Epi-Log & VacScene

The Communicable Disease Prevention Quarterly

Epi-Log: Ebola Monitoring and Preparedness in King County

The Ebola outbreak in West Africa is ongoing. US-based humanitarian relief and medical workers in addition to other travelers leave for and depart from Ebola–affected countries daily to help stop the spread of this disease. As long as the outbreak continues, health care providers will need to be prepared for the potential importation of Ebola cases into the US.

Public Health is currently monitoring travelers who have arrived from Ebola–affected countries in coordination with the Washington State Department of Health (DOH) and the Centers for Disease Control and Prevention (CDC). Currently all arrivals from Guinea, Liberia, Sierra Leone, and Mali undergo twice daily monitoring for fever and symptoms for 21 days after leaving the Ebola–affected country. Any traveler who develops symptoms compatible with Ebola will be isolated and have a prompt evaluation coordinated by Public Health. Because we are monitoring the vast majority of travelers from Ebola-affected areas, the likelihood of an Ebola-exposed person presenting unannounced in a local health care facility should be low.

Public Health is also working with local health care providers to ensure that all providers are familiar with current guidance for screening and managing potential Ebola patients. Health care providers must take a precise travel history to identify people who might have traveled to an Ebola–affected area or had contact with an Ebola patient in the preceding 21 days. Any patients with positive travel histories should be reported to Public Health before a disposition is made. Patients with a positive Ebola travel history and symptoms should be immediately isolated and managed according to current recommendations based on the patient's symptoms and the clinical setting.

The CDC, the DOH, the World Health Organization (WHO) and Public Health continue to develop and update guidance for health care providers, health care facilities, auxiliary services, public health personnel, and the general public, as the situation evolves.

Public Health
Seattle & King County

Q4/14

The **Epi-Log & VacScene** quarterly is a publication of the Communicable Disease Epidemiology & Immunization Section of Public Health.

Free subscription & updates online:
kingcounty.gov/communicable

In This Issue:

Epi-Log: Trichinosis Case Report

Hunters Takes Home More Than Bear Meat

In late July 2014, Public Health was notified by the Alaska State Health Department about a King County resident who was diagnosed with trichinosis after eating bear meat. The resident was part of a six-person party that killed a black bear while hunting in Alaska. The hunters butchered and cooked part of the meat over an open fire, consuming it afterwards. Another portion of the meat was slow cooked the following day over a 4 hour period and consumed. The remaining meat was frozen and taken home by the hunters when they disbanded.

After returning home, several hunters became ill with gastrointestinal symptoms, fever, severe muscle pain, and fatigue. Ultimately, four of the six hunters in the group were affected and sought health care; three of the four tested positive for elevated *Trichinella* antibodies. A sample of the frozen meat was examined by staff at the Washington State Public Health Laboratory and *Trichinella sp*. were detected at a level of 838 larvae per gram of meat (that's a very high larval burden). (See **Photos 1** and **2**)

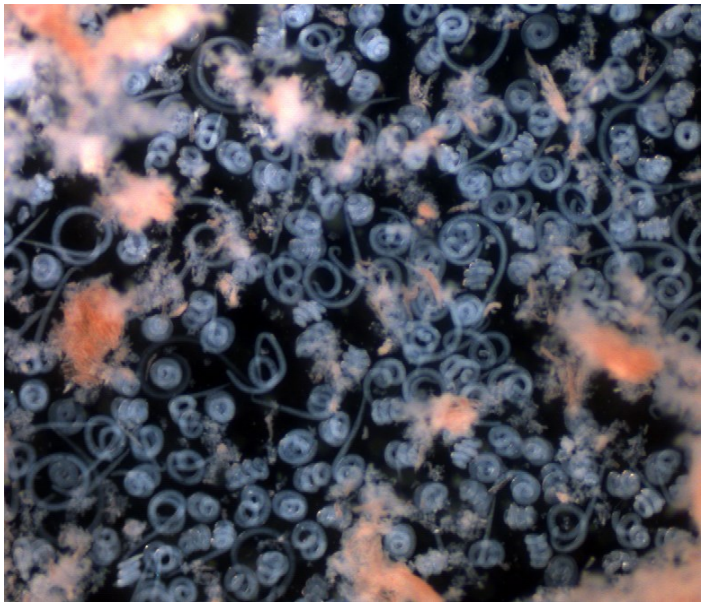


Photo 1. Larvae from bear meat sample. *Photo courtesy of the Washington State Public Health Laboratory.*

According to the Alaska Department of Fish and Game, it should be assumed that all bear meat in Alaska harbors *Trichinella,* and the prevalence in black bears is higher the farther north one travels. All members of the hunting party were aware of the risks of eating undercooked bear meat and have fully recovered.

