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TB Testing Service Packages

Screening for tuberculosis (TB) includes a symptom screen, as well as either a Tuberculin Skin Test (TST) or an IGRA (Interferon Gamma Release Assay), which is a blood test. Concentra® offers both commercially available IGRAs, T-SPOT and QuantiFERON TB. A chest X-ray (CXR) is also used as part of the screening process if the symptom screen is positive or a TST or T-SPOT is positive. **CXRs alone should not be used to screen for TB because they cannot diagnose latent TB infection (LTBI).** CXRs are useful only in diagnosing active TB.

All health care personnel (HCP), including volunteers, who have face-to-face contact/shared airspace with patients who have or potentially have TB, should be screened for TB. Baseline TB screening should occur for all new hires prior to seeing patients. According to new recommendations by the Centers for Disease Control and Prevention (CDC), published in 2019, "in the absence of known exposure or evidence of ongoing TB transmission, HCP without LTBI should not undergo routine serial TB screening or testing at any interval after baseline (e.g., annually)." However, annual screening may be required by state regulations or credentialing bodies. Serial screening may also be indicated as part of a contact investigation. The CDC also notes that health care facilities might consider using serial TB screening of certain groups who may be at increased occupational risk for TB exposure, such as pulmonologists or respiratory therapists or in certain settings if transmission within the facility has occurred in the past.

The 2019 CDC recommendations also advise that HCP with untreated LTBI be screened annually by a symptom screen. The recent recommendations also encourage all HCP with untreated LTBI to be treated unless medically contraindicated.

Besides HCP, it is also recommended or required for all employees of correctional facilities, homeless shelters, and first responders (law enforcement/ firefighters) to be screened for TB at least on new hire. It may also be required by state law or credentialing bodies for other employees to be screened for TB, such as day care workers and teachers. The CDC recommends against testing for TB in individuals who are at low risk of TB infection; however, it is recognized that such testing may be required by law or credentialing bodies.

An employer may decide between an IGRA or TST as part of the TB screening process. The CDC recommends using an IGRA over a TST in the following two scenarios:

- If a person has a history of bacille Calmette-Guerin (BCG) vaccine, which is used in many countries with a high prevlence of TB. While it is used to prevent childhood complications of TB, it may produce a false positive result with a TST.
- If it is difficult or impossible to obtain follow up for TST reading.

The CDC/American Thoracic Society/Infectious Disease Society of America Guidelines published in 2017 *suggest* using IGRA over TST in other low-risk situations. These guidelines do not provide recommendations for individuals who will be tested annually. Concentra recommends against using IGRAs for employees who undergo annual testing, due to the relatively high rates of conversions (negative to positive readings) and reversions (positive to negative readings), which present complicated clinical decisions. This recommendation is consistent with other expert opinion and some national recommendations. An IGRA would still be recommended for annual screening if either one of the two situations above

TST	IGRA
Advantages • In use for over 100 years • Inexpensive **Disadvantages** • Requires follow-up 48-72 hours later to interpret results • May give false positive result because of prior BCG vaccination • May give false positive results due to sensitization to nontuberculosis mycobacteria • Variability in reader interpretation/reader bias • Definition of positive depends on situation/ medical history • Adverse reactions (rare)	**Advantages** • No false positives due to prior BCG vaccine or nontuberculosis mycobacteria • Requires only a single visit (no 2-step testing), regardless of whether serial testing will be conducted **Disadvantages** • Serial IGRAs are complicated by higher rates of conversions and reversions, making interpretation difficult • Increased cost • Blood samples must be processed within 8-30 hours after collection, which may limit days or times test can be performed • Indeterminate, invalid, or borderline results usually necessitate repeat testing

is present. However, as both tests are considered acceptable, it is an employer's decision, and that can be influenced by cost and other variables.

New Hire Testing

TST

A TST involves injecting a small amount of fluid (called tuberculin) into the skin of the lower arm. The employee must return in 48 to 72 hours to have the site evaluated for a reaction. The result of the test depends on the size of the reaction.

- If a new hire has a previous, undocumented positive TST, the TST should be administered, unless the positive TST was associated with a severe reaction (ulceration, anaphylaxis), which is very rare. Performing a TB blood test instead of a TST is another option.
- If a new hire has a previous, documented positive TST or IGRA, neither a T-SPOT nor a TST should be used. Instead, a symptom screen must be performed. A single view CXR would be indicated if a symptom screen is positive or if no documented, negative CXR from within the past six months is presented.
- While the CDC states that a CXR anytime after the diagnosis of (LTBI) suffices, many states require a negative CXR within six to 12 months for new hires with history of documented LTBI infection. Concentra has chosen to use six months for consistency, but if an employer accepts a documented negative CXR from a period longer than six months, and this action is within state regulations, Concentra can make a policy exception.

An annual CXR should never be performed to screen for TB.

