

SUMMARY

DECISION SUPPORT

PATIENT EDUCATION/SELF MANAGEMENT

GOAL

- ✓ Perform surveillance to protect CDCR patients and CCHCS staff from *Mycobacterium tuberculosis* (TB) infection and disease
- ✓ Identify patients with active (infectious) TB disease— isolate, treat, and prevent transmission
- ✓ Identify patients with new TB infection. Offer latent tuberculosis infection (LTBI) treatment to prevent development of TB disease [If LTBI treatment refused, closely monitor for TB disease for first 2 years after infection (and rapidly isolate if TB develops)].
- ✓ Identify patients with remote TB infection, consider LTBI treatment to prevent development of TB disease

ALERTS

- Identify all symptomatic patients
- Monitor newly infected patients for development of symptoms
- Ensure LTBI treatment is offered to all infected patients

DIAGNOSTIC CRITERIA/EVALUATION

SYMPTOM SCREENING: Refer for assessment if patient has cough more than 3 weeks, fever, weight loss, night sweats or hemoptysis

TUBERCULIN SKIN TEST (TST) (standard method in CCHCS for detection of TB infection, recent or past)

- Recorded in millimeters (mm) of induration (palpable, firm swelling, not non-palpable erythema)
- Interpreted as “positive” or “negative” dependent on clinical factors or known exposure to TB
- Those with documented severe necrotic reaction to the TST should have an interferon gamma release assay (IGRA) instead of TST
- Pregnancy, lactation, or previous BCG vaccinations are not contraindications for a TST

HIGH RISK CONDITION (High risk of developing TB disease)

- Recent contact with a person with active TB (all contacts in a contact investigation);
- Abnormalities on a chest x-ray (CXR) consistent with old TB disease;
- HIV-infected or has an unknown HIV infection status;
- Has had an organ transplant and is on transplant immunosuppression; or
- Is otherwise immunosuppressed (e.g., receiving the equivalent of ≥ 15 mg/day of prednisone for \geq one month, chemotherapy for cancer, or tumor necrosis factor (TNF) –alpha antagonists).

POSITIVE TST IN CDCR PATIENTS

- Induration of ≥ 5 mm for patients with a high risk condition
- Induration of ≥ 10 mm for all others

EXCLUSION FROM TESTING

TST is not needed on arrival at reception center or during annual screening if the patient has:

- Documented positive TST or positive IGRA (interferon gamma release assay)
- Documented negative TST or negative IGRA in past 30 days (negative TST is < 5 mm with high risk condition or < 10 mm in all others)
- Documented prior active TB disease

TST CONVERSION: An increase in induration of the TST of ≥ 10 mm in a 2 year period

INFECTION: Acquisition of TB infection

RECENT TB INFECTION : Infection with TB occurring in the past 2 years

- Known recent exposure to a TB case and a new ≥ 5 mm TST (these patients are most often identified during a contact investigation)
- Newly positive TST found at annual screening or on arrival at reception center [≥ 5 mm induration if in a high risk group for progression to TB disease (e.g., immunocompromised) or ≥ 10 mm induration with no known risk factors].
- A TST conversion in the past 2 years.

REMOTE TB INFECTION: Documented TB infection more than 2 years prior

TB DISEASE: Clinical evidence of TB disease

CHEST X-RAY (CXR)—New CXR indicated for:

- Newly positive TST
- Any patient with a documented prior positive TST on arrival at reception center (new arrival or parole violator, not a transfer from another CDCR institution)
- Any patient prior to starting LTBI treatment (even if remotely infected and asymptomatic)
- New arrivals at reception centers with a high risk condition