What is Trichinosis?

Trichinosis (or trichinellosis) is a disease typically contracted after a person consumes raw or undercooked meat from animals infected with tissue-dwelling *Trichinella* roundworms. In the past, trichinosis was most commonly associated with the consumption of raw or undercooked pork; however, improvements in swine processing have led to a decline in infections from this source. At present, cases are more often associated with consumption of raw or undercooked wild game meat. Sporadic cases and outbreaks have been linked to the consumption of black and brown bear, wild boar, cougar, walrus, grizzly, and polar bear. *Trichinella* has also been found in raccoons, coyotes, and foxes. Animals infected with *Trichinella* usually appear healthy. The disease is now considered quite rare with approximately 20 human cases reported nationally each year.

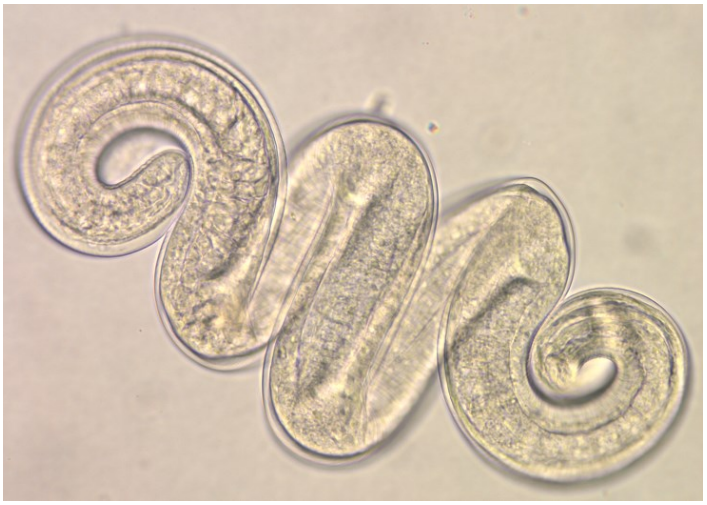


Photo 2. *Trichinella* species. *Photo courtesy of the Washington State Public Health Laboratory.*

Symptoms

Clinical presentation and severity depend on the number of parasites ingested. The incubation period is typically 8-15 days (range 5-45) and infection can be asymptomatic or severe enough to be fatal. Symptoms may include diarrhea, cramps, nausea, and vomiting, followed by fever. Facial edema, myalgias, muscle swelling, and weakness occur after the larvae have become encapsulated in the skeletal muscle. This is typically when most people seek health care. However, many people with *Trichinella* infection do not display any symptoms at all. **(cont'd)**

