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CHANGES TO THE FUNGAL ANTIBODY PANEL

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Effective June 1, 2015, the following changes will be made to the Fungal Antibody Panel:

1. Fungal Antibody Panel (test code FUNGAL) will no longer include an anti-Aspergillus antibody component. For Aspergillus serology, order Aspergillus Antibodies (ASPERAB). The anti-Blastomyces, Coccidioides, and Histoplasma antibodies components will remain.

2. The Coccidioides component of the Fungal Antibody Panel, as well as the Coccidioides-only Coccidioides Antibody (COCCIAB) test will now report antibody responses to two distinct antigens: IDTP and IDCF. Results may be interpreted as follows:

- IDTP+/IDCF- Consistent with an early acute case of Coccidioides infection.
- IDTP+/IDCF+ Consistent with an acute or early convalescent case of Coccidioides infection.
- IDTP-/IDCF+ Consistent with a resolved or chronic case of Coccidioides infection.
- IDTP-/IDCF- No serological evidence of Coccidioides infection.

Note that while IDTP & IDCF reactions closely follow those of IgM and IgG respectively, they are not strict measurements of those immunoglobulin classes.

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BACKGROUND

Coccidioidomycosis is a systemic fungal disease caused by *Coccidioides immitis* and the morphologically identical *C. posadasii*. (For the remainder of this article, '*C. immitis*' will represent both species.) *C. immitis*, like the genetically related species *Blastomyces dermatitidis* and *Histoplasma capsulatum*, is referred to as a dimorphic fungus due to the dual forms it takes. In the environment, dimorphic fungi grow as filamentous moulds, while in humans and animals they take on alternate pathogenic forms, either the *C. immitis* 'spherule', or a morphologically distinctive *H. capsulatum* or *B. dermatitidis* yeasts.

A systemic fungal infection typically begins in the lungs, where it causes an acute pneumonia that is usually asymptomatic or mild, but may rarely be fulminant and fatal. In a small proportion of infected people, the disease is not cleared and instead enters a chronic phase characterized by spread of the infection to other organs or a persistent localization to the lungs. Whether or not the infection is cleared, individuals develop a long-lasting antibody response during the course of the infection.

Besides the detection of specific anti-fungal antibodies already discussed, diagnosis of a systemic fungal infection is also routinely made by microscopic identification of the characteristic in vivo forms in clinical materials, culture, and antigen detection in urine, blood, and body fluids. Please refer to Marshfield Labs' Test Reference Manual for information on culture, histo- and cyto-pathology, and antigen detection methods.

TEST INFORMATION

Test Name	Fungal, Systemic Antibody Panel	
Test Code	FUNGAL	
Keywords	Fungal Serology	
Specimen Type	Serum, Red Top Tube (RTT); 1 mL, 0.5mL (pediatric)	
Performing Lab	Marshfield	
Test Availability	Wednesday	
CPT Coding	86635 x 2	Coccidioides Antibody
	86612	Blastomyces Antibody
	86698	Histoplasma Antibody

QUESTIONS

Questions about the Fungal Antibody Panel may be directed to:

- Technical questions: Roxanne Willadsen.
- Interpretive questions: Dr. Thomas Novicki or Dr. Thomas Fritsche.

Phone number: 800-222-5835.

REFERENCES

1. M. Huppert and J.W. Bailey. Am. J. Clin. Pathol. 1965. 44:369.
2. M.A. Weiden, J.N. Galgiani, and D. Pappagianis. J. Clin. Microbiol. 1983. 18:529.

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A NEW INTERFERON GAMMA RELEASE ASSAY FOR THE DIAGNOSIS OF TUBERCULOSIS

Thomas Novicki, PhD, DABMM, Clinical Microbiologist

On June 1, 2015, Marshfield Labs will replace its existing interferon gamma release assay (IGRA), QuantiFERON TB Gold In-Tube®, with the **Oxford Immunotec T-SPOT.TB® IGRA**. T-SPOT.TB will be performed by Oxford Diagnostic Laboratories in Memphis, Tennessee.

