

DANBURY HOSPITAL

Technically Speaking

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& Laboratory Medicine

May 2012 Vol. 6, No. 3

PCR and Culture available at Danbury Hospital Laboratory for Pertussis (Whooping Cough)

A Polymerase Chain Reaction (PCR) test for *Bordetella pertussis* diagnosis is now available at Danbury Hospital Laboratory. The purpose of this communication is to inform readers of the **continued** availability of pertussis cultures through the Danbury Hospital Laboratory and to review the Centers for Disease Control and Prevention (CDC) recommendations for best testing practices. Most of this information has been reformatted from the CDC web site available at <http://www.cdc.gov/pertussis/clinical/diagnostic-testing/index.html>.

KEY POINTS

- **CDC recommends PCR be used alongside culture, rather than as an alternative test.**
- **PCR can give falsely-negative or falsely-positive results. It is subject to contamination and may not distinguish between other *Bordetella* species.**
- **The gold standard is culture, which is best done from nasopharyngeal (NP) specimens collected during the first 2 weeks of cough.**
- **The Department of Public Health encourages providers to submit cultures alongside PCR, particularly in situations where a clinical practice is seeing an increase in the number of pertussis diagnoses among patients that share a common setting, such as a school or daycare.**

Diagnostic Testing for Pertussis (Whooping Cough)

There are differences in the diagnostic needs of the clinical versus public health setting. In the clinical setting, the goal is to optimize sensitivity (not to miss cases) while providing rapid results. This ensures rapid diagnosis and appropriate treatment to prevent further transmission. In the public health setting, a high degree of specificity (not to over-diagnose cases) is needed to avoid unnecessary and ineffective public health interventions, such as large-scale antibiotic prophylaxis. While PCR is increasingly used as the sole diagnostic test for pertussis, CDC recommends that PCR be used alongside culture, rather than as an alternative test. The Department of Public Health encourages providers to submit cultures alongside PCR with consideration for patient selection to optimize diagnostic sensitivity.

Culture

Culture is best done from nasopharyngeal (NP) specimens collected during the first 2 weeks of cough when viable bacteria are still present in the nasopharynx. Many other respiratory pathogens have similar clinical symptoms to pertussis and co-infections are common. Since culture is considered the gold standard, it is particularly important to isolate the bacterium and confirm the pertussis diagnosis, especially if an outbreak is suspected (for public health purposes defined as 2 or more cases in a common setting within 21 days of each other). Success in isolating the organism declines if the patient has received prior antibiotic therapy effective against *B. pertussis*, if specimen collection has been delayed beyond the first 2 weeks of illness or if the patient has been vaccinated.

Patients should be directed to Danbury Hospital Laboratory located on the second floor of the Tower Building to be cultured for pertussis. Please do not send patients to our Patient Service Centers since they are unable to perform the pertussis collection. Once an NP swab has been collected it should be plated directly or placed into Reagan Lowe transport medium immediately.

If specimen collection is to take place in the office, specimen collection kits which include the transport media for *B. pertussis* may be obtained by calling the Danbury Hospital Laboratory at 203-739-7685. Kits should be requested ahead of time so they are accessible at the time of specimen collection. Instructions for specimen collection will be provided with the kits.

PCR Testing and Interpretation of Results

If PCR is used, only patients with signs and symptoms consistent with pertussis should be tested. Testing asymptomatic persons increases the likelihood of obtaining false positive results. Asymptomatic close contacts of confirmed cases should not be tested and testing of contacts should not be used for post-exposure prophylaxis decisions. PCR has optimal sensitivity during the first 3 weeks of cough when bacterial DNA is still present in the nasopharynx. After the fourth week of cough, the amount of bacterial DNA rapidly diminishes which increases the risk of obtaining false negative results.

Accidental transfer of pertussis DNA from environmental surfaces to a clinical specimen can result in specimen contamination and falsely-positive results. Danbury Hospital Laboratory uses a single target PCR for IS481, which is present in multiple copies in *B. pertussis* and in lesser quantities in *B. holmesii* and *B. bronchiseptica*. Interpretation of PCR results should be done in conjunction with an evaluation of signs and symptoms and available epidemiological information.

If you have any questions concerning pertussis, please call the Microbiology Laboratory at 203-739-7685.

Online Test Catalog available for users

For your convenience, a complete, easy to use list of all orderable laboratory tests including ordering mnemonics, CPT codes, specimen collection and specimen storage requirements and analysis frequency is available online at

www.testcatalog.org/nrr/catalogs/danbury/catalog/search.aspx.

Stool Occult Blood testing

Stools for occult blood testing must be inoculated directly onto the test card by the patient immediately after passage from the body per order of the manufacturer. Therefore, effective immediately, stools submitted in containers for occult blood testing will no longer be accepted for testing by the laboratory.

Test cards may be obtained from the Danbury Hospital Laboratory and given to patients so they can collect specimens as ordered by their physician. Once inoculated onto the test cards, the specimens are stable for up to 14 days at room temperature.

Please have patients label each card with their name, date of birth and the date and time the specimen was collected. Instructions for patients on how to collect specimens are also available from the lab.

Please refer any questions to the Microbiology section of the laboratory at 203-739-7685.

Sweat Test for Cystic Fibrosis discontinued

Effective June 7, 2012, the Danbury Hospital Laboratory will no longer perform the sweat test for cystic fibrosis. This decision was made based on the steadily declining demand for this test and the need for a laboratory to perform a sufficient number of tests in order to maintain adequate proficiency. Although the sweat test remains as the “gold standard” laboratory test for the diagnosis of CF, most new cases are now being identified through the state-mandated universal CF screening program that has been in place in Connecticut since 2009. Patients who have a positive screen are having their follow-up sweat tests performed at the two Cystic Fibrosis Foundation-accredited laboratories that perform the newborn screening. These laboratories are associated with Connecticut’s two CFF-accredited treatment centers at the University of Connecticut Health Center in Farmington (call 860-679-4439 for appointments) and Yale-New Haven Hospital in New Haven (call 203-785-4081 for appointments). Patients may be referred for sweat testing to either of these excellent laboratories. All requests for sweat testing that are received by our laboratory will be referred to the UCONN laboratory in view of Danbury Hospital’s affiliation with UCONN’s CF Newborn Screening program.

Supply requisitions may be obtained by e-mail to sandra.smith@wcthealthnetwork.org or by calling 203-739-7800.