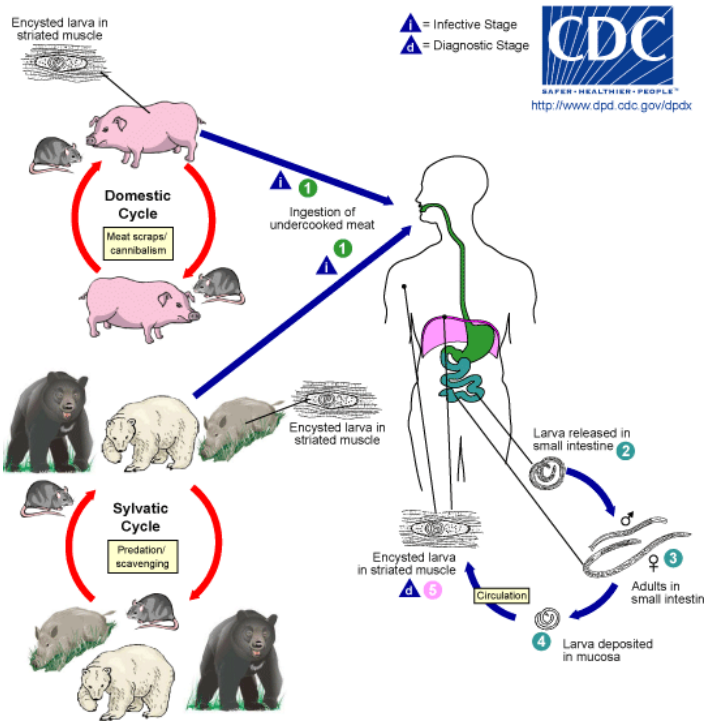


Figure 1. Life cycle of *Trichinella* nematodes (roundworms), the cause of trichinellosis in humans. *Original image courtesy CDC.*

The Life Cycle of *Trichinella*

In humans, the larvae are ingested, released from an encapsulated cyst by stomach acid (except for the nonencapsulated *T. pseudospiralis*), and then develop into adult male and female worms in the gastrointestinal tract. The adult worms mate and then shed larvae that penetrate the gastrointestinal tract and reach the bloodstream and lymph drainage system. The larvae are then distributed throughout the body, mainly to skeletal muscle cells. Some skeletal muscle cells develop into nurse cells that support and protect the larvae from the host's immune system. The life cycle requires at least two hosts, and humans are usually an incidental host (See **Figure 1**).

Testing and Treatment

When given early in the course of the illness, albendazole or mebendazole appear to be effective. Although these medications are active against adult worms in the gut, they have little effect on larvae embedded in tissue. Once larvae are established in the muscle tissue they can persist there for months or years, although symptoms usually subside after several months. Corticosteroids are used to treat severe inflammation. Additional information about treatment can be found online at the **CDC.**

Laboratory confirmation is commonly made by detection of *Trichinella* specific antibodies in serum drawn at least 3 weeks after infection. The diagnosis can also be confirmed by identification of *Trichinella* larvae in a skeletal muscle biopsy specimen (taken at least two weeks after infection) but a biopsy is often not necessary.

Proper Food Preparation: The Best Defense to Avoid Trichinosis

- Cook meat products until the juices run clear or to an internal temperature of 170° F.
- Freeze pork less than 6 inches thick for 20 days at 5° F or colder to kill any worms. **Unlike with pork, freezing wild game meats even for long periods of time may not effectively kill all worms.**
- Cook wild game meat thoroughly.
- Cook all meat fed to pigs or other wild animals.
- Do not allow hogs to eat uncooked carcasses of other animals, including rats, which may be infected with trichinellosis.
- Clean meat grinders thoroughly if you prepare your own ground meats.
- Curing (salting), drying (to make jerky), smoking, or microwaving meat does not consistently kill infective worms.

Epi-Log: Enterovirus D68 Update

Beginning in August 2014, the United States has experienced a nationwide outbreak of enterovirus D68 (EV-D68) associated with severe respiratory illness. Almost all the confirmed cases of EV-D68 infection this year have been among children, and severe illness was associated with a history of asthma.

EVD-68 was first identified in 1962 but has been relatively rare in the US until now. It is one of a number of endemic non-polio enteroviruses, which together cause 10 million to 15 million infections each year in the US Most of the infections cause no symptoms or only a mild illness like the common cold, but some cases can be severe and lead to paralysis or other serious outcomes. Complicating the picture are reports of unexplained neurologic illnesses with leg weakness in children in several states, some of whom were infected with EV-D68. Investigation of this association is **(cont'd)**

ongoing.

Of the more than 2,300 specimens tested by the CDC lab, about 40% have tested positive for EV-D68. About one third have tested positive for an enterovirus or rhinovirus other than EV-D68, highlighting the prevalence of these viruses in persons with respiratory illnesses.

Initially in Washington, children hospitalized for breathing difficulty who required some form of respiratory support, and who had a PCR screen positive for enterovirus/rhinovirus, had specimens sent to the CDC picornavirus lab for EV-D68 testing. Thirty-two specimens were submitted to CDC from children who were hospitalized in King County; five (15.6%) tested positive for EV-D68 and 14 (43.8%) tested positive for other pathogens (see Table 1 for alternate etiologies). Due to the high specimen volume at CDC and the fact that confirmation of EV-D68 does not change clinical management of the illness, testing is now restricted to cases where there has been a death, an unusual clinical finding, or a cluster of severe respiratory illnesses.

