data on antibiotics prescribed for STEC are recorded by the TPCHD investigator and entered to our statewide public health reporting database.

Results

Campylobacteriosis We retrieved data for 943 campylobacteriosis cases reported between 2010 through 2014. Of those, 290 were between the ages of 19 and 45 years of age at the time the diagnosis was reported to TPCHD. We reviewed the medical records of 54 of those cases. Of those, 24 (44%) had been prescribed an antibiotic to treat their campylobacteriosis. Five of those had received azithromycin, the drug of choice for campylobacteriosis. Thirteen received ciprofloxacin and two received levofloxacin. Three received metronidazole and one received cephalexin.

Salmonellosis We retrieved data for 352 cases of salmonellosis. Out of 96 cases between the ages of 19 and 45 years of age, we reviewed the records of 41 cases. Twenty-seven of those (66%) received an antibiotic to treat diarrhea.

Shigatoxin-producing *E. coli* We retrieved data for 74 cases of STEC diarrhea, 21 (28%) of whom received antibiotics. Only one child (age 11 years) received an antibiotic. The median ages were 25.6 years for STEC cases who received antibiotic therapy and 13.8 for those who did not. The mean ages were 31.2 for cases who received antibiotics and 17.2 for those who did not ($p = 0.003$).

Disease	Records Retrieved	Age 19 to 45	Medical records reviewed	Antibiotics Prescribed	Percent
Campylobacteriosis	943	290	54	24	44%
Salmonellosis	352	96	41	27	66%
STEC	74	NA	NA	21	28%

Discussion

Although antibiotics are indicated for subsets of patients, e.g., those with non-STEC bloody diarrhea, extraintestinal infections, prolonged illness, and immunocompromised individuals, campylobacteriosis and salmonellosis are usually self-limiting diseases. Antibiotic therapy for campylobacteriosis reduces the duration of diarrhea by less than one day.[1] Antibiotic therapy does not reduce the duration of diarrhea in non-typhoidal salmonellosis and can prolong fecal shedding of the organism.[2] Antibiotic therapy for STEC can increase the release of Shiga toxins and may increase the risk of HUS in children and is therefore contraindicated.[3]

Agricultural use of fluoroquinolones has increased the prevalence of *Campylobacter* resistance to those agents.[4] Azithromycin is the current drug of choice for treating campylobacteriosis, but resistance to macrolides is increasing.[5] Fluoroquinolone resistance in non-typhoidal *Salmonella* is increasing and multidrug resistant *Salmonella* is an emerging problem worldwide.[2]

Viral gastroenteritides, e.g., norovirus, rotavirus, adenovirus infections, are the most common causes of acute diarrhea in the United States.[6] Viral gastroenteritides are not notifiable conditions, so the incidence of viral diarrhea in Pierce County is unknown.

Campylobacteriosis is one of the most common bacterial diarrheal diseases in the U.S. and is the most commonly reported diarrheal disease in Pierce County (CDC, 2014). Campylobacteriosis is second only to pertussis as the most commonly reported notifiable condition in Pierce County. The increase in the number of reported campylobacteriosis cases in Pierce County appears to be due in part to a switch from culture-based testing to antigen tests for *Campylobacter*.

Conclusions

Our data suggest that relatively large proportions of cases of campylobacteriosis, salmonellosis, and STEC infections in Pierce County are receiving unnecessary and/or contraindicated antibiotic therapy for diarrheal diseases. Most acute diarrheal diseases are self-limiting and require only supportive treatment. For most patients with acute diarrhea, antibiotic therapy offers little or no benefit and increases the risks of adverse drug effects, complications, and prolonged pathogen shedding. Inappropriate antibiotic use is one of the most important contributors to the development of antibiotic resistance. In spite of increasing resistance to fluoroquinolones in *Campylobacter* and *Salmonella*, those drugs are frequently empirically prescribed to treat diarrhea. Fluoroquinolones are among the antibiotics with the highest risk for causing *Clostridium difficile* colitis.[7]

We recognize that antibiotic therapy is indicated for some patients with acute diarrhea, however, we encourage health care providers to consider the epidemiology of diarrheal diseases in Pierce County and carefully consider the risks versus benefits of antibiotic therapy for suspected or confirmed infectious diarrhea.

We gratefully acknowledge the assistance of Aaron Pomerantz for his assistance and contributions to this article.

