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## GLOBAL TUBERCULOSIS INSTITUTE

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# Treatment of Tuberculosis (TB) in Adult and Adolescent Patients with HIV Infection—2012

This fact sheet is intended as a convenient but not comprehensive reference for managing the care of HIV-infected patients with drug susceptible TB. HIV and TB treatment guidelines change frequently, therefore, consult the [cdc.gov/tb](http://cdc.gov/tb) and [aidsinfo.nih.gov](http://aidsinfo.nih.gov) websites for updates. It is also strongly recommended that treatment of co-infected patients be undertaken in consultation with an expert in this area.

## Key Principles in the Management of Tuberculosis in Patients Co-infected with HIV

- TB treatment regimens should be directly observed to assure patient adherence regardless of site of infection. Response to therapy should be carefully evaluated and treatment may need to be prolonged if there is a delay in clinical or bacteriologic response.
- A baseline evaluation and monthly follow-up consisting of clinical and bacteriologic assessment, review of concurrent medications, and periodic laboratory (liver function, renal function, and complete blood count) and radiographic evaluations are essential.
- Measurement of baseline CD4 (T cell) count is crucial to the optimal management of co-infected patients, including timing of initiation of antiretroviral therapy (ART).
- Initiation of ART in patients with low CD4 counts on TB therapy may result in development of the immune reconstitution inflammatory syndrome (IRIS), which must be distinguished from failure of TB therapy. Antituberculous therapy should not be stopped in patients who develop IRIS.

## Use of Antiretroviral Treatment and Rifamycins

- Rifamycins should always be included in the treatment regimen despite concerns for potential drug interactions. When rifamycins and antiretroviral drugs with potential interactions are co-administered, monitor TB treatment and HIV virologic responses carefully. Consider therapeutic drug monitoring of rifamycins, especially when rifabutin is administered with boosted protease inhibitors (PI).
- To prevent acquired rifamycin resistance in persons with TB and advanced HIV infection (CD4 count  $<100$  cells/mm<sup>3</sup>), rifampin (RIF) or rifabutin (RBT)-based therapies should be administered either daily or 3x weekly. Rifapentine should not be used.
- Rifamycins induce cytochrome P450 hepatic enzymes that accelerate the metabolism of certain HIV drugs and may significantly reduce their serum levels. RBT has been shown to be an effective substitute for RIF. It is preferred in the treatment of patients on all PI regimens, as well as those on certain non-nucleoside reverse transcriptase inhibitors (NNRTIs), entry inhibitors (EIs), and integrase inhibitors (IIs). However, RBT doses may need to be increased (with some NNRTIs) or decreased (with PIs) due to effects of these on RBT metabolism. No dose adjustments are needed for rifamycins while using nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs) and fusion inhibitors.

For specific rifamycins and ART dosing and information, see the treatment tables in "Guidelines for the Use of Antiretroviral Agents in HIV-1-Infected Adults and Adolescents" available at: <http://aidsinfo.nih.gov/contentfiles/lvguidelines/AdultandAdolescentGL.pdf>.

## Timing of the Initiation of Antiretroviral Therapy

All HIV-infected patients diagnosed with active TB should be started on ART. The urgency for the initiation of ART is based primarily on CD4 count but also on viral load and a history of certain HIV-associated clinical conditions. Clinicians need to also consider potential for drug interactions and toxicities, adherence challenges, and laboratory abnormalities. Patients already on ART should continue to receive HIV treatment as well as TB treatment. HIV treatment may need to be modified.

While TB treatment should be started immediately, the initiation of ART can be staggered to increase adherence and reduce the risk of IRIS, which may develop in patients with active TB and low CD4 counts. However, this is not a reason to delay initiation of, or discontinue ART.

For patients with CD4 counts:	Optimal timing for initiation of ART
<50 cells/mm <sup>3</sup>	2 weeks
>50 cells/mm <sup>3</sup> with clinical disease of major severity as indicated by clinical evaluation*	2 to 4 weeks**
For other patients >50 cells/mm <sup>3</sup>	8 to 12 weeks**

\*Including low Karnofsky score, low body mass index, low hemoglobin, low albumin, organ system dysfunction, or extent of disease

\*\* Urgency for initiation of ART may be less in stable patients with higher CD4 counts and treatment decisions should be individualized in these patients

***RBT can be used throughout TB treatment in patients on ART. However, if switching from a RIF-based-regimen to a RBT-based regimen, plan for a two-week “washout” period from the last dose of RIF and first dose of NNRTIs, PIs, EIs, and IIs.***

### Resources:

- Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the use of antiretroviral agents in HIV-1-infected adults and adolescents. Department of Health and Human Services. Available at <http://aidsinfo.nih.gov/contentfiles/lvguidelines/AdultandAdolescentGL.pdf>.
- CDC. Guidelines for prevention and treatment of opportunistic infections in HIV infected adults and adolescents: recommendations from CDC, the National Institutes of Health, and the HIV Medicine Association of the Infectious Disease Society of America. *MMWR* 2009; 58:19-28.
- CDC. Prevention and treatment of tuberculosis among patients infected with human immunodeficiency virus: principles of therapy and revised recommendations. *MMWR* 1998; 47.
- CDC. Updated guidelines for the use of rifamycins for the treatment of tuberculosis among HIV-infected patients taking protease inhibitors or non-nucleoside reverse transcriptase inhibitors. *MMWR* 2004; 53:37.
- CDC. Treatment of tuberculosis. *MMWR* 2003; 52 (RR-11).