Alternate Etiologies	# Cases
Enterovirus/Rhinovirus, not EV-D68	2
Human rhinovirus 44	1
Human rhinovirus A18	1
Human rhinovirus A24	1
Human rhinovirus A34	1
Human rhinovirus A38	1
Human rhinovirus A63	2
Human rhinovirus B27	1
Human rhinovirus C	4
Grand Total	14

Table 1. CDC Test Results for Specimens Not Positive For EV-D68.

As a proxy for severe respiratory illness in children, Public Health has been reviewing weekly counts of asthma-related emergency department admissions. The volume of asthma-related admissions is higher relative to trends observed during the past five years, but is consistent with the seasonal trend. There was a sharp increase in admissions during the last two weeks of September; the volume of admissions began to decline in early November, and has now reached baseline levels.

By late fall enterovirus infections also began to decline nationally, as expected. At about the same time, respiratory illnesses caused by other viruses, like influenza and respiratory syncytial virus (RSV), became more common. These viruses will be increasing throughout the winter and into spring. Influenza infection remains the major cause of preventable respiratory viral illnesses, hospitalizations and deaths. All persons 2 years of age and greater should receive influenza vaccine annually. Of particular note is the importance of vaccinating pregnant women to protect both the women and the newborn (American College of Obstetrics and Gynecology statement on influenza vaccination of pregnant women, http://www.acog.org/Resources-And-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Influenza-Vaccination-During-Pregnancy).

For the most up-to-date information on EV-D68, visit: http://www.cdc.gov/non-polio-enterovirus/outbreaks/EV-D68-outbreaks.html.

Epi-Log: Rabies WAC Update

Public Health plans to complete technical revision to the King County Board of Health Code, Chapter 8.04, Rabies. This code is existing law that has become outdated due to changes in state law and changes in best practices as described in the Compendium of Animal Rabies Prevention and Control, 2011, published by the National Association of State Public Health Veterinarians.

The code revision aims to:

- Clarify age and administration of rabies vaccination for dogs, cats, and ferrets, in alignment with the state requirement,
- Align with the state on the notifiable condition regarding rabies prevention (now identified as Suspected Rabies Exposure, previously identified as Animal Bites), and
- Provide consistency with the Compendium on the latest recommendations for confinement after a dog, cat or ferret has been exposed to a potentially rabid animal.

If you have questions or comments regarding the code revision or would like to see a draft of the code revision, please contact Maria Wood, Board of Health Administrator, at maria.wood@kingcounty.gov or at (206) 263.8791.

VacScene: Pneumococcal Conjugate Vaccine (PCV13) Now Routinely Recommended for Adults 65 and Older

Routine PCV7 and PCV13 vaccination in young children has significantly reduced, but not eliminated, the incidence of invasive pneumococcal disease (IPD) among adults. Approximately 20-25% of IPD cases and 10% of community-acquired pneumonia cases in adults ≥ 65 years are caused by PCV13 serotypes. In August 2014, ACIP published updated routine pneumococcal vaccine recommendations for adults 65 years and older to include a dose of pneumococcal conjugate vaccine, PCV13 (Prevnar). Previously, pneumococcal vaccine-naïve adults ≥ 65 years were recommended to receive one dose of pneumococcal polysaccharide vaccine, PPSV23 (Pneumovax). ACIP now recommends that those adults receive one dose of PCV13, and six to twelve months later receive a dose of PPSV23.

Since 2012, PCV13 has been recommended for vaccine-naïve adults ≥ 19 years with immunocompromising conditions, functional or anatomic asplenia, cerebrospinal fluid leak, or cochlear implants; those recommendations remain unchanged. For detailed recommendations on older adult pneumococcal vaccine doses and timing, please see the guide on pg. 6.

See postable guide on reverse.