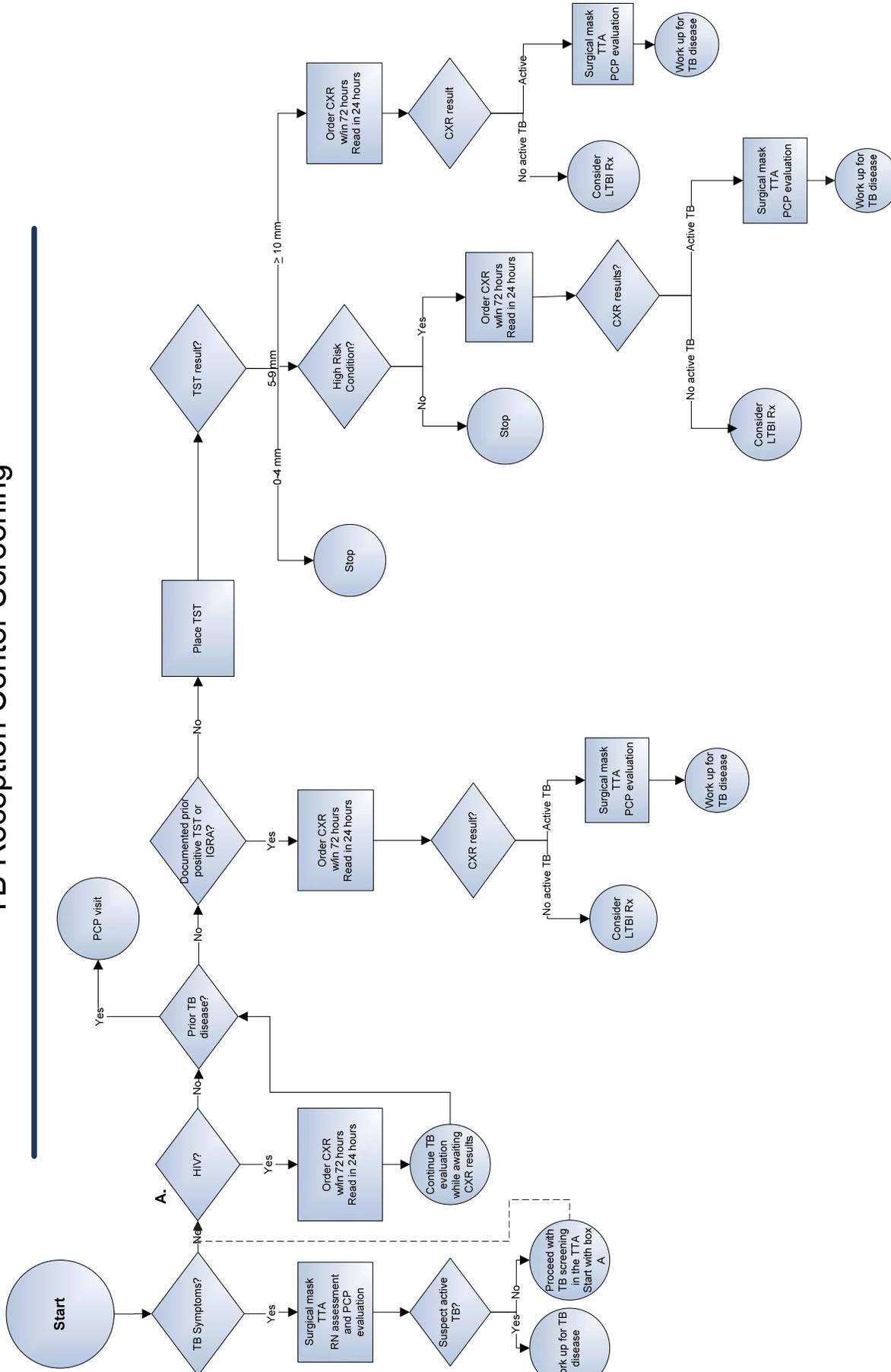
Baseline CXR

- Baseline CXR is a chest x-ray taken after TB infection is identified for which the x-ray itself is accessible through CDCR

MONITORING (EXCLUDING CONTACT INVESTIGATIONS)

ACTIVE TB SYMPTOM SCREENING
<ul style="list-style-type: none"> ▪ Annually (all patients) ▪ Upon arrival at reception center ▪ Transfers between institutions and category S (short stays from other agencies) ▪ Returns from out to court (OTC)
TB SKIN TEST
<ul style="list-style-type: none"> ▪ Annually and at reception center intake unless documented negative IGRA or negative TST (< 5 mm with high risk condition, < 10 mm for all others) in prior 30 days or documentation of LTBI (positive IGRA or positive TST) ▪ For clinical assessment of symptoms consistent with TB if no documented prior positive

