

# PERTUSSIS PCR



Pertussis is an endemic disease in Vermont. Between 2002 and 2006, confirmed cases per year ranged from 71 to 180 (mean 124), with a mean incidence of 20 cases per 100,000. Pertussis is most frequently detected in children 10 to 19 years of age.

Laboratory diagnosis of pertussis by culture is important for confirming the presence of pertussis in the community, however, *Bordetella pertussis* is a fastidious organism and negative cultures do not rule out disease. Polymerase chain reaction (PCR) assay is now frequently used due to its improved sensitivity and more rapid results.

## About the Test

The Polymerase Chain Reaction (PCR) test for *B. pertussis* involves amplification of the DNA and detection of a specific target sequence (IS481) using a probe. Detection of the target sequence occurs in real-time, allowing for faster analysis. There is no Food and Drug Administration (FDA) approved polymerase chain reaction (PCR) test for *Bordetella pertussis*. The performance characteristics of the VDH Laboratory test were validated internally.

The target for the *B. pertussis* PCR reaction is also found in *Bordetella holmesii*. A false-positive result for *B. pertussis* DNA may occur if *B. holmesii* is present in the sample, however *B. holmesii* is found at a much lower prevalence than *B. pertussis*<sup>(1)</sup>.

## When should PCR be used?

Pertussis PCR testing should only be done on individuals with clinically compatible symptoms. PCR results are not intended to be used as the *sole* means for clinical diagnosis or patient management decisions. If a patient has a positive PCR result and is also experiencing clinical symptoms of pertussis (cough lasting  $\geq$  14 days AND at least one of the following: paroxysms, whoop, OR post-tussive vomiting), then that individual is considered to have confirmed pertussis even if the culture comes back negative.

## Specimen Requirements

The collection method for specimens submitted for PCR testing is the same as that for testing by culture (VDHL Kit #5). Specimens submitted for PCR testing **MUST** be collected using a **Dacron** nasopharyngeal swab.

Suspected cases of pertussis should be reported to Infectious Disease Epidemiology (802-863-7240 or 1-800-640-4374). Pertussis specimen collection kits can be obtained by calling 802-863-7560. Collection Instruction and submission forms are also available online at [http://healthvermont.gov/enviro/ph\\_lab/ClinicalLabServicesManual.aspx](http://healthvermont.gov/enviro/ph_lab/ClinicalLabServicesManual.aspx)

<sup>(1)</sup> Mazengia E., Silva E.A., Peppe J.A, Timperi R., George H. "Recovery of *Bordetella holmesii* from Patients with Pertussis-Like Symptoms: Use of Pulsed-Field Gel Electrophoresis To Characterize Circulating Strains." *Journal of Clinical Microbiology* (June 2000): 2330-2333.