

EFFECTIVE AUGUST 19, 2018, TriCore will change from QuantiFERON-TB Gold to QuantiFERON-TB Gold Plus (QFT-Plus) to better detect TB infection. This improved test requires a new 4-tube test kit. The order number for the 4-tube test kit **113036**. The new kit may be ordered beginning August 6, 2018. The current 3-tube test kit will not be accepted after August 18, 2018.

WHAT IS QUANTIFERON-TB GOLD PLUS?

QuantiFERON-TB Gold Plus (QFT-Plus) is very similar to the previous QuantiFERON-TB Gold test. Both tests are Interferon-gamma Release Assays (IGRAs) recommended by the CDC and the intended use remains the same. It is an indirect test for *M. tuberculosis* infection (including disease) for use in conjunction with risk assessment, radiography, and other medical and diagnostic evaluations. The difference between the two tests is mainly in the custom blood collection tubes. The Nil and Mitogen tubes remain the same, but the TB Antigen tube has been changed. With QFT-Plus, there are now two TB Antigen tubes: TB Antigen Tube 1 (TB1), optimized to stimulate a CD4 immune response, and TB Antigen Tube 2 (TB2), optimized to stimulate both CD4 and CD8 immune responses.

WHAT IS THE BENEFIT OF DETECTING IMMUNE RESPONSES FROM CD8 T CELLS?

In the natural history of *M. tuberculosis* infection, CD4 and CD8 T cells play a critical role in immunological control of the bacillus. Evidence now supports a role for CD8 T cells participating in the host defense to *M. tuberculosis* by producing IFN- γ and other soluble factors, which activate macrophages to suppress growth of *M. tuberculosis*, kill infected cells or directly lyse intracellular *M. tuberculosis*. *M. tuberculosis*-specific CD8 cells have been detected in subjects with latent TB infection and with active TB disease. However, CD8 T cell responses are described as being more frequently detected in patients with higher bacterial burden such as active TB disease versus latent TB infection, and may be associated with a recent *M. tuberculosis* exposure. In addition, research indicates *M. tuberculosis*-specific CD8 T cells producing IFN- γ have also been detected in active TB subjects with HIV co-infection and in young children with TB disease.

CAN QFT-PLUS DISTINGUISH BETWEEN ACTIVE TB AND LATENT TB INFECTION?

Current evidence may suggest higher CD8 activity in active TB, however there is insufficient evidence to state that QFT-Plus can distinguish between active TB and latent TB infection. Therefore, QFT-Plus should never be used in isolation to diagnose active TB or latent TB infection. Anyone testing positive should be assessed for active TB with a medical evaluation, chest radiograph and other tests indicated by the clinical symptoms and medical evaluation.

WHAT IS THE DIAGNOSTIC SENSITIVITY AND SPECIFICITY OF QFT-PLUS?

The sensitivity of QFT-Plus is as high as 94% in individuals with active disease, but varies depending on the setting and extent of TB disease. The specificity of QFT-Plus has consistently shown to be >97% in low-risk individuals.

CAN QFT-PLUS BE USED FOR CHILDREN?

Published data indicates that QFT-Plus performs as well in children as it does in adults and there is no apparent loss of performance in children under 5 years. However, the performance of the QFT-Plus test has not been extensively evaluated in individuals younger than 17 years of age, immunocompromised patients, or pregnant women.

IS QFT-PLUS REPLACING THE PREVIOUS QUANTIFERON-TB GOLD TEST?

Yes, the older QuantiFERON-TB Gold test is being inactivated and will no longer be available.

References

1. Barcellini, L. et al. (2016) First independent evaluation of QuantiFERON-TB Plus performance. *Eur. Respir. J.* 47, 1587-1590.
2. Chicchio, T. et al. (2014) Polyfunctional T-cells and effector memory phenotype are associated with active TB in HIV-infected patients. *J. Infect.* doi: 10.1016/j.jinf.2014.06.009. Epub
3. Ongaya, A. et al. (2013) Mycobacterium tuberculosis-specific CD8+ T cell recall in convalescing TB subjects with HIV co-infection. *Tuberculosis* 93, S60.
4. Lanicioni, C. et al. (2012) CD8+ T cells provide an immunologic signature of tuberculosis in young children. *Am. J. Respir. Crit. Care Med.* 185, 206
5. Sollai, S., et al. (2014) Systematic review and meta-analysis on the utility of Interferon gamma release assays for the diagnosis of Mycobacterium tuberculosis infection in children: a 2013 update. *BMC Infect. Dis.* 14 Suppl 1, S6.
6. Centers for Disease Control and Prevention. Tuberculosis: Testing and Diagnosis. <https://www.cdc.gov/tb/topic/testing/default.htm>

BLOOD COLLECTION

- Label QFT-Plus Blood Collection Tubes appropriately.
Important: QFT-Plus Blood Collection Tubes should be at room temperature (17–25°C) at the time of blood collection.
- Collect 1 ml of blood by venipuncture directly into each of the QFT-Plus Blood Collection Tubes,
 - As 1 ml tubes draw blood relatively slowly, keep the tube on the needle for 2–3 seconds once the tube appears to have completed filling.
 - The black mark on the side of the tubes indicates the validated range of 0.8 ml to 1.2 ml. If the level of blood in any tube is outside of the indicator mark, a new blood sample should be obtained.
 - If a “butterfly needle” is being used to collect blood, a “purge” tube should be used to ensure that the tubing is filled with blood prior to the QFT-Plus Blood Collection Tubes being used.

TUBE SHAKING

- Immediately after filling the tubes, shake them ten (10) times just firmly enough to make sure the entire inner surface of the tube is coated with blood. This will dissolve antigens on tube walls.
Important: Overly vigorous shaking may cause gel disruption and could lead to aberrant results.

SHIPPING AND INCUBATION

- Ship tubes to the testing laboratory at 22°C ± 5°C.
Important: Maintain tubes at room temperature. Do not refrigerate or freeze the blood.
- QFT-Plus tubes must be received at the testing laboratory within 12 hours of collection.

STABILITY/STORAGE (COLLECTION TO INITIATION OF TESTING)

- Room Temperature: 12 hours
- Refrigerated: Unacceptable
- Frozen: Unacceptable

VIDEO

A video showing proper collection and shaking of the QFT-Plus Blood Collection tubes can be found here:
<https://vimeopro.com/tricore/tbgold>