TB Reception Center Screening



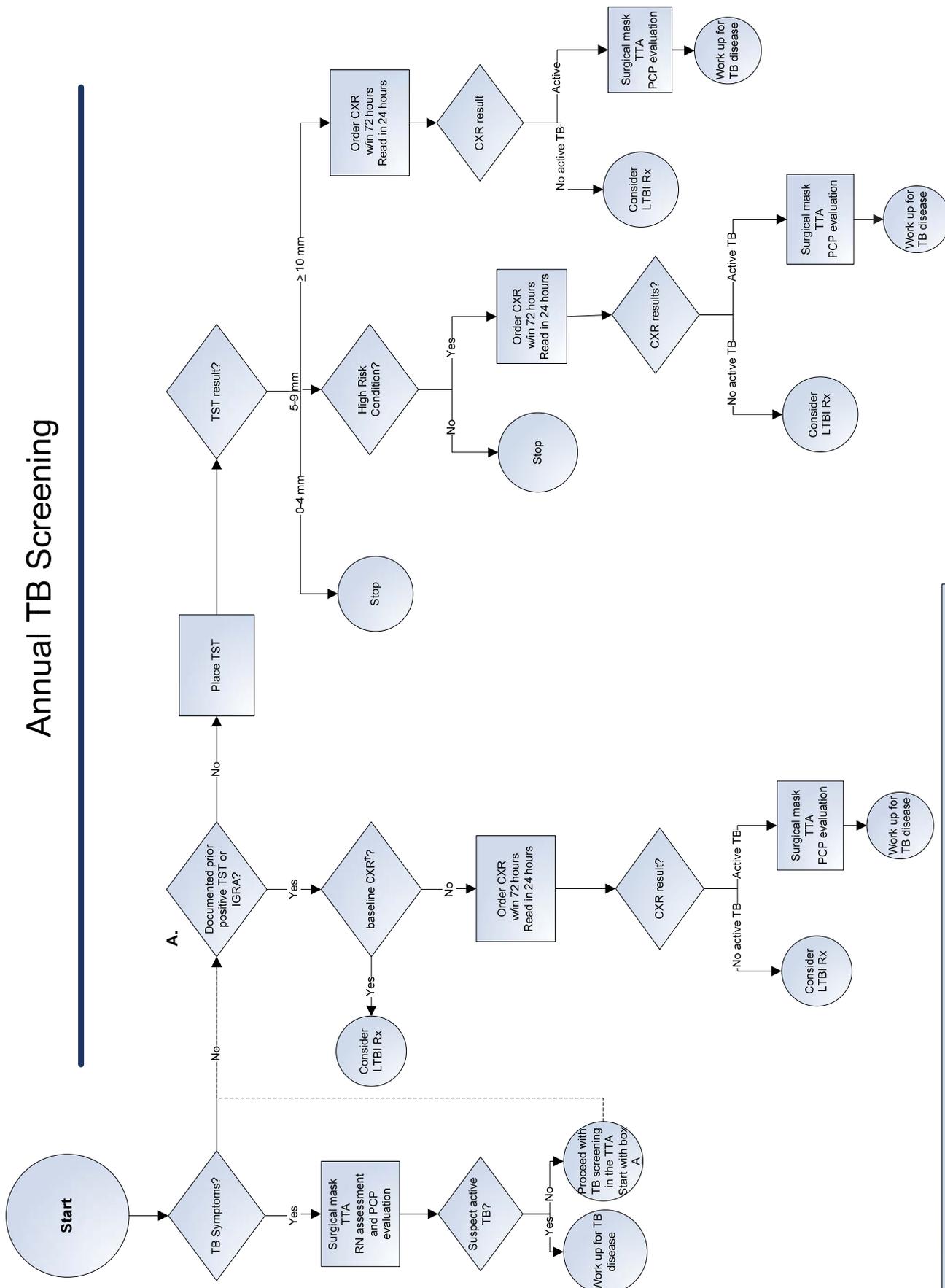
***High Risk Condition**

- Has had recent contact with a person with active TB (all contacts in a contact investigation);
- Has abnormalities on a chest x-ray (CXR) consistent with old TB disease;
- Is HIV-infected or has an unknown HIV infection status;
- Has had an organ transplant and is on transplant immunosuppression; or
- Is otherwise immunosuppressed (e.g., receiving the equivalent of ≥ 15 mg/day of prednisone for $>$ one month, chemotherapy for cancer, or TNF- α antagonists)