T-SPOT.TB results are reported differently than the current IGRA. In addition to a result of positive, negative, borderline, or invalid result and interpretive commentary added by Marshfield Labs, an image of the Oxford Diagnostic Laboratories report will be viewable through an adjacent hyperlink. (Additionally, a report of 'test not performed' may occasionally occur for technical reasons.) This report will have several values:

- Nil (Neg) Control Spot Count:
  This is a determination of baseline interferon gamma production. A significantly elevated Nil result will lead to an invalid result.
- Panels A and B Spot Counts:
  These values, reported separately, represent the response of the individual's lymphocytes to several *Mycobacterium tuberculosis* antigens through an increase in interferon gamma production.
- Positive Control Spot Count:
  This value represents an assessment of the ability of the individual's lymphocyte population to produce interferon gamma. A significantly reduced value will lead to an invalid result.

Note that the unit of measure used in this assay is a 'spot count'. This is due to the methodology of the test, the ELISPOT assay. This unit is a non-standardized value, unlike the international units/mL of the current QuantiFERON TB test. The Food and Drug Administration fundamentally considers the T-SPOT.TB test to be a qualitative test. At the recommendation of the Centers for Disease Control and Prevention, the spot counts are included in our reports. These counts are useful only as an additional guide in the interpretation of a single test result. Spot counts should never be used in either single or serial testing to predict disease progression or severity, or to monitor therapeutic response.

The T-SPOT.TB test may be generally used in place of the tuberculin skin test (TST). Unlike TST, IGRAs do not give positive results in BCG-vaccinated individuals. However, three non-tuberculous mycobacteria, *Mycobacterium kansasii*, *Mycobacterium marinum* and *Mycobacterium szulgai*, have been found to cause a positive reaction to this test.

There are several limitations to the T-SPOT.TB test:

- This test is **not** a definitive test for tuberculosis; IGRA results must be used together with other diagnostic results, clinical findings, and TB risk factors to the patient.
- This test **cannot** differentiate between latent and active TB.
- This test has not been fully validated for the following populations:
  - individuals ≤ 17 years of age
  - pregnant women

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- hemophilia patients
- patients undergoing anti-tuberculosis chemotherapy (Thus, an IGRA should not be used as a test-of-cure.)

- Exposure to the PPD antigen used in the TST may cause a false positive IGRA reaction for an extended period of time. Best practice dictates completing IGRA testing before placing a TST.

For more information refer to the Centers for Disease Control and Prevention web site at: http://www.cdc.gov/nchstp/tb; accessed 05/22/15.

TEST INFORMATION

Test Name	T-SPOT.TB
Test Code	TSPOTSO
Keywords	TB, Tuberculosis
Specimen Type	Sodium/Lithium Heparin Whole Blood (GTT)-supplied by Oxford; • Adults and children ≥10 years of age: collect 6 mL. • Children ≥2 to <10 years of age: collect 4 mL. • Children <2 years of age: collect 2 mL. Note: Specimen MUST be sent out the same day as collection via FedEx. Shipping containers provided by Oxford Laboratories.
Performing Lab	Oxford Diagnostic Laboratories; Memphis, TN
Test Availability	Monday-Friday
CPT Coding	86481

QUESTIONS

Questions about the interpretation of test results may be directed to:

- Dr. Thomas Novicki or Dr. Thomas Fritsche.

Phone number: 800-222-5835.

SELECTED REFERENCES

1. CDC. Updated guidelines for using interferon gamma release assays to detect *Mycobacterium tuberculosis* infection — United States, 2010. MMWR 2010. 59(RR5).
2. Goletti,D., A. Sanduzzi, and G. Deloqu. Performance of the tuberculin skin test and interferon-gamma release assays: an update on the accuracy, cutoff stratification, and new potential immune-based approaches. J Rheumatol Suppl. 2014. 91:24.
3. Pai M, C.M. Denkinger, S.V. Kik et al. Gamma interferon release assays for detection of *Mycobacterium tuberculosis* infection. 2014. 27:3-20.