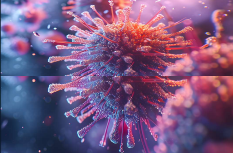



38 Antiretroviral Therapy for Special Populations
Speaker: Roy Gulick, MD, MPH



Antiretroviral Therapy (ART) for Special Populations

Roy M. Gulick, MD, MPH
Rochelle Belfer Professor in Medicine
Chief, Division of Infectious Diseases
Weill Cornell Medicine

7/6/2025

1



Disclosures of Financial Relationships with Relevant Commercial Interests

- None

2


Special Populations

- Acute/recent HIV infection
- Acute opportunistic infection
- Tuberculosis
- HIV-HBV co-infection
- HIV-HCV co-infection
- Pregnancy
- Post-HIV exposure (PEP)
 - Occupational (OPEP)
 - Non-occupational (NPEP)
 - Pre-HIV exposure (PREP)

3

Question #1

PREVIEW QUESTION



A 22-year-old man presents with fever, mouth pain, and skin rash. PE reveals 3 small oral ulcers and diffuse macular rash. Labs show WBC 3K, platelets 89K, monospot negative, RPR NR, HIV antibody negative, HIV RNA 1,876,000 cps/ml.

Which statement is correct?

- A. ART should not be offered
- B. ART would decrease his symptoms
- C. ART would not decrease ongoing transmission
- D. ART has long-term clinical benefits in this setting

4

Question #1

PREVIEW QUESTION

2025
INFECTION
DISEASE
BOARD REVIEW



A 22-year-old man presents with fever, mouth pain, and skin rash. PE reveals 3 small oral ulcers and diffuse macular rash. Labs show WBC 3K, platelets 89K, monospot negative, RPR NR, HIV antibody negative, HIV RNA 1,876,000 cps/ml.

Which statement is correct?

- A. ART should not be offered
- B. ART would decrease his symptoms
- C. ART would not decrease ongoing transmission
- D. ART has long-term clinical benefits in this setting

5

Acute or Recent HIV

- ART is RECOMMENDED.
- ART reduces symptoms and signs and reduces transmission.
- No long-term virologic, immunologic, or clinical data available.
- Goal is full virologic suppression.
- Obtain genotype prior to ART.
- If ART is started prior to genotype results, use **bictegravir, dolutegravir, or boosted darunavir**, together with tenofovir (TAF or TDF) + emtricitabine.
- If patient was on IM cabotegravir for PrEP, use **boosted darunavir-based** regimen (rather than integrase inhibitor-based).
- Can modify regimen, if needed, when genotype results return.

DHHS Guidelines 9/12/24

6

Question #2

A 52-year-old woman is admitted for progressive SOB, is intubated, undergoes BAL and is found to have PCP. HIV Ab test is positive, CD4 103, HIV RNA 135,000 copies/ml. She is day 4 of IV trimethoprim-sulfa and corticosteroids and still intubated.

When should she start ART?

- A. Immediately
- B. In the next 2 weeks
- C. After completing 21 days of trimethoprim-sulfa
- D. At her first outpatient clinic visit

7

Question #2

A 52-year-old woman is admitted for progressive SOB, is intubated, undergoes BAL and is found to have PCP. HIV Ab test is positive, CD4 103, HIV RNA 135,000 copies/ml. She is day 4 of IV trimethoprim-sulfa and corticosteroids and still intubated.

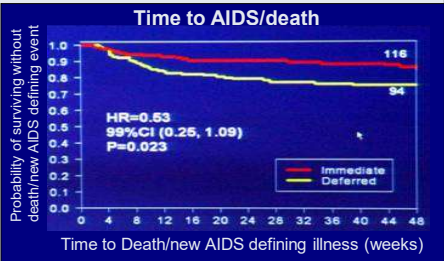
When should she start ART?

