

Interferon Gamma Release Assay QuantiFERON-TB Gold In-Tube or T-Spot.TB Tests

WHAT ARE THEY?

Interferon Gamma Release Assay (IGRA) tests are whole-blood tests used as an aid in diagnosing *Mycobacterium tuberculosis* infection. Two tests are approved by the U.S. Food and Drug Administration (FDA). QuantiFERON- B Gold In-Tube test (QFT) was approved in 2007 and T-Spot.TB Test (T-Spot) was approved in 2008. These tests cannot, in and of themselves, rule in or out active tuberculosis disease.

WHAT ARE THE ADVANTAGES?

- Requires a single patient visit to draw blood sample.
- Results can be available within 24 hours.
- Does not boost responses measured by subsequent tests.
- Is not subject to reader bias.
- Is not affected by prior bacille Calmette-Guérin (BCG) vaccination.
- Can alert providers to patients with impaired T-cell immunity (e.g., persons with HIV, cancer, renal failure, or undergoing immunosuppressive therapy). Those unable to mount an immune response will most likely produce an indeterminate QFT or borderline T-Spot.

WHAT ARE THE DISADVANTAGES AND LIMITATIONS?

- QFT samples must arrive at the Utah Public Health Laboratory (UPHL) within 15 hours of collection, or be incubated and spun within strict guidelines (contact the UPHL at (801) 965-2400 for more information on time restraints. Check with Oxford Laboratories regarding T-Spot procedures 1-877598-2522.
- There are limited data on the use of IGRAs in children younger than 17 years of age, among persons recently exposed to *M. tuberculosis*, and in immunocompromised persons (e.g., impaired immune function caused by HIV infection or acquired immunodeficiency syndrome [AIDS], current treatment with immunosuppressive medication(s), selected hematologic disorders, specific malignancies, diabetes, silicosis, chronic renal failure, and in pregnant women). Refer to the most recent publications available for current information on this matter.
- Errors in collecting or transporting blood specimens or in running and interpreting the assay can decrease the accuracy of the IGRA.
- There are limited data on the use of IGRAs to determine who is at risk for developing active TB disease.

QFT testing is available at UPHL. For more information please call (801) 965-2400 or visit <http://health.utah.gov/lab/>. T-Spot is available through Oxford Labs. For more information please call 1-877-598-2522 or visit <http://www.tspot.com/>

DIRECTORY OF UTAH LOCAL HEALTH DEPARTMENTS

Bear River

655 East 1300 North
Logan, Utah 84341
Phone: (435) 792-6500

San Juan

196 East Center Street
Blanding, Utah 84511
Phone: (435) 678-2723

Tooele County

151 North Main Street
Tooele, Utah 84074
Phone: (435) 277-2300

Weber-Morgan

477 23rd Street
Ogden, Utah 84401
Phone: (801) 399-7100

Central Utah

70 Westview Drive
Richfield, Utah 84701
Phone: (435) 896-5451

Southeast Utah

28 South 100 East
Price, Utah 84501
Phone: (435) 673-3528

TriCounty

133 South 500 East
Vernal, Utah 84078
Phone: (435) 247-1177

Davis County

22 South State Street
Clearfield, Utah 84015
Phone: (801) 525-5200

Southwest Utah

620 South 400 East
Suite 400
St. George, Utah 84770
Phone: (435) 673-3528

Utah County

151 South University Avenue
Provo, Utah 84601
Phone: (801) 851-7000

Salt Lake County

660 South 200 East
Salt Lake City, Utah 84111
Phone: (385) 468-4100

Summit County

650 Round Valley Drive
Park City, Utah 84060
Phone: (435) 333-1500

Wasatch County

55 South 500 East
Heber City, Utah 84032
Phone: (435) 654-2700

Fold Line



TUBERCULOSIS (TB) IS A REPORTABLE DISEASE

Required by Utah State Statute

Report all suspected and confirmed cases of TB to the Utah Department of Health and/or to your local health department. (See local health department contact information on back cover.)

