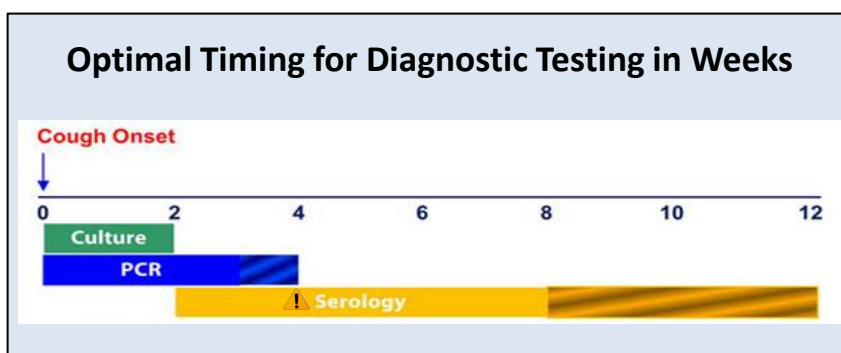


Clinicians and public health officials sometimes have different priorities when it comes to pertussis testing. In the clinical setting, the goal is usually to optimize sensitivity while providing rapid results. This allows for rapid diagnosis and treatment of the individual patient. In the public health setting, a high degree of specificity is important to avoid unnecessary and ineffective public health interventions.

The information below describes the benefits and limitations of some tests currently available to diagnose *Bordetella pertussis* infection.



Source: <http://www.cdc.gov/pertussis/clinical/diagnostic-testing/diagnosis-confirmation.html>

Diagnostic Testing Options

1 CULTURE

- Considered the gold standard because it is the only 100% specific method for identification.
- Useful for confirming pertussis as the cause of a respiratory disease outbreak. Many other respiratory pathogens cause similar clinical symptoms to pertussis and “pseudo-outbreaks” do occur.
- Allows for strain identification and antimicrobial resistance testing. Identifying which strains of *B. pertussis* are causing disease is of public health importance.
- TIMING: Best done from nasopharyngeal (NP) specimens collected during the first 2 weeks following cough onset when viable bacteria are still present in the nasopharynx.

2 PCR

- Rapid results with excellent sensitivity.
- Varies in specificity, so culture confirmation for at least one case is recommended any time a pertussis outbreak is suspected.
- Results should be interpreted along with the clinical symptoms and epidemiological information.
- The high sensitivity of PCR increases the risk of false-positivity, but following some simple best practices can reduce the risk of obtaining inaccurate results (see “Specimen Collection Best Practices” below).
- TIMING: Best done from NP specimens collected during the first 0-3 weeks following cough onset, but may provide accurate results for up to 4 weeks.



SEROLOGY

- Several different serologic tests are available commercially with unproven or unknown clinical accuracy.
- CDC and FDA have developed a serologic assay that has been useful for confirming diagnosis, especially during suspected outbreaks.
- This approved assay is available through the NC State Laboratory of Public Health (SLPH) with prior approval from the Communicable Disease Branch.
- TIMING: For the CDC single point serology test, optimal timing for specimen collection is 2 to 8 weeks following cough onset, however serology may be performed on specimens collected up to 12 weeks following cough onset.

Testing at NC SLPH

- Services available include PCR testing for *B. pertussis* and culture for *B. pertussis* and *B. parapertussis* (see the NC SCOPE Guide to Laboratory Services for additional information: <http://slph.ncpublichealth.com/doc/SCOPE-10-2017-updated-102317.pdf>)
- Specimens for PCR and culture are accepted from public and private health care providers for testing at the NC SLPH.
- With prior approval from the Communicable Disease Branch (919-733-3419), CDC-approved serological testing can be arranged through the NC SLPH with the Vaccine Preventable Disease Reference Laboratory Network.

Specimen Collection Best Practices

- Two short training videos are available for collection of nasopharyngeal aspirate and swab specimens: <http://www.cdc.gov/pertussis/clinical/diagnostic-testing/specimen-collection.html>.
- PCR best practices are important to avoid common pitfalls leading to inaccurate results. Information on best practices is available at: <http://www.cdc.gov/pertussis/clinical/diagnostic-testing/diagnosis-pcr-bestpractices.html>.