† Baseline CXR is a chest x-ray taken after TB infection identified for which a reading is available in CDCR. This CXR could have been taken many years in the past. A new CXR is not necessary unless there is a positive symptom screen, new positive TB test, or starting new LTBI

‡ LTBI Rx – follow current treatment guidelines

Annual TB Screening



***High Risk Condition**

- Has had recent contact with a person with active TB (all contacts in a contact investigation);
- Has abnormalities on a chest X-ray (CXR) consistent with old TB disease;
- Is HIV-infected or has an unknown HIV infection status;
- Has had an organ transplant and is on transplant immunosuppression; or
- Is otherwise immunosuppressed (e.g., receiving the equivalent of ≥ 15 mg/day of prednisone for \geq one month, chemotherapy for cancer, or TNF- α antagonists).

†Baseline CXR is a chest x-ray taken after TB infection identified for which a reading is available in CDCR. This CXR could have been taken many years in the past. A new CXR is not necessary, unless there is a positive symptom screen, new positive TB test, or if starting new LTBI.

‡LTBI Rx - follow current treatment guideline

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SCREENING/EVALUATION AND TESTING

ARRIVALS TO RECEPTION CENTERS

Symptom screening: All patients shall be screened for symptoms of active TB immediately on arrival.

SYMPTOMS PRESENT

- All patients with symptoms or signs of TB (regardless of the TST result) shall wear a surgical mask and be sent to TTA to be evaluated for active TB disease. Workup will include medical evaluation and, if clinically indicated, a CXR and sputum smears and cultures for AFB.
- Contact the sending institution to obtain additional available medical information.

ASYMPTOMATIC PATIENTS

Patients with prior negative TST or unknown or inadequate documentation of TB infection status shall

- Have a TST placed within 72 hours of arrival at a Reception Center.

TST is not indicated for:

- Documented TST < 5 mm in past 30 days for patient with a high risk condition
- Documented TST < 10 mm in past 30 days for patient without a high risk condition
- Documented TST with mm reading interpreted as 'positive' at any time in the past
- Documented IGRA test interpreted as positive

HIV infected

- Asymptomatic patients known to be HIV infected shall also receive a CXR within 72 hours of arrival at reception unless their records contain documentation of a normal or stable CXR within the preceding 30 days. The CXR should be read in 24 hours.
- Any HIV infected patient with a CXR abnormality that cannot be documented as stable for 60 or more days by previous records, with the exception of an isolated calcified granuloma or apical pleural thickening, shall be isolated and evaluated by a clinician even if asymptomatic.

Work up after TST reading

- <5 mm TST reading in patients who are asymptomatic and HIV negative do not require a CXR or further work up.
- All patients with TST ≥5 mm must have a repeat symptom screen completed at time of test reading.
- Patients with a TST of 5-9 mm with a high risk condition for TB disease must have a CXR within 72 hours of test reading to evaluate for TB disease.
- All patients with a TST of ≥10 mm must have CXRs within 72 hours of test reading to evaluate for TB disease.

CXR for asymptomatic patients with no known history of active TB disease.		
TST (mm)	High Risk condition	CXR recommendation
0 -≤ 4 mm	NA	No CXR
5-9 mm	Yes	Obtain CXR to evaluate for TB disease
5-9 mm	No	No CXR
>10 mm	NA	Obtain CXR to evaluate for TB disease

NA is not applicable

High Risk Condition is:

- HIV-infected or has an unknown HIV infection status;
- Has had an organ transplant and is on transplant immunosuppression; or
- Is otherwise immunosuppressed (e.g., receiving the equivalent of ≥15 mg/day of prednisone for ≥ one month, chemotherapy for cancer, or TNF –alpha antagonists).