Provider Guide

Testing for TB Infection & Guidelines for Post-test Referral

July 2017

Utah Department of Health Tuberculosis Control Program
288 North 1460 West, Box 142104, Salt Lake City, UT, 84114-2104
Phone: (801) 538-6191 Fax: (801) 538-9913
<http://health.utah.gov/epi/diseases/TB/>



Provider Guide to Testing for Tuberculosis (TB) Infection and Post-test Referral

Step 1: Classify the Results for TB Infection Test

A: The following measurements of induration are classified as positive in a Tuberculin Skin Test (TST) [‡] :			B: IGRA ^Ω
≥5 mm	≥10 mm	≥15 mm	IGRA Positive
<ul style="list-style-type: none"> HIV-positive persons Persons with evidence of old, healed and untreated TB on a chest x-ray Recent contacts of persons with active TB disease Persons with organ transplants and other immunocompromised persons 	<ul style="list-style-type: none"> Persons with medical risk factors for TB (Table 2) Injection drug Users Recent arrivals from high-incidence areas (Table 1) Persons at higher risk for exposure to or infection with TB (Table 1) Mycobacteriology lab personnel Children under age 5 Children/adolescents exposed to adults in high-risk categories (Tables 1 & 2) 	<ul style="list-style-type: none"> Persons at low-risk for TB disease for whom testing is not generally indicated 	<ul style="list-style-type: none"> <i>Mycobacterium tuberculosis</i> (MTB) infection likely in <u>most</u> circumstances. Refer questions to the Utah Public Health Laboratory at (801) 965- 2400 or T- Spot at 1(877) 598-2522

[‡] **Tuberculin Skin Test (TST)**- Results are classified according to a person's risk factors for TB. In general, a history of vaccination with bacille Calmette-Guerin (BCG) does not influence the need for a TST, the classification of TST results, or clinical decisions regarding the management of TST-positive individuals. **See Tables 1, 2, and 3.**

^Ω **Interferon Gamma Release Assay (IGRA)**- A negative result indicates that infection is unlikely but cannot be excluded if: symptoms are consistent with active TB disease, if test is less than 8-10 weeks after exposure, or individual has increased likelihood of disease progression. **See disadvantages and limitations on back cover.**

High-Priority Contacts - Certain high-priority contacts need medical follow-up, including a chest x-ray, even if their reaction is less than 5 mm because they are at high-risk of developing active TB disease and having a false-negative TST result. These include: (1) immunocompromised contacts and (2) children younger than age 5 who were tested less than 8-10 weeks after the last exposure to TB. No further evaluation is necessary when high-priority contacts have a negative reaction to a TST given *more* than 8 weeks after the last exposure to TB. **See Step 2 and Table 3 footnote (*).**

Step 2: If indicated, obtain a chest x-ray and a medical evaluation

Any person with a newly positive TST or IGRA test result, including high-priority contacts of a patient with active TB disease (as defined in Step 1), should have a chest x-ray to evaluate for active TB disease. If the initial chest x-ray is normal, no follow-up chest x-rays are indicated.

Step 3: Are TB symptoms present, or is the chest x-ray abnormal?



Yes	No
 <ul style="list-style-type: none"> Fever Chills Fatigue Loss of appetite Weight loss Night sweats Prolonged productive cough Chest pain Coughing up blood 	
Evaluate for active TB disease	Refer for treatment according to the guidelines in Table 3

Table 1. Persons at higher risk for exposure to or infection with TB

- Close contacts of persons known or suspected to have active TB disease
- Foreign-born persons from areas where TB is common. To view up-to-date *M. tuberculosis* incidence information by country: www.who.int/tb/country/data/profiles/en/
- Residents and employees of high-risk congregate settings (e.g., correctional institutions, nursing homes, mental health facilities, other long-term residential settings, homeless shelters, etc.)
- Health care workers who serve high-risk patients
- Medically underserved, low-income populations
- High-risk racial or ethnic minority populations
- Children exposed to adults in high-risk categories
- Injection drug users

Table 2. Medical risk factors for the development of active TB disease in TB-infected individuals

- HIV infection (or risk for HIV in individuals who decline HIV testing)
- New TB infection within the previous two years
- Evidence of old, healed TB on a chest x-ray
- Diabetes
- End-stage renal disease
- Prolonged corticosteroid therapy
- Other immunosuppressive therapy
- Cancer of the head and neck
- Hematologic and reticuloendothelial diseases (e.g., leukemia and Hodgkin's disease)
- Silicosis.
- Chronic malabsorption syndromes
- Intestinal bypass or gastrectomy
- Being 10% or more below ideal body weight
- Injection drug use

Table 3. Guidelines for treatment of TB infection by patient risk factors, TST result, IGRA result, and age*‡

