Maryland DHMH TB Laboratory Recommendations for Interpretation of QFT-GIT Tests
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QFT-GIT test quick facts:
Major advantages of the QFT-GIT test include:

1. The false-positive influence of BCG vaccine on results is avoided.
2. There is minimal cross-reactivity with most non-TB mycobacteria, unlike the tuberculin skin test (TST).
3. The QFT-GIT requires one blood draw, so no follow-up patient visit is required for test reading, as with a TST.
4. As a laboratory test, QFT-GIT results may be more readily accepted by patients.

Disadvantages of the QFT-GIT test include:

1. There is still no "gold standard" for diagnosing latent TB infection (LTBI). QFT-GIT is a diagnostic tool that must be used in context with patient history and TB risk.
2. Test results have been shown to be particularly erratic in persons with reduced immune response.
3. QFT-GIT is approved by the FDA for use with all ages, however, CDC and the state of Maryland CTBCP do not recommend its routine use in children less than 5 years of age . Some health care providers have used the test with children 2-5 years of age, but there is not a substantial body of published data on the use of the test in children < 5 years old to provide a reference. The test is not recommended at all for children < 2 years of age. Results of the test in young children must be interpreted with caution.

Interpreting Test Results

A "positive" QFT-GIT result is interpreted as "likely TB infection".
In keeping with best laboratory practices, the DHMH TB Laboratory will continue to report QFT-GIT results and interpretation of those results using currently approved cut-points for a positive QFT-GIT test, per manufacturer package insert as noted in the following table.

Nil [IU/mL]	TB Antigen minus Nil [IU/mL]	Mitogen minus Nil [IU/mL][1]	QuantiFERON®-TB [IU/mL]	Report/Interpretation
≤ 8.0	< 0.35	≥ 0.5	**Negative**	*M. tuberculosis* infection NOT likely
	≥ 0.35 and < 25% of Nil value	≥ 0.5		
	≥ 0.35 and ≥ 25% of Nil value	Any	**Positive**[2]	*M. tuberculosis* infection likely
	< 0.35	< 0.5	**Indeterminate**[3]	Results are indeterminate for TB Antigen responsiveness
	≥ 0.35 and < 25% of Nil value	< 0.5		
> 8.0[4]	Any	Any		

Infectious Burden:

Questions may arise regarding the "infectious burden" of an individual and whether that influences QFT-GIT results. **A "low positive" result of 0.35 IU/mL or a "high positive" result of 10.0 IU/mL does not reflect the actual infectious burden of the patient.** Variations in expected results are more likely a factor of the strength of the immune system of the individual being tested. Test variations may also be due to slight variations in processing, e.g., incubation time, appropriate shaking of the tube per protocol, and etc.

Positive Predictive Value:

Preliminary analysis of the a CDC Tuberculosis Epidemiologic Studies Consortium (TBESC) current study (unpublished data) demonstrates that positive predictive value (PPV) of QFT-GIT, like all other screening tests, is somewhat low for identifying true positives in low LTBI prevalence populations. However, this does not mean a positive test result is then more likely to be due to a non-TB mycobacterium.

Positive to Negative and Back Again:

The CDC Tuberculosis Epidemiologic Studies Consoritim (TBESC) Task Order 18 data (unpublished) showed clearly that conversions and reversions of positive and negative test results over time were ***not*** related, as originally anticipated, to initial results being close to established cut-points. Reasons for these changes remain speculative and without clear research data to support why such variations occur.

At the DHMH laboratory, every QFT-GIT "positive" test result is repeated on the same blood sample. If the second result is "negative" and close to the original positive result (e.g., near the cut-point), the final result is reported as negative. If the second test is "negative" but much lower than original positive result, the sample is rerun for a 3rd time before a final determination is made. NOTE: QFT is known to lose antigen response over time so one would expect the second result to be lower.

Interpretation of test results in persons requiring serial testing must be done in the context of the individual's medical history and risk of TB exposure. Serial testing of persons at low TB risk should not be done.

Occupational health programs requiring serial testing of employees for TB using either TST or QFT-GIT should be based on annual facility assessments for TB risk according to CDC recommendations.

Non-TB Mycobacteria (NTM):

The intent of the QFT-GIT test is to screen for TB infection , ***not*** to screen for other non-TB mycobacteria (NTM). Any assumption that a positive QFT-GIT is due to a non-TB mycobacterium (NTM) can be made ***only*** if there is evidence by a positive culture.

NOTE: TSTs are affected by numerous NTMs while QFT-GIT cross-reacts with only a few (*M. kansasii, M. marinum, and M. szulgai*).

TST and QFT:

The QFT-GIT is not a confirmatory test; it should not be used to "double-check" TST results. Questions about utilizing QFT-GIT following a TST should be done in consultation with a TB expert, and should never be adopted as a "routine" practice by a clinician or program.

References:

CDC website: http://www.cdc.gov/tb/topic/testing/default.htm

Qiagen website: http://usa.quantiferon.com/IRM/content/default.aspx

Dorman SE, et.al., ***Interferon-γ release assays and tuberculin skin testing for diagnosis of latent tuberculosis infection in healthcare workers in the United States.*** Am J Respir Crit Care Med. 2014 Jan 1;189(1):77-87. doi: 10.1164/rccm.201302-0365OC.

CTBCP Telephone: 410-767-6698
http://phpa.dhmh.maryland.gov/OIDPCS/CTBCP/SitePages/Hime.apex

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http://www.dhmh.maryland.gov/laboratories/SitePages/Home.aspx