- A. Immediately
- B. In the next 2 weeks
- C. After completing 21 days of trimethoprim-sulfa
- D. At her first outpatient clinic visit

8

ACTG 5164: Immediate vs Delayed ART with an Acute OI

- 282 patients with treatable OI diagnosed within 14 days randomized to start ART within 48 hours vs. after 4 weeks
 - most common OI: PCP (63%)
- AIDS progression/death: **immediate rx (14%)** vs **delayed rx (24%)**
- No differences in safety/toxicity, IRIS, or week 48 responses
- Caution with CNS OI (e.g. cryptococcus, TB)



Zolopa PLoS One 2009;4:e5575

9

HIV-TB Co-infection

- Treat active TB the same with or without HIV.
- All PWH with TB should start TB meds immediately.
- In PWH with TB, timing of starting ART depends on CD4 count:
 - For CD4 <50, start ART ASAP, within 2 weeks of TB rx
 - For CD4 ≥50, start ART within 8 weeks of TB rx
- Start pregnant women with HIV and TB on ART as early as feasible.
- For TB meningitis, after ≥2 weeks + monitor closely.

DHHS Guidelines 9/12/24

10

Question #3

A 39-year-old man with HIV, CD4 298, HIV RNA 23,000 cps/ml, never on ART is diagnosed with pulmonary TB. The plan is to start INH, RIF, PZA, and ETH while awaiting susceptibilities. He agrees to start ART and genotype is wild-type.

Which of the following ART regimens do you recommend?

- A. TDF/emtricitabine/efavirenz
- B. TDF/emtricitabine + atazanavir (unboosted)
- C. TAF/emtricitabine + darunavir (boosted with cobicistat or ritonavir)
- D. TAF/emtricitabine/bictegravir

11

Question #3

A 39-year-old man with HIV, CD4 298, HIV RNA 23,000 cps/ml, never on ART is diagnosed with pulmonary TB. The plan is to start INH, RIF, PZA, and ETH while awaiting susceptibilities. He agrees to start ART and genotype is wild-type.

Which of the following ART regimens do you recommend?

- A. **TDF/emtricitabine/efavirenz**
- B. TDF/emtricitabine + atazanavir (unboosted)
- C. TAF/emtricitabine + darunavir (boosted with cobicistat or ritonavir)
- D. TAF/emtricitabine/bictegravir

12

HIV-TB Co-infection (2)

- Include a **rifamycin** in the regimen.
 - Rifampin
 - Significantly ↓ **TAF** – current FDA label: not recommended
 - Significantly ↓ ALL **PIs** – **do not use**
 - ↓ **Dolutegravir (DTG)** (need to ↑ DTG to 50 mg bid)
 - Significantly ↓ **bictegravir (BIC)** – **do not use** (conflicting data)
 - ↓ NNRTI concentrations: **efavirenz (EFV)** 600 mg daily is recommended
 - Rifabutin: preferred; more manageable drug interactions with protease inhibitors
- For IRIS, continue both ART and TB meds while managing the syndrome.
- Treatment support, including directly observed therapy (DOT) of TB rx is strongly recommended.

DHHS Guidelines 9/12/24

13

Question #4

A 55-year-old with HIV not previously on rx, CD4 320 and HIV RNA 67,000 cps/ml

Lab testing reveals: toxoplasma Ab+; CMV Ab+; HAV total Ab+; HBV surface Ag+, core Ab+, surface Ab-; HCV Ab-; RPR NR

Of the following, which ART regimen would you recommend?

- A. Abacavir/lamivudine/dolutegravir
- B. Cabotegravir + rilpivirine IM
- C. Dolutegravir/lamivudine
- D. Tenofovir (TAF or TDF)/emtricitabine + darunavir (boosted)

14

Question #4

A 55-year-old with HIV not previously on rx, CD4 320 and HIV RNA 67,000 cps/ml

Lab testing reveals: toxoplasma Ab+; CMV Ab+; HAV total Ab+; HBV surface Ag+, core Ab+, surface Ab-; HCV Ab-; RPR NR

Of the following, which ART regimen would you recommend?

