In New York State, the standard of care for individuals with HIV-2 is:
- Atazanavir
- If a protease inhibitor is being considered as part of an ART regimen for treatment of HIV-2, boosted darunavir is preferred.

**KEY POINTS**

- In New York State, the standard of care for individuals with HIV-2 is to initiate and maintain ART in order to achieve an undetectable HIV-2 viral load.
- If a protease inhibitor is being considered as part of an ART regimen for treatment of HIV-2, boosted darunavir is preferred.
- Atazanavir should not be used because of its lack of potency in vitro against HIV-2.

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**HIV CLINICAL RESOURCE**

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## DIAGNOSIS AND MANAGEMENT OF HIV-2 IN ADULTS

**NYSDOH AIDS INSTITUTE HIV CLINICAL GUIDELINE**

**JULY 2019**

### ALL RECOMMENDATIONS

Please see full guideline for additional information. P.1

#### Diagnosis of HIV-2

- To diagnose HIV-2 infection, clinicians should follow the steps in the CDC/APHL HIV Diagnostic Testing Algorithm and the recommendations in the NYSDOH AI guideline HIV Testing. (A1)
- In individuals who are confirmed to have HIV-2 antibodies, clinicians should perform a clinical evaluation for HIV-2 infection that is similar in scope to the evaluation of patients with HIV-1. (A1) HIV-2 antibodies are confirmed by a reactive result to an HIV-1/2 or HIV-1/2 Ag/Ab immunopassay and a positive result for HIV-2 antibodies on an FDA-approved supplemental supplemental HIV-1/2 Ab differentiation assay.

#### Treatment of HIV-2

- Clinicians should recommend ART for all individuals diagnosed with HIV-2. (A2)
- Clinicians should not prescribe any NRTI for treatment of HIV-2 infection. (A2)
- Clinicians should recommend a single-tablet regimen that includes 2 NRTIs plus plus an INSTI as the initial treatment for adults with HIV-2 who are not pregnant and not planning to become pregnant, including those with acute HIV-2 infection (see Table 1). (A2)
- For individuals with HIV-1/HIV-2 coinfection, clinicians should:
  - Perform HIV-1 drug resistance testing to guide the choice of an initial regimen or to modify a regimen if virologic failure develops. (A2)
  - Recommend an ART regimen that will suppress both viruses effectively. (A2)

#### Monitoring ART in Individuals With HIV-2

- For individuals who are newly diagnosed with HIV-2, clinicians should perform the same laboratory and diagnostic testing currently recommended for individuals with HIV-1, with the exception of drug resistance testing, which is not available. (A3)

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Wadsworth Center Bloodborne Viruses Laboratory Services
Figure 2. Recommended HIV Testing Algorithm for Serum or Plasma Specimens [CDC. Updated January 2018]

Step 1. HIV-1/2 antigen/antibody immunoassay [a]  

(-) Negative for HIV-1 and HIV-2 antibodies and p24 Ag

Step 2. HIV-1/2 antibody differentiation immunoassay

HIV-1 (+)  
HIV-2 (-)  
HIV-1 antibodies detected

HIV-1 (-)  
HIV-2 (+)  
HIV-2 antibodies detected

HIV-1 (+) or indeterminate AND HIV-2 (-) or indeterminate

Step 3. HIV-1 NAT

HIV-1 NAT (+)  
Acute HIV-1 infection

HIV-1 NAT (-)  
Negative for HIV-1 [c]

(+ ) indicates reactive test result  
(-) indicates non-reactive test result

NAT = nucleic acid test

1. Laboratories should conduct initial testing for HIV with an FDA-approved antigen/antibody immunoassay [a] that detects HIV-1 and HIV-2 antibodies and HIV-1 p24 antigen to test for established HIV-1 and HIV-2 infection and for acute HIV-1 infection, respectively. No further testing is required for specimens that are non-reactive on the initial immunoassay. However, if there is a possibility of very early infection leading to a non-reactive initial antigen/antibody immunoassay, such as when recent HIV exposure is suspected or reported, then conduct an HIV-1 nucleic acid test (NAT), or request a new specimen and repeat the algorithm according to CDC guidance (1,4,5,6).

2. Specimens with a reactive antigen/antibody immunoassay result (or repeatedly reactive, if repeat testing is recommended by the manufacturer or required by regulatory authorities) should be tested with an FDA-approved supplemental antibody immunoassay that differentiates HIV-1 antibodies from HIV-2 antibodies. Reactive results on the initial antigen/antibody immunoassay and the HIV-1/2 antibody differentiation immunoassay should be interpreted as positive for HIV-1 antibodies, HIV-2 antibodies [b], or HIV antibodies, untypable (undifferentiated).

3. Specimens that are reactive on the initial antigen/antibody immunoassay and non-reactive or indeterminate on the HIV-1/2 antibody differentiation immunoassay should be tested with an FDA-approved NAT [a].
   - A reactive HIV-1 NAT result and non-reactive or indeterminate HIV-1/HIV-2 antibody differentiation immunoassay result indicates laboratory evidence of acute HIV-1 infection.
   - A negative HIV-1 NAT result and non-reactive or indeterminate antibody differentiation immunoassay result indicates an HIV-1 false-positive result on the initial immunoassay.
   - A negative HIV-1 NAT result and repeatedly HIV-2 indeterminate or HIV indeterminate antibody differentiation immunoassay result should be referred for testing with a different validated supplemental NAT -2 test (antibody test or NAT) or repeat the algorithm in 2 to 4 weeks, starting with an antigen/antibody immunoassay (3).