Recent research from the Netherlands (reviewed by ACIP but currently not published) has shown that PCV13 is effective in reducing community-acquired pneumonia and invasive pneumococcal disease (IPD) among adults ≥ 65 years. A randomized placebo-controlled trial among 85,000 adults ≥ 65 years showed 45.6% efficacy against vaccine-type pneumococcal pneumonia, 45% against vaccine-type nonbacteremic pneumococcal pneumonia, and 75% efficacy against vaccine-type IPD.

The safety profile of PCV13 in adults ≥ 65 years is similar to that of PPSV23, with no increase in adverse events or significant difference in common adverse reactions. Concomitant administration of PCV13 and trivalent inactivated influenza vaccine was shown to be safe and immunogenic. Providers should consider routinely offering PCV13 and inactivated flu vaccine at the same visit to seniors for whom those vaccines are indicated. PCV13 vaccination is contraindicated in persons with a severe allergic reaction to any component of PCV13 or PCV7, or to any diphtheria toxoid-containing vaccine.

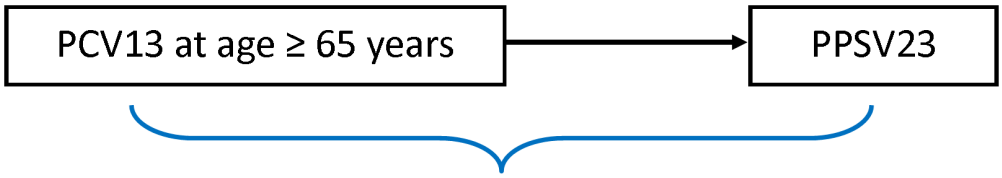
Ongoing indirect effects from PCV13 use among children, if similar to those observed after PCV7 introduction, might further reduce the remaining burden of adult pneumococcal disease caused by PCV13-types. A preliminary analysis using a probabilistic model following a single cohort of persons aged 65 years demonstrated that adding a dose of PCV13 to the current PPSV23 recommendations for adults aged ≥65 years, compared with current PPSV23 recommendations, would prevent an estimated 230 cases of IPD and approximately 12,000 cases of community-acquired pneumonia over the lifetime of a single cohort of persons aged 65 years, *assuming current indirect effects* from the child immunization program and current PPSV23 vaccination coverage among adults aged ≥65 years (approximately 60%). In a setting of fully realized indirect effects assuming the same vaccination coverage, the expected benefits of PCV13 use among this cohort will likely decline to an estimated 160 cases of IPD and 4,500 cases of community-acquired pneumonia averted among persons aged ≥65 years.

CDC will assess the implementation and impact of the recommendation for PCV13 use among adults aged ≥ 65 years, including coverage with PCV13 and PPSV23, and impact of PCV13 on vaccine-type IPD burden and community-acquired pneumonia. ACIP will be updated routinely on changes in the burden of IPD and community-acquired pneumonia among adults during the next 3 years to determine the need for revisions to the adult PCV13 recommendations.

For detailed clinical information, visit the CDC's pneumococcal vaccination page for health care providers. The Immunization Action Coalition's Pneumococcal Vaccination Recommendations for Children and Adults by Age and/or Risk Factor summarizes ACIP recommendations in a chart format, and the CDC handout, Pneumococcal Vaccines: Addressing Common Questions about Pneumococcal Vaccination for Adults may be useful in helping your patients understand why both of these pneumococcal vaccines are now recommended.

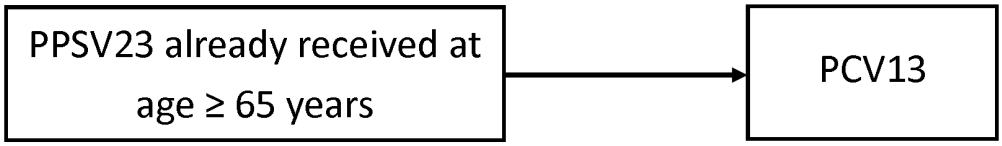
Recommended Sequence and Intervals for PCV13 and PPSV23 for Adults Aged ≥ 65 Years, ACIP

Pneumococcal vaccine-naïve persons aged ≥ 65 years:



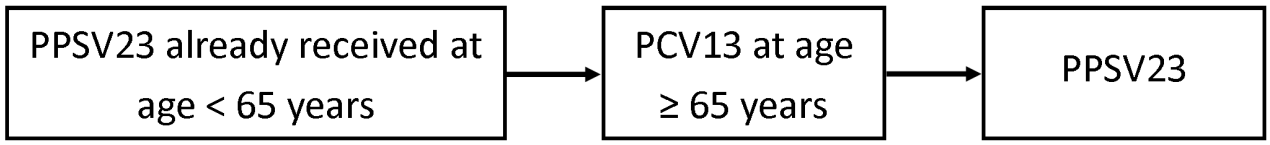
6-12 Months*

Persons who previously received PPSV23 at age ≥ 65 years:



≥ 1 year

Persons who previously received PPSV23 before age 65 years who are now aged ≥ 65 years:



≥ 1 year

6-12 months* AND ≥ 5 years from prior PPSV23 dose

*Minimum interval between sequential administration of PCV13 and PPSV23 is 8 weeks; PPSV23 can be given later than 6-12 months after PCV13 if this window is missed. For more, visit: ACIP's 2014 recommendations for adults 65 years and older.

Abbreviations: PCV13 = 13-valent pneumococcal conjugate vaccine; PPSV23 = 23-valent pneumococcal polysaccharide vaccine

December, 2014

VacScene: Offer Tdap During Each Pregnancy to Maximize Protection of Vulnerable Infants

Young infants, who are dependent on maternal antibodies and lack the ability to mount an immune response to pertussis, are more susceptible to pertussis infection and at increased risk for severe disease, including hospitalization and death, compared to any other age group. During Washington State's 2012 pertussis epidemic, there were 378 cases in infants < 12 months of age, including 70 (19%) who were hospitalized. Pertussis continues to circulate in King County and Washington, leaving vulnerable infants and others at risk.

Research has shown that a dose of Tdap during pregnancy is significantly more protective for infants than a maternal dose of Tdap immediately postpartum. A Lancet study reviewed in the Q3/14 VacScene showed that up to 90% of infants whose mothers received Tdap in pregnancy were protected from pertussis. In 2013 the Advisory Committee on Immunization Practices (ACIP) recommended that pregnant women receive a dose of Tdap during each pregnancy, preferably during the third trimester for maximum maternal antibody transfer. One dose of Tdap has also been routinely recommended for adolescents and adults since 2006, and older adults since 2011.

Independent research and ongoing monitoring through the Vaccine Adverse Event Reporting System (VAERS) have shown that Tdap vaccination during pregnancy is safe for women and their babies. Tdap vaccination side-effects, which tend to be mild or moderate and self-resolving, include injection site pain, erythema or swelling, body ache, fatigue or fever. Any theoretical risk of severe side effects from multiple Tdap doses is outweighed by Tdap vaccination benefits, according to the CDC and The American College of Obstetricians and Gynecologists (ACOG).

Despite extensive data demonstrating that Tdap vaccination is safe and effective, coverage rates among adults remain low. **In 2012, only 14% of adults ≥ 19 years and only 31% of health care workers reported receiving a dose of Tdap.** Data on Tdap coverage among pregnant women are limited, but a 2011-13 study of Medicaid-enrolled pregnant women in Michigan found that only 14.3% received Tdap during pregnancy.

Providers should:

- Assess a patient's immunization status at every visit
- Strongly recommend needed vaccines
- Stock and administer recommended vaccines
- Document vaccines administered in the patient record, and in the Washington State Immunization Information System (WAIIS, formerly Child Profile)

Remember: Vaccine availability and a strong provider recommendation are crucial to patient acceptance of Tdap vaccination.

Tdap Resources:

- Issue Brief: Prevention of Pertussis in Infants, Public Health – Seattle & King County
- ACIP Recommendations for Use of Tdap in Pregnant Women, CDC
- Tdap for Women toolkit; includes a script to use when recommending the vaccine, ACOG
- "Dear Colleague" letter on Tdap vaccination for pregnant women, CDC
- Tdap Vaccine Information Statement, available in 18 languages

VacScene: Unexpected Outcome of LAIV Ineffectiveness Against H1N1 Infection Among Children During the 2013-14 Flu Season

The Advisory Committee on Immunization Practices (ACIP) 2014-15 influenza vaccination recommendations included a preference for live, attenuated influenza vaccine (LAIV) over inactivated influenza vaccine (IIV) in healthy children aged 2 years through 8 years when LAIV is immediately available and if the child has no precautions or contraindications to the vaccine. ACIP's preferential recommendation for LAIV was based upon a systematic, graded review of data from several comparative studies demonstrating its superior efficacy over IIV against laboratory-confirmed influenza in young children.