Documented prior positive TST— Patients with written documentation of a positive Interferon Gamma Release Assay (IGRA) test or a positive TST with a written record of a mm read and a positive interpretation (≥ 5mm with risk factors or ≥10 mm without risk factors)] shall:

- ⇒ Be considered for treatment for latent TB infection (LTBI) if there is no documentation of treatment or if previous treatment was incomplete or inadequate
- ⇒ Have a CXR within 72 hours of arrival at a reception center
- ⇒ Have a repeat CXR taken if prior CXR taken more than six month before entry or re-entry into CDCR
- ⇒ Have a CXR and further workup as clinically indicated to rule out TB disease before offering LTBI treatment

Documented prior TB disease– Patients with history of prior TB disease shall be evaluated by a health care provider; their records will be reviewed to ensure that they completed the indicated TB treatment course.

SCREENING/EVALUATION AND TESTING

ANNUAL SCREENING

Annual evaluation for TB includes:

- Symptom screening of **all** patients
- TST testing for all patients except those with:
 - Documented positive TST or positive IGRA (interferon gamma release assay) in past (induration of ≥ 5 mm for patients with high risk condition, induration of ≥ 10 mm for all others)
 - Documented negative TST or negative IGRA in past 30 days (negative TST is <5 mm with high risk condition or <10 mm in all others)
 - Documented prior active TB disease
 - History of severe necrotic reaction to TST (IGRA recommended)

[The Annual Patient TB Evaluation and Testing Program complies with Penal Code (PC) Sections 7570 to 7576, which mandate annual (and medically necessary) screening and evaluation of all patients for TB. Annual patient test results are used to calculate TB prevalence and new infection (incidence) rates for each institution and overall for patients in CDCR facilities].

Mass annual evaluation and testing is usually scheduled during the last weekend in April.

Each institution is responsible for:

- 1) preparing the local procedures to evaluate and test patients;
- 2) determining staffing needs and schedules;
- 3) ordering supplies, report forms and educational materials; and
- 4) training new staff in the process.

Whenever possible, staff schedules are adjusted to accommodate the needs of the institution while minimizing the use of overtime. Patient movement between and within institutions must stop at 0001 hours, on Friday or Saturday, until 0001 hours on the following Tuesday or sooner if released by institution medical staff. The key test dates for the Annual Patient Evaluation and TST Program are: on Friday or Saturday, conduct screening and administer the TSTs; and on Monday, read and interpret the TSTs.

PATIENT EDUCATION (To increase understanding and to reduce confusion and refusals)

- Each institution must inform the patients of the annual TB Evaluation Program, including the purpose and legal mandate. Each institution shall have patient education materials and information including videos, in English and Spanish, which will be shown over closed-circuit television.

INTERPRETATION OF TST RESULTS

- Patients with a <5 mm TST reading who are asymptomatic and HIV negative do not require a CXR or further work up.
- All patients with TST ≥ 5 mm must have repeat symptom screen completed at time of test reading.
- Patients with a TST of 5-9 mm *who have risk factors for progression to TB disease* (high risk condition) must have a CXR within 72 hours of test reading to evaluate for TB disease; the CXR should be read within 72 hours.
- All patients with a TST of ≥ 10 mm must have CXRs within 72 hours of test reading to evaluate for TB disease.

CXR for asymptomatic patients with no known history of active TB disease.		
TST (mm)	High Risk condition	CXR recommendation
0 - \leq 4 mm	NA	No CXR
5-9 mm	Yes	Obtain CXR to evaluate for TB disease
5-9 mm	No	No CXR
≥ 10 mm	NA	Obtain CXR to evaluate for TB disease

High Risk Condition:

NA is not applicable

- Is HIV-infected or has an unknown HIV infection status;
- Has had an organ transplant and is on transplant immunosuppression; or
- Is otherwise immunosuppressed (e.g., receiving the equivalent of ≥ 15 mg/day of prednisone for \geq one month, chemotherapy for cancer, or TNF α antagonists).

