EPI-LOG

Communicable Disease and Epidemiology News
Published continuously since 1961
Tao Sheng Kwan-Gett, MD MPH editor (tao.kwan-gett@kingcounty.gov)
To update address information email olivia.cardenas@kingcounty.gov

Public Health
Seattle & King County

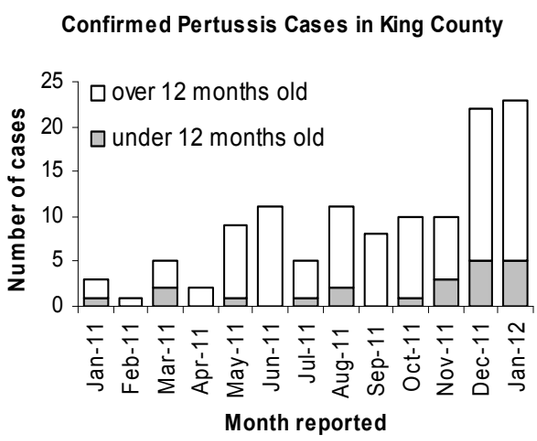
Epidemiology, Prevention Division
401 Fifth Avenue, Suite 900
Seattle, WA 98104-2333

Vol. 52, No. 2 February 2012

- **PERTUSSIS TESTING**

Frequently Asked Questions About Pertussis Testing

Pertussis cases have been increasing in King County over the last two months. Of the 97 cases reported in 2011, nearly a quarter were reported in December. Among the 45 cases reported between December 1, 2011 and January 31, 2012, ten (22%) were in infants under a year of age.



Because acute respiratory illnesses with cough are common, determining who has pertussis can be difficult especially during the cold and flu season. Timely and accurate diagnosis is important to treat infected persons and prescribe postexposure prophylactic antibiotics to limit the spread of disease.

Below are some commonly asked questions about pertussis testing and specimen collection.

Who should be tested for pertussis?

Pertussis should be considered in the differential diagnosis of:

- Patients of any age with cough illness >2 weeks duration
- Patients with respiratory illness of any duration who have had contact with persons with a prolonged cough illness, or a confirmed pertussis case
- Infants <12 months of age with respiratory tract symptoms of any duration, even if they are immunized against pertussis or test positive for RSV (respiratory syncytial virus).

What is the best test for pertussis?

The tests available to diagnosis *B. pertussis* infection include:

- *PCR*– Though culture is the gold standard, PCR testing for *B. pertussis* is the most useful and practical laboratory test to diagnose pertussis. PCR should ideally be performed on a posterior nasopharyngeal (NP) specimen obtained within 3 weeks of cough onset, but may provide accurate results for up to 4 weeks of cough in infants or unvaccinated persons. After the fourth week of cough, the amount of bacterial DNA rapidly diminishes, increasing the risk of false-negative results. An advantage of PCR over culture is that results are available sooner. PCR results from some laboratories are available within 24 hours of submission, making them useful for testing high risk patients such as health care workers, infants, or pregnant women. PCR is at least as sensitive as culture and some data suggest that PCR may detect *B. pertussis* when culture is negative. It is important to correlate PCR results with clinical symptoms as false negative results are possible.

Fully immunize all children against pertussis, and provide a single dose of Tdap as recommended by national guidelines to:

- **Children 7-10 years who are not fully vaccinated against pertussis**
- **Adolescents 11-18 years who have completed the DTP/DTaP series**
- **Pregnant and post-partum women***
- **All adults aged 19-64 years**
- **Adults aged 65 years and older who have or anticipate having close contact with infants less than 12 months old**

*In 2011, the Advisory Committee on Immunization Practices (ACIP) recommended that pregnant women who have not already received a Tdap booster should be vaccinated during pregnancy, preferably during the third trimester or late second trimester (after 20 weeks gestation). If not vaccinated during pregnancy, unvaccinated women should be vaccinated in the immediate post-partum period before discharge. Other adult and adolescent household members and close contacts of infants should also be vaccinated before or during the pregnancy to protect them and the newborn against pertussis.