- A. Abacavir/lamivudine/dolutegravir
- B. Cabotegravir + rilpivirine IM
- C. Dolutegravir/lamivudine
- D. **Tenofovir (TAF or TDF)/emtricitabine + darunavir (boosted)**

15

HIV-HBV Co-infection

- Some ART has activity against HBV
 - Lamivudine (3TC), emtricitabine (FTC), tenofovir (TDF and TAF)
- Some HBV drugs have activity against HIV
 - Entecavir (can select M184V) *McMahon NEJM 2007;356:2614*
- If treatment started, treat both optimally
 - 2 active agents for HBV (TAF or TDF) + (3TC or FTC)
 - + 3rd drug for HIV (preferred = BIC or DTG)
 - If tenofovir cannot be used, start a fully suppressive regimen and add entecavir

DHHS Guidelines 9/12/24

16

HIV-HCV Co-infection

- Anyone with HCV should be screened for HIV.
- High-risk HIV+ patients should be screened for HCV annually.
- ART should be started in those with concomitant HCV.
 - Same initial regimens recommended, but caution with drug-drug interactions and overlapping toxicities.
- Patients with HIV and HCV should be evaluated for HCV therapy (including assessing liver fibrosis stage).
 - Also evaluate for HBV co-infection.
- HCV direct-acting antiviral regimens → high cure rates

DHHS Guidelines 9/12/24

17

Question #5

PREVIEW QUESTION

2025
INFECTION DISEASE
BOARD REVIEW



A 26-year-old woman with HIV on TAF/emtricitabine + efavirenz with CD4 630 and VL suppressed below detection becomes pregnant.

What do you recommend regarding ART?

- A. Discontinue ART until 2nd trimester
- B. Change TAF to zidovudine
- C. Change efavirenz to bictegravir
- D. Continue current regimen

18

Question #5

PREVIEW QUESTION

2025
INFECTION DISEASE
BOARD REVIEW



A 26-year-old woman with HIV on TAF/emtricitabine + efavirenz with CD4 630 and VL suppressed below detection becomes pregnant.

What do you recommend regarding ART?

- A. Discontinue ART until 2nd trimester
- B. Change TAF to zidovudine
- C. Change efavirenz to bictegravir
- D. **Continue current regimen**

19

Antiretrovirals in Pregnancy

- ART recommended for all pregnant people, as early as possible, regardless of CD4 or VL level (rx and prevention of MTCT: mother to child transmission)
 - Perform drug-resistance testing if VL >500-1000 cps/ml
 - Start (or continue if safe/tolerated) standard 3-drug ART as early as possible (while awaiting drug resistance testing):
 - 2-drug regimens can be continued, if virologically suppressed
 - Modify regimen when drug resistance testing results available
 - ART does NOT increase the risk of birth defects
- Near delivery, if HIV RNA >1000 (or unknown), use intravenous zidovudine, and recommend Cesarean section at 38 weeks

DHHS Perinatal Guidelines 12/19/24 <www.clinicalinfo.hiv.gov>

20

ART in Pregnancy: NRTI

- Preferred:
 - Abacavir/lamivudine
 - Tenofovir (TAF or TDF)/(emtricitabine or lamivudine)
- Alternative:
 - Zidovudine/lamivudine
- IV zidovudine recommended close to delivery if VL >1000

DHHS Perinatal Guidelines 12/19/24 <www.clinicalinfo.hiv.gov>

21

ART in Pregnancy: NNRTI

- Alternative:
 - Efavirenz (birth defects reported in primate studies, NO evidence in human studies and extensive experience; screen for depression)
 - Rilpivirine (NOT with baseline VL >100K or CD4 <200 or PPIs)
- Insufficient data: Doravirine
- Not recommended (could continue if already taking):
 - Etravirine (not for treatment-naïve pts)
 - Nevirapine (toxicity, need for lead-in dosing, low barrier to resistance)

DHHS Perinatal Guidelines 12/19/24 <www.clinicalinfo.hiv.gov>

22

ART in Pregnancy: PI

- Preferred:
 - Darunavir/ritonavir (when previously on cabotegravir PrEP; need to use bid)
- Alternative:
 - Atazanavir/ritonavir
 - Darunavir/ritonavir (need to use bid)
- Not recommended:
 - Cobicistat (↓ drug concentrations, limited experience)
 - Lopinavir/ritonavir (side effects, need to use bid; could continue if already taking; may need to ↑ dose)