CANDIDATES FOR TREATMENT OF TB INFECTION							
CATEGORY OF PERSON TESTED	TST < 5 mm	TST ♦ 5 mm	TST ♦ 10 mm	TST ♦ 15 mm	or	IGRA-Pos π	IGRA-Neg
Case Contact: Children < age 5*£	Treat**	Treat	Treat	Treat		Treat	Treat**
Case Contact: HIV-infected [¶] £	Treat**	Treat	Treat	Treat		Treat	Treat**
Case Contact: Immunocompromised*£	Treat**	Treat	Treat	Treat		Treat	Treat**
Case Contact: ≥ age 5 and immunocompetent [£]	Repeat***	Treat	Treat	Treat		Treat	Repeat***
Immunocompromised persons	Do Not Treat	Treat	Treat	Treat		Treat	Do Not Treat
HIV-infected	Do Not Treat	Treat	Treat	Treat		Treat	Do Not Treat
Fibrotic changes on chest x-ray	Do Not Treat	Treat	Treat	Treat		Treat	Do Not Treat
Recent arrival from endemic country ^{»»}	Do Not Treat	Do Not Treat	Treat	Treat		Treat	Do Not Treat
Injection drug user	Do Not Treat	Do Not Treat	Treat	Treat		Treat	Do Not Treat
Resident/employee in an institutional setting [§]	Do Not Treat	Do Not Treat	Treat	Treat		Treat	Do Not Treat
Mycobacteriology lab personnel	Do Not Treat	Do Not Treat	Treat	Treat		Treat	Do Not Treat
High-risk clinical conditions ⁺	Do Not Treat	Do Not Treat	Treat	Treat		Treat	Do Not Treat
Child < age 5	Do Not Treat	Do Not Treat	Treat	Treat		Treat	Do Not Treat
Persons < age 17 exposed to high-risk adults	Do Not Treat	Do Not Treat	Treat	Treat		Treat	Do Not Treat
No risk factors	Do Not Treat	Do Not Treat	Do Not Treat	Treat		Treat	Do Not Treat

For more information on treatment or to refer an individual for treatment, please see the Directory of Local Health Departments (back cover).

£ The window period is the time span between the date of an initial TST or IGRA with a negative reaction and the date of the follow-up TST or IGRA that should take place 8-10 weeks after exposure. After the window period has ended, a repeat test should be administered to each contact who had an initial negative reaction.

* IGRA are not FDA approved to test those under 5 years of age. Case contacts who are under 5 years of age or immunocompromised, initially testing negative should be started on therapy. Testing should be repeated 8-10 weeks after last exposure to TB. Treatment can be discontinued after second negative TST or IGRA in children. Immunocompromised individuals with a second negative TST or IGRA need to be evaluated by a physician.

** Treat and repeat TST or IGRA test after 8-10 weeks. Always obtain a chest x-ray and rule out active TB before starting treatment.

*** Repeat TST or IGRA test after 8-10 weeks. Always obtain a chest x-ray and rule out active TB before starting treatment.

¶ HIV-infected contacts should receive a full course of treatment even if they have a second reaction of < 5 mm or a negative IGRA.

‡ TSTs and IGRAs are not contraindicated for individuals who have been vaccinated with BCG (bacille Calmette-Guerin). Test results for *M. tuberculosis* infection for individuals with a history of BCG should be interpreted by using the same diagnostic cut points used for individuals without a history of BCG vaccination.

π Rarely QFT may cross-react with *M. kansasii*, *M. szulgai*, or *M. marinum* resulting in a false-positive result. In addition, T-Spot may also react to *M. goodii*.

»» See <http://www.who.int/tb/country/data/profiles/en/> to view up-to-date *M. tuberculosis* incidence information by country.

§ TST Conversion: An increase in reaction size of ≥10 mm within 2 years should be considered a TST conversion indicative of recent infection with *M. tuberculosis*.

+ Silicosis, diabetes mellitus, chronic renal failure, some hematologic disorders (e.g. leukemias and lymphomas), other specific malignancies (e.g. carcinoma of the head and neck or lung), being ≥ 10% below ideal body weight, gastrectomy, intestinal bypass.

In all situations of high suspicion of tuberculosis, a person with a negative TST or IGRA should be further evaluated with radiological, bacteriological, HIV, or other testing as appropriate.