- *Culture*- Culture is the method for the identification of *B. pertussis* that is 100% specific. The downsides of culture are lack of sensitivity and turnaround time. *B. pertussis* is fastidious and a false negative result could be caused by the overgrowth of other nasopharyngeal organisms, or improper specimen collection and handling. Results from culture can take anywhere from 5 to 14 days. Therefore, empiric treatment should be started based on the clinical suspicion for pertussis, prior to receiving culture results. If culture is used to test for pertussis, consider simultaneously obtaining pertussis PCR.
- *Serology*—Serologic tests are not recommended for the diagnosis of pertussis infection. The lack of standardization and unknown correlation with illness limits its usefulness. Individuals with suspected pertussis whose only laboratory finding is a positive *B. pertussis* serology are not considered confirmed cases for public health purposes.

What specimens should I collect and how do I collect them?

Obtain an NP specimen as early as possible in the illness (during the first three weeks is optimum) and prior to administering antibiotics. Collection and transport procedures must be followed closely for the best results. Use dacron or rayon swabs with metal shafts. Calcium alginate swabs or wood handles can interfere with PCR testing.

Additional information about collecting an NP specimen (including an excellent video) can be found on Public Health's pertussis webpage at www.kingcounty.gov/healthservices/health/communicable/diseases/whoopingcough.aspx.

Disease Reporting

AIDS/HIV…… (206) 296-4645
STDS…… (206) 744-3954
TB…… (206) 744-4579
All Other Notifiable Communicable Diseases ……..... (206) 296-4774
Automated reporting line for conditions not immediately notifiable (24/7)……..... (206) 296-4782

Hotline

Communicable Disease……... (206) 296-4949

Online Resources

Home Page: www.kingcounty.gov/health/cd
The *EPI-LOG*: www.kingcounty.gov/health/epilog
Communicable Disease Listserv: mailman.u.washington.edu/mailman/listinfo/phskc-info-x

Can I use serology to determine if someone is immune to pertussis and does not need vaccination?

No—there is no known serologic correlate for protection against *B. pertussis.* Commercial assays for *B. pertussis* antibodies or pertussis toxin are not clinically validated and the protective titer is unknown.

Antibodies against tetanus or diphtheria toxins are also sometimes mistakenly obtained as markers of the immune response to DTaP or Tdap vaccination. However, they also cannot be used to determine if someone is immune to pertussis because their relationship to protection is not known.

The best protection against pertussis is to be up to date for pertussis immunization. More information on pertussis containing vaccines can be found at www.cdc.gov/vaccines/vpd-vac/pertussis.

Pertussis resources including an issue brief on the prevention of pertussis in infants and a patient flyer on pertussis and pregnancy in several languages are available at: www.kingcounty.gov/health/cd - click on "P" for pertussis.

Reported Cases of Selected Diseases, Seattle & King County 2011

	Cases Reported in January	
	2012	**2011**
Campylobacteriosis	18	21
Chlamydial infections	410	548
Cryptosporidiosis	1	1
Giardiasis	15	8
Gonorrhea	122	128
Hepatitis A	2	1
Hepatitis B (acute)	0	0
Hepatitis B (chronic)	52	50
Hepatitis C (acute)	0	1
Hepatitis C (not acute, includes current and past infection)	124	123
Herpes, genital (primary)	49	59
HIV and AIDS (includes only AIDS cases not previously reported as HIV)	28	17
Legionellosis	0	3
Listeriosis	0	1
Measles	0	0
Meningococcal Disease	0	3
Mumps	0	0
Pertussis	23	3
Rubella (including congenital rubella)	0	0
Salmonellosis	15	12
Shiga toxin producing *E. coli (STEC), including E. coli O157:H7 and non-O157)*	3	3
Shigellosis	3	3
Syphilis	24	33
Syphilis, congenital	1	0
Syphilis, late	6	9
Tuberculosis	1	8
Vibriosis	0	0
Yersiniosis	1	1

The *Epi-Log* is available in alternate formats upon request.