4. Laboratories should use this same testing algorithm, beginning with an antigen/antibody immunoassay on all serum or plasma specimens submitted for testing after a preliminary positive result from any rapid HIV test conducted in a CLIA-waived setting (7).

[a] The FDA-approved single-use rapid HIV-1/2 antigen/antibody immunoassay can be used as the initial assay in the laboratory HIV testing algorithm for serum or plasma. If any instrumented antigen/antibody test is available, it is preferred due to its superior sensitivity for detecting HIV during acute infection (1,2).

[b] This includes specimens reported as HIV-2 positive with HIV-1 cross-reactivity (3).

[c] Refer to last bullet, item 3 above.

References:
1) Laboratory Testing for the Diagnosis of HIV Infection: Updated Recommendations  
https://stacks.cdc.gov/view/cdc/23447
2) Use of the Determine HIV 1/2 Ag/Ab Combo Test with Serum or Plasma in the Laboratory Algorithm for HIV Diagnosis  
https://stacks.cdc.gov/view/cdc/48472
3) Technical Update on HIV-1/2 Differentiation Assays  
https://stacks.cdc.gov/view/cdc/40790
4) Suggested Reporting Language for the HIV Laboratory Diagnostic Testing Algorithm  
https://stacks.cdc.gov/view/cdc/45930
5) Updated Guidelines for Antiretroviral Postexposure Prophylaxis After Sexual, Injection Drug Use, or Other Nonoccupational Exposure to HIV—United States, 2016  
https://stacks.cdc.gov/view/cdc/38856
6) Web content: How Soon Can Clinicians Rule Out Infection?  
https://www.cdc.gov/hiv/testing/clinical/index.html
7) Web content: Clinical Laboratory Improvement Amendments  
https://www.cdc.gov/clia/

TABLE 1: ART Regimens for Initial Treatment of Nonpregnant Adults With HIV-2 

<table>
<thead>
<tr>
<th>Single-Tablet Regimens</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABC/3TC/DTG (Triumeq)</td>
<td>• Initiate only in patients confirmed to be negative for HLA-B*5701 and negative for HBsAg. • Consider underlying risk of coronary heart disease. • Documented DTG resistance after initiation in treatment-naïve patients is rare. • Clinicians should refer to the DHHS Recommendations for the Use of Antiretroviral Drugs in Pregnant Women with HIV Infection and Interventions to Reduce Perinatal HIV Transmission in the United States when choosing an initial regimen for individuals of childbearing potential. • In patients with HIV/HBV coinfection, this regimen should be used in conjunction with other anti-HBV drugs.</td>
</tr>
<tr>
<td>TAF 25 mg/FTC/BIC (Biktarvy)</td>
<td>• Initiate only in patients with CrCl ≥30 mL/min. • Contains 25 mg of TAF, unboosted.</td>
</tr>
</tbody>
</table>

ALTERNATIVE REGIMENS

<table>
<thead>
<tr>
<th>Single-Tablet Regimens</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>TAF 10 mg/FTC/COBI/DRV (Symtuza)</td>
<td>• Initiate only in patients with CrCl ≥30 mL/min. • Carefully consider drug-drug interactions with COBI. • Contains 10 mg TAF, boosted.</td>
</tr>
<tr>
<td>TAF 10 mg/FTC/COBI/EVG (Descovy and Prezista and Norvir)</td>
<td>• Initiate only in patients with CrCl ≥30 mL/min. • Contains 25 mg TAF, boosted. Use with caution in individuals with stage 3 chronic kidney disease.</td>
</tr>
<tr>
<td>TAF/FTC/DRV/COBI (Descovy and Prezista and Norvir)</td>
<td>• Carefully consider drug-drug interactions with COBI. • Initiate only in patients with CrCl ≥30 mL/min. • Contains 25 mg TAF, boosted. Use with caution in individuals with stage 3 chronic kidney disease.</td>
</tr>
<tr>
<td>TAF 25 mg/FTC/DTG (Descovy and Truvada)</td>
<td>• Initiate only in patients with CrCl ≥30 mL/min. • Documented DTG resistance after initiation in treatment-naïve patients is rare. • Contains 25 mg of TAF, unboosted. • Clinicians should refer to the DHHS Recommendations for the Use of Antiretroviral Drugs in Pregnant Women with HIV Infection and Interventions to Reduce Perinatal HIV Transmission in the United States when choosing an initial regimen for individuals of childbearing potential.</td>
</tr>
<tr>
<td>TAF 25 mg/FTC/RAL HD (Descovy and Truvada)</td>
<td>• Initiate only in patients with CrCl ≥30 mL/min. • To date, no clinical trials have been conducted with TAF; data are based on bioequivalence pharmacokinetic studies. • Contains 25 mg of TAF, unboosted. • TAF/FTC once daily and RAL HD 1200 mg once daily dosed as two 600 mg HD tablets.</td>
</tr>
</tbody>
</table>

TABLE 2: ART Regimens for Initial Treatment of Nonpregnant Adults With HIV-2 

<table>
<thead>
<tr>
<th>Single-Tablet Regimens</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABC/3TC (Epzicom) [2] OR TDF/FTC (Truvada)</td>
<td>• Contains 25 mg of TAF, unboosted.</td>
</tr>
</tbody>
</table>

Table continued...

Notes:
1. Listed alphabetically.
2. Prescribe ABC/3TC only if the patient is HLA-B*5701 negative and HBsAg is negative.
3. Dosed twice daily.

Drug name abbreviations key: 3TC, lamivudine; ABC, abacavir; DRV, darunavir/ritonavir; FTC, emtricitabine; RAL, raltegravir; TDF, tenofovir disoproxil fumarate