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2-step TST

For employees who may have periodic TB screening or who are otherwise at significant risk of acquiring TB, and if a TST is used, a **2-step TST** should be performed on initial baseline testing upon hire, instead of a single TST. This would include **HCP, correctional facility employees, and first responders**. A 2-step test is used to decrease the likelihood that a boosted reaction on later testing will be interpreted as a new infection. In a 2-step TST, two TSTs separated by at least one week are performed. Two-step testing is not performed when a T-SPOT is used or when annual screening is indicated after the baseline 2-step.

- If the new hire has a documented negative TST within the last 12 months, only one TST needs to be performed, and the present TST counts as the second part of the 2-step testing.
- If a new hire has a documented or undocumented negative TST from more than 12 months ago, a 2-step TST should be performed.
- If a new hire has a previous, undocumented positive TST, the 2-step TST should be administered, unless the positive TST was associated with a severe reaction (i.e. ulceration or anaphylaxis), which is very rare. Performing a T-SPOT instead of TST is another option.

New Hire Situation	Test	Testing when periodic screening is recommended or required/increased risk of TB infection
No previous TST or IGRA result	IGRA or TST	IGRA or 2-step TST
Previous negative TST or IGRA result (documented or not documented) > 12 months before new employment	IGRA or TST	IGRA or 2-step TST
Previous documented negative TST ≤ 12 months before new employment	IGRA or TST	Single TST or IGRA
Previous documented positive TST or IGRA	No TST or IGRA. CXR if no documented CXR within six months	No TST or IGRA. CXR if no documented CXR within six months
Previous undocumented positive TST or IGRA	IGRA or TST (no TST if previous severe ulceration or anaphylaxis)	IGRA or 2-step TST (no TST if previous severe ulceration or anaphylaxis)
Previous BCG vaccine	IGRA preferred, but can use TST	IGRA preferred, but can use 2-step TST

- A T-SPOT can be performed instead of a 2-step TST for new hire screening. Concentra does not recommend using the T-SPOT if annual screening is indicated or required, due to the relatively high frequency of conversions and reversions in low-risk individuals.
- If the new hire has a previous, documented positive TST or IGRA, neither a T-SPOT nor a TST should be used. Instead, a **symptom screen** must be performed. A single-view CXR would be indicated if a symptom screen is positive or if no documented negative CXR from within the past six months is presented.
  - While the CDC states that a CXR anytime after the diagnosis of LTBI suffices, many states require a negative CXR within six to 12 months for new hires with history of documented LTBI infection. Concentra has chosen to use six months for consistency, but if an employer accepts a documented negative CXR from a period longer than six months, and this action is within state regulations, Concentra can make a policy exception.

Annual CXR to screen for TB should never be performed.

Live vaccines and TB testing

Live vaccines (MMR, Varicella, nasal flu vaccine) must be administered the same day as the TST or TB blood test, or the TB test must be administered 28 days after a live vaccine is given. Inactivated vaccines such as flu shot, Tdap, hepatitis B can be given anytime before, concurrently or after TB testing.

If doing a 2-step TST or blood test, there are two options:

1. Give MMR and/or Varicella first visit (Day 0) with TST or blood test
   a. If using blood test, can give the MMR and Varicella Day 28 (28 days after first dose) as second TB test not indicated
   b. If using TST must wait to give 2nd step TST on day 28 and give the second MMR and/or Varicella at that time
2. Do not give MMR and/or Varicella at first visit (Day 0) but instead only do first step of the TST (there would be no point of this option if using blood test as second step not needed and can give all first visit)
   a. On Day 7 administer second TST and first MMR and/or Varicella
   b. Give second MMR and/or Varicella 28 days later

The second option would be recommended if checking titers for MMR and/or varicella prior to vaccination.

Annual Screening

As above and based on the 2019 CDC recommendations, annual testing and screening is no longer recommended for most HCP unless required by law or credentialing body. If indicated or required:

- Serial screening should always be performed with a symptom screen.
- CXRs are indicated if the symptom screen is positive or if there is a newly positive TST or T-SPOT.
- Employees with previous, documented positive TST or IGRA with a documented negative CXR for a new hire should only be screened by symptoms screen.

Annual symptom screen should be performed on all HCP who have untreated LTBI.

ANNUAL CXRs SHOULD NOT BE PERFORMED (unless a symptom screen is positive).

A Concentra expert is available to answer any questions regarding your vaccination and TB programs for your employees.

References

Centers for Disease Control and Prevention. Tuberculosis Screening, Testing, and Treatment of U.S. Health Care Personnel: Recommendations from the National Tuberculosis Controllers Association and CDC, 2019. MMWR 2019 Vol 68 No.l 19.

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Centers for Disease Control and Prevention. Prevention of Hepatitis B Virus Infection in the United States: Recommendation of the Advisory Committee on Immunization Practices. MMWR 2018: 67(1).

Lewinsohn, David Et al. Official American Thoracic Society of America/Infectious Diseases Society of America/Centers for Disease Control and Prevention Clinical Practice Guidelines: Diagnosis of Tuberculosis in Adults and Children. Clinical Infectious Disease. 2017:64 (15 Jan)

OSHA BB standard: https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10051