CXR

- Patients with a new positive TST (patients with a TST of 5-9 mm with risk factors, and patients with a TST of ≥ 10 mm with or without risk factors) shall have a CXR to assess for radiographic evidence of active TB disease within 72 hours. (Isolated calcified granulomas and apical pleural thickening are not considered radiographic evidence of active TB disease.)
- If the CXR has no radiographic evidence of active TB disease and the patient is asymptomatic, treatment for LTBI may be indicated.

EVALUATION FOR CXR FINDINGS CONSISTENT WITH ACTIVE TB DISEASE

If the CXR has abnormalities consistent with TB or if the CXR is normal but the patient has symptoms consistent with tuberculosis, the patient should wear a surgical mask and be sent to the TTA to be evaluated for active TB disease. Treatment for LTBI should be delayed until active TB disease has been ruled out. If sputum specimens for AFB smear and culture are collected as part of the evaluation, LTBI treatment should not be started until there is documentation of 3 negative TB cultures (from adequate specimens collected at least 8 hours apart).

If the CXR is abnormal in the setting of a newly positive TST, AFB smear and culture should be obtained even when the radiographic abnormalities appear stable (excluding isolated calcified granulomas and apical pleural thickening). Treatment for LTBI should not be initiated until three culture results are reported as negative for TB disease (from adequate sputum specimens collected at least 8 hours apart).

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**PATIENTS RETURNING FROM OUT TO COURT (OTC),
TRANSFERRED FROM ONE INSTITUTION TO ANOTHER AND ENROUTERS (SHORT STAY PATIENTS)
PATIENTS ARRIVING FOR AN OVERNIGHT STAY WHILE EN ROUTE TO ANOTHER INSTITUTION**

Symptom screening: *All patients shall be screened for symptoms of active TB immediately on arrival.*

ASYMPTOMATIC

- Patients who return from OTC after spending ≥ 1 night in a jail, transfer between institutions, or who are short stay patients with no known recent exposure to an active TB patient do not require testing for TB infection. [Symptom screening IS required].

SYMPTOMS PRESENT

- All patients with symptoms or signs of TB (regardless of the TST result) shall wear a surgical mask and be sent to the TTA to be evaluated for active TB disease. Workup will include medical evaluation and, if clinically indicated, a CXR and sputum smears and cultures for AFB. When indicated, symptomatic patients will be isolated per clinician order.
- Contact the sending institution to obtain additional available medical information.
- HIV infected patients with symptoms suggestive of TB shall be masked and evaluated by a PCP, regardless of CXR findings.
- Any HIV infected patient with a CXR abnormality that cannot be documented as stable for 60 or more days by previous records, with the exception of an isolated calcified granuloma or apical pleural thickening, shall be isolated and evaluated by a clinician, even if asymptomatic.

CATEGORY “S” PATIENTS (CATEGORY “S” PATIENTS ARE PATIENTS TRANSFERRED INTO STATE INSTITUTIONS FROM COUNTY/CITY JAILS FOR REASONS SUCH AS RIOTS OR AN EARTHQUAKE).

Symptom screening: *All category “S” patients shall be screened for symptoms of active TB immediately upon arrival.*

SYMPTOMS PRESENT

- All patients with symptoms or signs of TB (regardless of the TST result) shall wear a surgical mask and be sent to the TTA to be evaluated for active TB disease. Workup will include medical evaluation and, if clinically indicated, a CXR and sputum smears and cultures for AFB. When indicated, symptomatic patients will be isolated per clinician order.
- Contact the sending institution to obtain additional available medical information.
- Prior to return of the patient to his or her original place of confinement the facility must be informed of the need to isolate the patient until active TB has been excluded.
- HIV infected patients with symptoms suggestive of TB disease shall be isolated and evaluated by a clinician regardless of x-ray findings.
- Any HIV infected patient with a CXR abnormality that cannot be documented as stable for 60 or more days by previous records, with the exception of an isolated calcified granuloma or apical pleural thickening, shall be isolated and evaluated by a clinician, even if asymptomatic.

ASYMPTOMATIC

- Asymptomatic category “S” patients without known exposure to TB do not require testing for TB infection. [Symptom screening IS required].

