**HIV Module: HIV and Tuberculosis**

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Objectives:

* Describe the epidemiology of Tuberculosis (TB) including transmission
* Describe the clinical manifestations of TB and clinical course
* Define latent TB infection and current guidelines for secondary prophylaxis
* Describe strategies for diagnosis and management of active TB infection
* Explain the classifications of drug resistant TB and its epidemiology
* Describe unique challenges in TB-HIV co-infection pertaining to the above topics

**Case 1. Mr. Pott is a 47 year old man with HIV/AIDS, hypertension, chronic tobacco use and active alcohol use disorder. His HIV is well-controlled on combination antiretroviral therapy (cART) and recent CD4 count was 500 cells/mm3 with undetectable viral load. He is currently homeless and has a history of incarceration. He presents to clinic because he has been accepted to an inpatient rehabilitation facility and needs a PPD. He wants to know if he is at risk for TB.**

1. Describe the epidemiology of TB and HIV. How is TB transmitted? Does the risk of active TB differ in patients with and without HIV? What are other risk factors?

**Case 1 continued: You conduct a thorough ROS and Mr. Pott denies experiencing recent cough, hemoptysis, fever, night sweats, weight loss, lymphadenopathy, fatigue, or malaise. You place a PPD (TST) for Mr. Pott. When he returns 72 hours later, there is an area of induration 7 mm in diameter.**

1. Define latent TB infection (LTBI). What are the current guidelines for screening of LTBI in HIV+ patients? How would you interpret Mr. Pott’s PPD?
2. Given his positive TST, how can Mr. Pott’s risk of developing active TB be reduced?

**Case 2: Ms. Calmette is a 26-year-old woman with newly diagnosed HIV who presents with cough x 4 weeks. The cough has worsened gradually over the past month and she now has hemoptysis. It is associated with fever, weight loss, night sweats. She does not have any additional known medical problems and does not take any medications. She denies alcohol or other substance use and current sexual activity. ROS is notable for headaches and white patches on tongue.**

1. Ms. C. has the classic symptoms of pulmonary TB (hemoptysis, fever, weight loss, night sweats). What other clinical signs/symptoms may be seen in pulmonary TB? Extrapulmonary TB? What else is on the differential?
2. In the clinic with Ms. C, what are your next steps? How would you go about working up her symptoms?

**Case 2 continued: Ms. Smith has a positive AFB sputum smear microscopy, and NAAT test is positive for MTB. Sputum mycobacterial culture results are pending. CXR shows a cavitary lesion in the right upper lobe. HIV test is positive; CD4 is 250 cells/mm3 with VL 43,000 copies/mm3.**

1. Describe the management of active pulmonary and extrapulmonary TB.
2. Ms. C wants to know when she should start antiretroviral medication for her HIV. What do you tell her? What specific considerations would you take into account regarding concurrent TB treatment and antiretroviral medications?

**Case 2 Continued: Ms. Calmette is started on RIPE while in the hospital. HLA B5701 is negative and you plan to start her on Triumeq 8 weeks after RIPE initiation.**

1. What other adverse effects are you concerned about?

**Bonus Case:**

**Mr. Sofuba is a 42 year old man with longstanding well-controlled HIV disease. He returned from a stint as a Peace Corps volunteer in Kazakhstan 1 year ago at which time he had a positive IGRA and completed 9 months of INH prophylaxis. However, for the past 3 months he has had progressive cough that has become blood-streaked, fevers, night sweats, and a 20-pound weight loss. A sputum sample is positive for AFB on microscopy and *Mtb* on NAAT. PCR testing also reveals mutations associated with resistance to both RIF and INH. He is started on second line regimen. Eight weeks later, cultures with second-line drug sensitivity testing result with *Mtb* that is sensitive to moxifloxacin and capreomycin.**

1. How would you classify Mr. S’s TB disease? How should he be managed?

**Resources:**

ATS/CDC/IDSA Clinical Practice Guidelines for Drug-Susceptible TB

Available at: <https://www.cdc.gov/tb/publications/guidelines/pdf/clin-infect-dis.-2016-nahid-cid_ciw376.pdf>

Official American Thoracic Society/Infectious Diseases Society of America/Centers for Disease Control and Prevention Clinical Practice Guidelines: Diagnosis of Tuberculosis in Adults and Children. Available at:

<https://academic.oup.com/cid/article-lookup/doi/10.1093/cid/ciw778>

USDHHS Guidelines for Prevention and Treatment of Opportunistic Infections in HIV-Infected Adults and Adolescents, Section on Mycobacterium tuberculosis Infection and Disease, updated September 2017. Available at <https://aidsinfo.nih.gov/contentfiles/lvguidelines/adult_oi.pdf>