Unfortunately, 2013-14 overall **(cont'd)**

vaccine effectiveness (VE) data, which were collected by the CDC in conjunction with the US Influenza Vaccine Effectiveness Network (Flu VE Network), unexpectedly showed there was no measurable effectiveness of 2013-14 LAIV against the influenza A (H1N1) strain. Although mid-season studies are conducted by Flu VE Network to provide interim VE estimates, LAIV and IIV were not analyzed separately for those studies in 2013-14. Estimates of vaccine effectiveness during the 2011-12 and 2012-13 influenza seasons suggested that LAIV effectiveness was similar, but not superior to IIV against influenza A H3N2 and influenza B viruses.

This new finding is not yet fully understood but may be related to the specific H1N1 component in the vaccine, other factors related to vaccine composition, manufacturing or stability or, less likely, an unidentified issue with the study methods or analysis plan. According to a November 6, 2014 statement from the CDC, 2013-14 VE study results suggest that LAIV may not protect children from H1N1 viruses during the 2014-15 season because the current H1N1 vaccine virus is the same as in last season's formulation.

To better understand the 2013-14 data and determine causes and options for addressing low VE of LAIV against H1N1, CDC is in discussions with the FDA, the manufacturer of LAIV, the Department of Defense, which also conducts VE studies, and other partners. In addition, the US Flu VE Network will expand enrollment of children in their 2014-15 studies.

ACIP and CDC's current influenza vaccination recommendations remain unchanged for the 2014-15 season, based upon the following factors:

- Surveillance shows that there is substantially more circulation of influenza A (H3N2) and B viruses and very little circulating H1N1 so far;
- LAIV has been shown to offer good protection against influenza A (H3N2) and influenza B viruses in the past;
- LAIV may offer better protection than IIV against antigenically drifted viruses that may circulate this season; and,
- Vaccine providers have received their vaccine for the 2014-2015 season and have likely administered a good proportion of it.

People who have not been vaccinated yet this season should get vaccinated now. Parents should seek to get their children immunized with whatever vaccine is immediately available and indicated. Influenza vaccination should not be delayed to procure a specific vaccine preparation. The HealthMap Vaccine Finder can be used to locate vaccine.

LAIV Resources:

- CDC update on LAIV effectiveness
- AAP statement on LAIV effectiveness

VacScene: Push for Rapid Vaccine Development in Response to Ebola Health Crisis

The 2014 Ebola outbreak in West Africa is the largest in history, infecting more than 15,000 individuals since March and killing more than one-third of those infected. In response to this public health emergency, in September 2014 WHO convened a group of 70 experts in virology, public health, infectious diseases and medical ethics to assess and define the body of work needed to study and license two candidate Ebola vaccines within months rather than the years typically needed for vaccine development. The group, including many representatives from Ebola-affected and neighboring African countries, examined study objectives, design and data sharing, infrastructure and logistics (such as maintaining the cold chain), and staffing and other local resource needs. Their analyses resulted in the development of Phase 1 trials now underway at more than 10 locations in Africa, Europe and North America. Data collected from the dozens of volunteers in each of these trials will inform vaccine safety, dosage and potential side-effects, and will allow for progression to Phase 2 clinical trials as early as December 2014 for further investigation of safety, immunogenicity and dosing. The two candidate Ebola vaccines in Phase 1 trials include:

- **CAd3-ZEBOV,** developed by GlaxoSmithKine in collaboration with the US National Institute of Allergy & Infectious Diseases, uses a **(cont'd)**

chimpanzee-derived adenovirus vector with an Ebola virus gene inserted.