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INVOLUNTARY TESTING FOR PATIENTS REFUSING TUBERCULOSIS EXAMINATION

Inmates who refuse TB evaluation/testing will be tested involuntarily according to statute. (Penal Code 7570-7576 requires inmates to have a TST upon incarceration and at least annually thereafter). The Chief Executive Officer (CEO) and Warden shall designate protocols to be used for timely involuntary evaluation and testing for patients who are nonadherent with the CDCR Evaluation and Testing Program.

Included in the protocol for involuntary testing is documentation of education about the risks and consequences of the refusal to test as well as documentation of encouragement provided to the patient to test voluntarily. Details of the policy for involuntary testing are contained in the TB Prevention and Control Guide.

PREGNANT PATIENTS

- The TST has no adverse effects on pregnancy.
- No documented episodes of fetal harm have resulted from a TST.
- Pregnancy shall not exclude a female from receiving a TST.
- Pregnant women have a greater likelihood of a false-negative TST.
- All pregnant women shall be screened for signs and symptoms of TB disease, and, if the TST is negative, the TST shall be repeated 6 to 12 weeks postpartum.
- When indicated, a CXR shall be delayed if at all possible (if there are no TB signs or symptoms) until the second trimester, and proper precautions will be taken to shield the abdomen from the effects of radiation.
- When indicated in pregnancy, the CXR shall be repeated after delivery for consideration of treatment for LTBI. (*During pregnancy and the first six weeks postpartum the risk of progression from TB infection to TB disease is high and these patients shall be monitored closely for symptoms of TB disease.*)

TB TESTING AND INCREASING THE DETECTION OF LTBI

The TST is not completely specific; patients infected with other mycobacterial species or who received BCG immunization may have a reaction to the TST despite not being infected with TB. Prior BCG recipients with positive TSTs must undergo TB evaluation. The TST is also not completely sensitive in detecting TB infection; patients with active TB disease or TB infected immunocompromised patients may have a TST of 0 mm. The TST cannot be used as a sole criteria to exclude active TB as a diagnosis, but it is a useful screening test for TB infection despite these limitations.

Use of Interferon Gamma Release Assays (IGRAs)

IGRAs (e.g., Quantiferon TB Gold In-tube test and T-Spot) are blood tests that can be used to detect TB infection. Some IGRAs are more specific for TB than TSTs and are thus less likely to cause a false positive reaction after infection with nontuberculous (atypical) mycobacteria or after sensitization with BCG vaccination. However, IGRAs are NOT more sensitive than TSTs and are not more likely to detect true TB infections when used alone (or in place of a TST). IGRAs should NOT be used as confirmatory tests for TSTs. IGRAs can be useful in evaluating for TB infection in certain patients (e.g., those with a documented necrotic reaction to a TST, or patients who refuse a TST but are willing to have a blood test for TB infection). The CCHCS Public Health Unit should be consulted in deciding whether or not to use an IGRA test in a patient normally eligible for a TST.

Increasing the detection of LTBI (e.g., before prescribing immunosuppressive drugs)

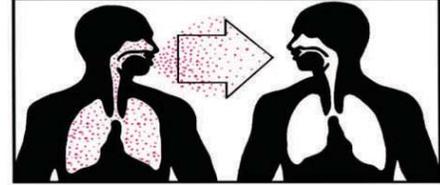
Neither TSTs nor IGRAs are completely sensitive in the detection of TB infection and false negative reactions (a negative test in a person with TB infection) occur with both tests. The sensitivity of both of these tests is about the same, however the sensitivity of detecting TB infection is increased when both tests are used. Certain clinical circumstances may warrant increased efforts to detect TB infection, such as a plan to initiate immunosuppressive treatment (e.g., TNF alpha antagonists) which could result in reactivation of LTBI. Using the results of both a TST and an IGRA test can improve the detection of LTBI. The patient may be tested with both tests at the same time and, if one or both tests are positive, the patient is considered to be TB infected. Alternatively, if the patient had a recent negative TST, the IGRA test can be performed and, if the IGRA test is positive, the patient is considered TB infected. Similarly, if the patient had a recent negative IGRA test, a TST can be placed and, if the TST is positive, the patient is also considered TB infected.

