## LABORATORY FAQS

**Q. What tests are routinely used at CDC for diagnosis of pertussis?**

**A.** Culture, multi-target real time PCR (R-PCR) assays and serology to measure IgG antibodies against pertussis toxin.

**Q. How do we interpret our pertussis laboratory results?**

**A.** Culture, the "gold standard" for identification of pertussis, is the only 100% specific method for identification. However, pertussis diagnosis must be a combination of diagnostic tests (Culture, PCR, and Serology) in conjunction with clinical and epidemiological information.

**Q. What are some important factors to consider when interpreting laboratory results?**

**A.** Vaccination history and timing of specimen collection relative to disease onset are all important factors to consider.

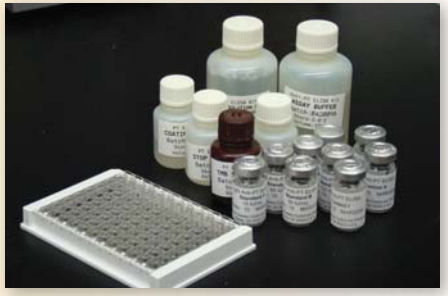
For more clinical information about pertussis, please visit:

www.cdc.gov/vaccines/vpd-vac/pertussis

## LABORATORY FAQS

**Q. What types of specimens should be collected from patients meeting the clinical case definition for pertussis?**

**A.** A nasopharyngeal (NP) aspirate (saline flush) is the optimal specimen collected to diagnose pertussis in the early stages of disease. NP swabs are also acceptable. Throat and anterior nasal swabs will drastically reduce your chances of isolating *B. pertussis*. Serum can be collected from patients coughing for 2 or more weeks.



For more information on pertussis testing and specimen collection, please visit:

**www.cdc.gov/ncidod/dbmd/diseaseinfo/pertussis_a.htm**

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For more information, please contact APHL at **(240) 485-2745**.

APHL ASSOCIATION OF PUBLIC HEALTH LABORATORIES

**http://www.aphl.org**

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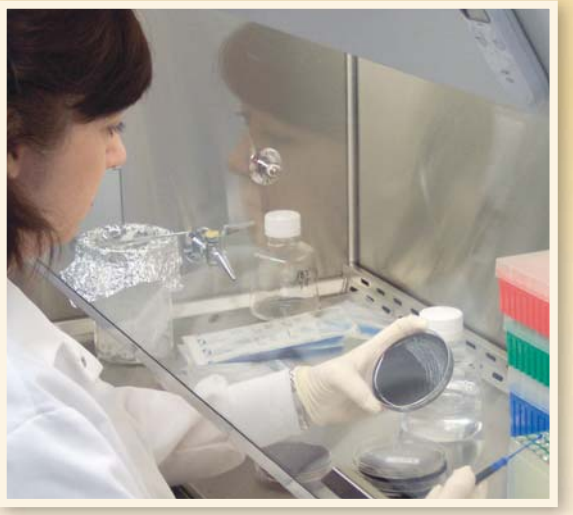
# What's All The WHOOP About?

## It's all about Pertussis Diagnostics



## PERTUSSIS CULTURE

- "Gold Standard"
- Particularly important if an outbreak is suspected
- *Bordetella pertussis* should be cultured on Regan-Lowe or Bordet-Gengou media

## PERTUSSIS SEROLOGY

- Useful method for diagnosing pertussis especially in adults and in the later stages of the disease
- Useful for confirming diagnosis, especially during outbreaks
- CDC, in collaboration with FDA, has developed an ELISA kit that measures IgG antibodies against pertussis toxin

## MULTI-TARGET REAL TIME PCR (R-PCR) ASSAY

- Adoption of multi-target R-PCR methods allows for confirmation and speciation among *Bordetella* spp
- Interpret R-PCR results along with the clinical symptoms and epidemiological information
- Determine the clinically relevant cut-off value for all targets

## SUMMARY OF DIAGNOSTIC TESTS FOR PERTUSSIS
## Compiled by CDC's Pertussis and Diphtheria Laboratory

| Test | Sensitivity[2,3] | Specificity[2,3] | Optimal Timing | Advantages | Disadvantages |
|---|---|---|---|---|---|
| **Culture** | 12 – 60% | 100% | < 2 weeks post-cough onset | Very specific (100%) | Low sensitivity; 7-10 day delay between specimen collection and diagnosis |
| **PCR** | 70 – 99% | 86 – 100% | < 4 weeks post-cough onset | Rapid test; more sensitive than culture; organisms do not need to be viable; positive post-antibiotics | No FDA approved tests or standard-ization; potential for false positives; DNA cross-contamination can be problematic |
| **Paired[1] Sera** | 90 – 92% | 72 – 100% | At symptom onset and 4-6 weeks later | Effective indica-tion of mounting antibody titers | Late diagnosis; no FDA approved tests or standard-ization |
| **Single[1] Sera** | 36 – 76% | 99% | At least 2 weeks post-cough onset; ideally 4-8 weeks post-cough | Useful for late diagnosis or post-antibiotics | No FDA approved test or standard-ization; possibly confounded by recent vaccination; diagnostic cut-offs not validated |

1 Not part of CDC/CSTE case definition (Exception: MA single point ELISA assay)

2 Sensitivity and specificity values obtained from Wendelboe and Van Rie, 2006

3 Data currently being validated at CDC (except paired sera)