Case Based Scenarios Diagnosis of TB Infection

CASE #1

35-year-old U.S. born woman was tested for TB as a requirement for volunteering at her children's K-8 school. Her QFT-IT TB Ag-Nil is 0.75 IU/mL of IFN-gamma. You repeat her TB risk assessment and confirm that she has never been a contact to active TB, traveled overseas to a TB endemic country, she has no history of homelessness nor incarceration, nor does she has an immunocompromising medical condition.

What do you do next?

a) CXR

b) Repeat IGRA

c) TST

d) Start LTBI treatment

e) a and b

Answer: E

Based on the information, this woman is not considered at risk for TB infection, and could have been evaluated with the risk assessment alone. LA County TBCP recommends always obtaining a CXR with any positive TB test for which there is no CXR done in the prior 90 days. According to the revised guidelines, it is reasonable to repeat the TB test (IGRA or TST). If TB test is positive, offer treatment for TB infection. If the TB test is negative, reevaluate her immune status and if immunocompetent, consider her not infected with TB.

Based on this information, this woman is not considered at risk for TB infection and may have a false positive IGRA. As per Table 3. LA County TBCP Recommendations for Diagnostic Testing for TB infection, this patient falls in the category of a low risk individual that was tested and is found to be IGRA positive. She should have a CXR, a repeat TB test (IGRA or TST) and if negative, accept negative test as evidence of no TB infection. If the repeat TB test is positive, then treatment for TB infection should be considered.

CASE #2

35-year-old U.S. born woman requests TB clearance for volunteering at her children's school. She has no symptoms of TB. You proceed with:

a) TST

b) Risk assessment

c) Both

d) It depends

Answer: D

LAUSD supports the TB risk assessment approach for clearing individuals to volunteer in educational settings. However, individual districts or schools still require universal testing. For schools that accept the TB risk assessment, proceed with the TB risk assessment (school/volunteer risk assessment), and if a TB risk is identified, test for TB. If not TB risk identified, the evaluation is complete and a certification of clearance can be sent with the patient. For districts or schools that require TB testing, providers may do both the risk assessment and TB test. A memo from the LA County TBCP supporting using risk assessments to clear low risk individuals is provided here to send with the parent. You may also contact the LA County TBCP to notify us of a school or district that continues to require universal testing.

CASE #3

A health care worker undergoes mandatory annual TB testing at her institution. She has no medical conditions, overseas travel, or known contact to TB in her occupational history. She has never been homeless or incarcerated. She denies any TB symptoms. Her prior TB testing history is below:

- 2015 borderline positive QFT (TB Ag - Nil = 0.40 – considered 'no infection')-CLEARED
- 2016 QFT negative (TB Ag - Nil < 0.35) - CLEARED
- 6/20/2017 QFT positive (TB Ag - Nil = 2.3)
- 6/26/2017 QFT borderline positive (TB Ag – Nil = 0.40)
- 2017 T-spot (negative)
- 2017 TST negative

A CXR is negative. What do you do next?

a) Initiate treatment for TB infection

b) Consider not infected with TB and continue annual testing for TB infection

c) Inquire about QFT specimen processing for employee health

d) All except a

Answer: D

The patient is at low risk for TB infection, despite theoretical occupational risk for exposure to TB and is not considered to have TB infection. In California, all employers of healthcare workers are required to offer annual TB testing as mandated by OSHA in the Airborne Transmissible Disease Standard. Engineering controls in hospitals have reduced occupational transmission significantly. A multicenter trial in the U.S. that studied serial testing with IGRAs and TSTs in healthcare workers found that on average, conversions in IGRAs (QFT and T-spot) was 6-8% and for TST was 0.9%. Repeat testing six months later found that in just over 75%, the IGRAs "converters" tested as IGRA negative, and TSTs (with only 50% returning for their tests) reverted in 90%. (Dorman SE, et al., "Interferon Gamma Release Assays and Tuberculin Skin Testing for the Diagnosis of Latent Tuberculosis Infection in Healthcare Workers in the United States", AJRCCM, 2014) Because specimen processing for QFTs is more laboratory specific than T-spot, reproducibility of results in QFTs is more dependent on laboratory procedures and quality assurance follow through with timely specimen incubation and blood volume in the special tubes. (Tagmouti, S et al., "Reproducibility of Interferon Gamma Release Assays. A systematic review", Annals ATS, 2014.) Therefore, the explanation for the probable false positive TB Ag-Nil 2.6 value might be explained by laboratory specimen handling. If the IGRA tests for employee health are run by the institutional laboratory, at a programmatic level, it is reasonable to review the specimen handling procedures and indeterminate rates of the laboratory.