TB SKIN TEST (MANTOUX): WHAT YOU SHOULD KNOW

Q: What is the TB Skin Test?

A: The tuberculosis (TB) skin test, sometimes called a “Mantoux,” is a simple, harmless way to find out if you have latent TB infection.

Q: What is latent TB infection?



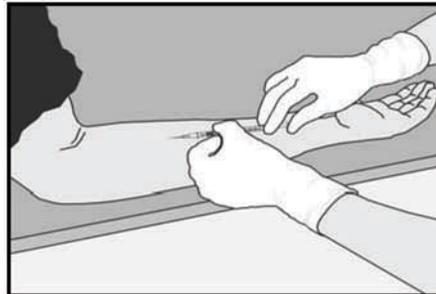
A: There are two phases of TB. Both phases can be treated with medicine. When TB germs first enter your body, they cause latent (silent) TB infection. You will have no symptoms with latent infection. Without treatment, latent TB infection can become active TB disease. Anyone can get TB because it spreads from one person to another through the air.

Phase 1 – Latent TB Infection	Phase 2 – Active TB Disease
TB germs are “asleep” in your body. This phase can last for a long time (even many years.)	TB germs are active and spreading. They are damaging tissue in your body. TB disease usually effects the lungs but it may affect other organs.
You don’t look or feel sick. Your chest x-ray is usually normal.	You usually feel sick. Your doctor will do special tests to find where TB is harming your body.
You can’t spread TB to other people.	If the TB germs are in your lungs, you can spread TB to other people by coughing, sneezing, talking, or singing.
Usually treated by taking 1 or 2 medicines for 3 to 9 months.	Treated with 4 medicines for at least 2 months, then usually 2 medicines for at least another 4 months.

Q: How can I tell if I have latent TB infection?

A: A TB skin test (“Mantoux”) can show if you have latent TB infection. You could have latent TB infection if you have ever spent time close to someone with active TB disease (even if you didn’t know they were sick).

Your nurse will use a small needle to inject some harmless testing fluid (called “tuberculin”) under the skin on your arm.



Your nurse MUST check your arm 2 or 3 days after the TB skin test, even if your arm looks OK to you.

If you have a reaction to the test, it will look like a raised bump. Your nurse will measure the size of the reaction. If there is a bump, it will go away in a few weeks.

TB SKIN TEST (MANTOUX): WHAT YOU SHOULD KNOW (CONT.)

Q: How do I take care of my arm after the TB skin test?

- A:**
- Don't cover the spot with a bandage or tape.
 - Be careful not to rub it or scratch it.
 - If the spot itches, put a cold cloth on it.
 - You can wash your arm and dry it gently.

Q: What if my TB skin test is negative?

A: The test is "negative" if there is no bump (or only a very small bump) at the spot where the fluid was injected. A negative TB skin test usually means that you don't have TB infection or disease.

In some situations, you may need to have another TB skin test later.

Q: What if my TB skin test is positive?

A: The test is "positive" if there is a bump of a certain size where the fluid was injected. This means you probably have TB germs in your body. Most people with a positive TB skin test have latent TB infection. To be sure, your doctor will examine you and give you a chest x-ray. You may need other tests to see if you have active TB disease.

Q: You should have a TB skin test if:

- A:**
- You work or live in a prison, nursing home, clinic, hospital, homeless shelter,
 - you have had frequent close contact with someone who has active TB disease,
 - you have lived in a country where many people have TB,
 - you have HIV infection or certain other health problems.

Q: What if I've had BCG vaccine?

- A:**
- Even if you have had BCG vaccine, you can have a TB skin test.
 - People who have had BCG vaccine still can get latent TB infection and active TB disease.
 - BCG vaccine may help protect young children from getting very sick with TB. This protection goes away as people get older.
 - BCG vaccine may sometimes cause a positive TB skin test reaction. However, if you have a positive reaction to the TB skin test, it probably is from TB germs in your body - not from your BCG vaccine.