- **VSV-ZEBOV**, developed by scientists at the Public Health Agency of Canada and now licensed by New-Link Genetics, is based on the virus that causes vesicular stomatitis in animals. The virus has been weakened and genetically modified to express the glycoprotein of the Zaire Ebola Virus (ZEBOV) in order to stimulate an immune response.

Both vaccine candidates have demonstrated 100% efficacy in studies in nonhuman primates, but how that will translate to human subjects remains unknown. The design of proposed trials in exposed populations raises many complex questions that pit issues of scientific rigor against feasibility and acceptability. Since there are no data on the efficacy of Ebola vaccines in humans, equipoise justifies the use of a randomized, controlled trial. Yet though it's clear that well-designed randomized, controlled trials would generate the most reliable and robust data regarding vaccine efficacy, the feasibility of such studies may be affected by the same fear and resistance to interventions that communities have evinced in the West African epidemic to date. The trials therefore need to be designed with participation from local governments and communities so that they can proceed in a manner that is acceptable to the affected populations.

In addition, the National Institutes of Health (NIH) is supporting development of two other experimental vaccines based on rabies virus vaccines currently used in people and animals. The candidate vaccines have shown to be safe and to induce rabies- and Ebola-specific immune responses in monkeys, including the Zaire strain of Ebola, which is circulating in the West African outbreak.

Ebola Resources:

- WHO: Ebola vaccines, therapies and diagnostics
- CDC information on investigational vaccines and therapeutics for Ebola
- NIH on VSV Ebola vaccine
- Ebola Vaccine — An Urgent International Priority. New England Journal of Medicine, 7 OCT 2014

VacScene: Febrile Seizure Following MMR or MMRV Vaccination

Febrile seizures of any cause occur most often in children between 6 months and 5 years of age, peaking between 14 and 18 months of age. Most children recover rapidly and without lasting effects. Febrile seizures typically occur after infection, but may occasionally occur following vaccination. Previous research has shown that there is a small increased risk of febrile seizure one to two weeks following the first dose of MMR or MMRV vaccine. A study published in the May 19th, 2014 issue of *Pediatrics* showed that delaying measles-containing vaccination beyond the recommended 12-15 month age range for the first dose could put some children at increased risk for post-vaccination febrile seizure. Researchers analyzed data from the Vaccine Safety Datalink database from a cohort of 323,247 US children born between 2004 and 2008. Although overall incidence remained very low, their analysis showed that the incident rate ratio for seizure within seven to ten days following first dose of MMR vaccine was 6.53 for children who received a dose at ages 16-23 months, compared to 2.65 for those who received a dose at ages 12-15 months. Following the first dose of MMRV vaccine, the seizure incident rate ratio was 9.80 for children who received a dose at ages 16- 23 months, compared to 4.95 for those who received a dose at ages 12-15 months. Researchers found no association between the recommended vaccine schedule and seizures during the first year of life.

For further details, visit: **Pediatrics online.**

Epi-Log & VacScene

Public Health
Seattle & King County

Communicable Disease Epidemiology &
Immunization Section, Prevention Division
401 5th Avenue, Suite 900
Seattle, WA 98104-2333

PRSR STD
US Postage
PAID
Seattle, WA No.
Permit No. 1775

Public Health Resources:

Communicable Disease Epidemiology & Immunization Section: kingcounty.gov/health/cd

Our monthly **reportable cases table** has moved online. Visit: kingcounty.gov/communicable

Program related questions ..... (206) 296.4774

Communicable Disease Reporting:

AIDS/HIV ..... (206) 263.2000
STDs ..... (206) 744.3954
TB ..... (206) 744.4579

All Other Notifiable Communicable Diseases ..... (206) 296.4774

Automated reporting for conditions not immediately notifiable (24/7) .. (206) 296.4782

Communicable Disease Hotline ..... (206) 296.4949

Subscribe!

Free subscription of the Epi-Log & VacScene quarterly newsletter is available at **kingcounty.gov/communicable**. The publication is available in online PDF and print editions.

Current Subscribers:

Update your address and subscription options by clicking on the update link in your email .

For assistance, contact Olivia Cardenas at (206) 263.8236.

We welcome your feedback.

Have ideas or suggestions for future issues?

Write us: **communicable@kingcounty.gov**