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Pre-Exposure Prophylaxis for HIV-PrEP

In 2014, CDC issued guidelines for pre-exposure prophylaxis for persons at high risk for HIV. While the number of new infections per year has decreased 90% since the 1990s, there have been an estimated 50,000 new infections each year since 2006. Along with treatment of HIV infection with highly-active antiretroviral therapy, pre-exposure prophylaxis (PrEP) for people at high risk for infection is expected to jumpstart a downward trend in new cases after many years of stalled progress in prevention.

Persons At Higher Risk For HIV

Most new HIV infections are in men who have sex with men (MSM). In 2010, MSM accounted for 78% of new HIV infecions among males and 63% of new infections overall. The estimated number of new HIV infections was greatest among MSM under age 35. In 2010, the greatest number of new HIV infections (4,800) among MSM occurred in young black/African American MSM aged 13–24. Young black MSM accounted for 45% of new HIV infections among black MSM and 55% of new HIV infections among young MSM overall. African Americans are disproportionately affected overall.

African Americans accounted for an estimated 44% of all new HIV infections in 2010, despite representing only 12% of the US population. Sixty four percent of women infected in 2010 were African American women.

Effectiveness

Several clinical trials have demonstrated a substantial reduction in the rate of HIV infection for men who have sex with men (MSM), men and women in heterosexual discordant couples, injection drug users and heterosexual men and women recruited as individuals. All participants in these trials received

PrEP or placebo, along with intensive counseling on safe-sex behavior, regular testing for sexually transmitted diseases (STDs), and a regular supply of condoms. In all of the studies, PrEP was much more effective in participants who took the medication consistently and had measurable levels of medication in their blood. When taken consistently, the medication was up to 92% effective in preventing HIV infection.

It is not known how quickly PrEP becomes effective after initiation of the regimen, but pharmacokinetic studies in healthy men and women suggest that maximum intracellular concentrations of tenofovir diphosphate (the activated form of the medication) are reached in blood after approximately 20 days of daily oral dosing, in rectal tissue at approximately 7 days, and in cervicovaginal tissues at approximately 20 days

Who Should Take PrEP?

PrEP is for persons that are at high risk for HIV infection, so it is important to take a detailed sexual history and ask about injection drug use. It is important to ascertain specific sexual practices, such as receptive anal intercourse, and other risk factors such as alcohol abuse and use of stimulant drugs that may affect sexual behavior. The best way to approach sensitive questions is in a matter-of-fact way and stress that this information is important for the patient's health. Careful attention to identifiying the need for PrEP is of the utmost importance if we are going to reduce health disparities in HIV among African Americans. Consult the PrEP guidelines for a discussion of questions you should ask to determine risk.

The initial evaluation should include HIV testing, screening for symptoms of acute HIV infection, renal function assessment and documentation of hepatitis B screening and vaccination. The patient should also receive risk reduction counseling and referral to any needed services.

It is very important that the daily dose of medication be taken every day. When adherence is poor, the drug is not effective and there may be concern for the development of HIV resistance. People who are at high risk for non-adherence due to drug and/or mental problems, homelessness, or other severe instability need to be given the supports they need to be able to take the medications as directed. Prescriptions should be for no more than a 90 day supply, and the patient should be seen every three months for HIV screening, assessment of medication adherence, reinforcement of prevention messages, side effect assessment, and symptom check for sexually transmitted infections (STIs). At 3 months and every 6 months thereafter, assess renal function and test for bacterial STIs every 6 months. See the table below for a snapshot of the guidance.

Safety and Side Effects

The medication is a single daily dose of tenofovir disoproxil fumarate (TDF) and emtricitabine (FTC) (Truvada®). Side effects during the trials were uncommon, but most common side effects were nausea, headache and flatulence which tended to resolve after the first month on the regimen. Decreased renal function and active hepatitis B infection are potential safety issues for the use of TDF/FTC as PrEP. Patients with creatinine clearance < 60 ml/min should not take TDF/FTC. If a patient with active hepatitis B infection were to suddenly stop TDF/FTC, hepatitis B infection can have a robust reactivation that may cause liver damage, so the PrEP candidate needs to be tested for hepatitis B and vaccinated if not infected and not immune.

Resources For Clinicians

The National HIV/AIDS Clinicians's Consultation Service www.nccc.ucsf.edu has an excellent website with comprehensive guidance. They also have a helpline that is available M-F from 8 a.m. to 3 p.m. at (855) 448-7737 or (855) HIV-PrEP.

There will be a class for clinicians on Sept. 30, 12:30–2 p.m. at Tacoma Pierce County Health Department, lunch provided. This event is for healthcare professionals who are current or prospective PrEP providers. Space is limited.

To register please RSVP before September 28 by email to juliasf@uw.edu or phone (206) 543-4327.

For more information about PrEP, call Jessica Gehle at (253) 798-2939.

Sources

1. CDC Pre Exposure Prophylaxis www.cdc.gov/hiv/prevention/research/prep

Summary of Guidance for PrEP Use

	Men Who Have Sex With Men	Heterosexual Women and Men	Injection Drug Users
Detecting substantial risk of acquiring HIV infection:	• Sexual partner with HIV • Recent bacterial STD • High number of sex partners • History of inconsistent or no condom use • Commercial sex work	• Sexual partner with HIV • Recent bacterial STD • High number of sex partners • History of inconsistent or no condom use • Commercial sex work • Lives in high-prevalence area or network	• HIV-positive injecting partner • Sharing injection equipment • Recent drug treatment (but currently injecting)
Clinically eligible:	• Documented negative HIV test before prescribing PrEP • No signs/symptoms of acute HIV infection • Normal renal function, no contraindicated medications • Documented hepatitis B virus infection and vaccination status		
Prescription	Daily, continuing, oral doeses of TDF/FTC (Truvada), ≤90 day supply		
Other services:	• Follow-up visits at least every 3 months to provide: • HIV test, medication adherence counseling, behavioral risk reduction support, side effect assessment, STD symptom assessment • At 3 months and every 6 months after, assess renal function • Every 6 months test for bacterial STDs		
	• Do oral/rectal STD testing	• Assess pregnancy intent • Pregnancy test every 3 months	• Access to clean needles/syringes and drug treatment services

Source: US Public Health Service. Preexposure prophylaxis for the prevention of HIV infection in the United States —2014: a clinical practice guideline.

Reported Cases of Selected Diseases

Preliminary case counts

ENTERIC DISEASES	This Month	2015 to Date	1/2014–7/2014
Campylobacter	36	166	138
Cryptosporidium	4	11	10
Giardia lamblia	3	26	21
Hemolytic Uremic Syndrome (HUS)	0	0	0
Salmonella	14	49	45
Shigella	3	7	4
Enterohemorrhagic *E. coli*	1	7	4
HEPATITIS			
Hepatitis A (Acute)	0	0	1
Hepatitis B (Acute)	3	4	0
Hepatitis C (Acute)	3	14	11
Hepatitis E (Acute)	0	1	0
Hepatitis B (Chronic)	18	113	92
Hepatitis C (Chronic)	113	827	661
INVASIVE DISEASES/BACTERIAL			
Haemophilus influenzae	0	0	0
Listeria monocytogens	0	2	1
Meningococcal	1	1	3
Streptococcus, Group A	0	0	0
SEXUALLY TRANSMITTED DISEASES			
Chlamydia	398	2648	2376
Gonorrhea	116	779	663
Herpes, Initial Infection	25	33	382
Lymphogranuloma venereum	0	0	0
Chancroid	0	0	0
Syphilis Early	8	34	23
Syphilis Late	2	22	6
TUBERCULOSIS			
Tuberculosis	1	8	8
VACCINE PREVENTABLE DISEASES			
Measles	0	0	2
Mumps	0	0	1
Rubella	0	0	0
Pertussis	23	126	51
OTHER DISEASES			
Botulism (wound)	0	0	0
Botulism (infant)	0	0	2
Botulism (foodborne)	0	0	0
Carbapenemase-Resistant Enterobacteracea	1	1	1
Chikungunya	0	1	0
Coccidiomycosis	0	1	2
Dengue Fever	0	1	0
Influenza Deaths	0	25	10
Legionellosis	1	3	3
Leptospirosis	0	1	0
Lyme Disease	0	1	0
Malaria	1	2	3
Prion Disease, Human	0	1	0
Q Fever	0	0	0
Relapsing Fever	0	0	0
Tularemia	0	0	1
Typhoid Fever	0	0	1
Vibrio	2	3	3
West Nile Virus	0	0	0
Yersiniosis	0	3	0

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