DHHS Perinatal Guidelines 12/19/24 <www.clinicalinfo.hiv.gov>

23

ART in Pregnancy: INSTI

- Preferred:
 - Dolutegravir (neural tube defects not significantly ↑ vs. other ART)
- Alternative:
 - Bictegravir
 - Raltegravir (need to use bid)
- Not recommended:
 - Elvitegravir/cobicistat (↓ drug concentrations)
 - IM cabotegravir + rilpivirine

DHHS Perinatal Guidelines 12/19/24 <www.clinicalinfo.hiv.gov>

24

ART in Pregnancy: Other

- **Not recommended:**
 - 2-drug regimens (e.g. dolutegravir/lamivudine, dolutegravir/rilpivirine, cabotegravir/rilpivirine IM)
 - Cobicistat as a booster (for EVG or PIs)
- **Only recommended for treatment-experienced:**
 - Etravirine, fostemsavir, ibalizumab, lenacapavir, maraviroc

DHHS Perinatal Guidelines 12/19/24 <www.clinicalinfo.hiv.gov>

25

Question #6

A 34-year-old nurse without HIV sustains a needlestick from a patient with HIV who has not taken ART for 2 years.

Which of these post-exposure (PEP) regimens do you recommend?

- A. Tenofovir (TDF or TAF)/emtricitabine
- B. Tenofovir (TDF or TAF)/emtricitabine + non-nucleoside RT inhibitor (NNRTI)
- C. Tenofovir (TDF or TAF)/emtricitabine + integrase inhibitor
- D. Tenofovir (TDF or TAG)/emtricitabine + protease inhibitor

26

Question #6

A 34-year-old nurse without HIV sustains a needlestick from a patient with HIV who has not taken ART for 2 years.

Which of these post-exposure (PEP) regimens do you recommend?

- A. Tenofovir (TDF or TAF)/emtricitabine
- B. Tenofovir (TDF or TAF)/emtricitabine + non-nucleoside RT inhibitor (NNRTI)
- C. **Tenofovir (TDF or TAF)/emtricitabine + integrase inhibitor**
- D. Tenofovir (TDF or TAG)/emtricitabine + protease inhibitor

27

Antiretrovirals for PEP (1)

Post-exposure prophylaxis (PEP) for **occupational** exposure:

- Assess nature of exposure:
 - source fluid, volume of fluid, type of exposure, timing
- Assess exposure source; HIV and hepatitis testing
- Testing (baseline, 6 + 12 wks + 6 months with standard HIV Ab or 6 wks + 4 months if new HIV Ab/p24 test used) and counseling
- Offer 4 weeks of rx for recognized transmission risk
 - Start ASAP (within 72 hours)
 - **Tenofovir (TDF)/emtricitabine + dolutegravir** (not in women in early pregnancy or sexually active and not on birth control) or **raltegravir**
 - Adjust regimen for possibility of resistance in source patient
 - F/U within 72 hours

PHS Guidelines updated 5/23/18

28

Antiretrovirals for PEP (2)

PEP for **non-occupational** exposure:

- Presentation ≤ 72 hours with substantial risk exposure from HIV+ or likely to be HIV+ – **recommended**
- Presentation > 72 hours or no substantial risk of exposure – **not recommended**
- Testing: Do rapid HIV (Ag)/Ab test or if results not available, start PEP
- Prior to PEP: BUN/creatinine, LFTs, STI testing (CT, GC, syphilis), HBV/HCV testing, pregnancy testing
- Preferred Treatment: 4 weeks of
 - **TAF/FTC/bictegravir**
 - **Tenofovir (TAF or TDF)/(FTC or 3TC) + dolutegravir**

Tanner CDC Guidelines MMWR 2025;74:1-56

29

Question #7

23-year-old man without HIV with a partner with HIV on ART with HIV RNA suppressed below detection asks you about starting pre-exposure prophylaxis (PrEP).

Which of these PrEP regimens do you recommend?

- A. Nothing – PrEP is not indicated
- B. PrEP with tenofovir (TDF)/emtricitabine daily
- C. PrEP with tenofovir (TAF)/emtricitabine “on demand”
- D. PrEP with bictegravir/tenofovir (TAF)/emtricitabine daily

30

Question #7

23-year-old man without HIV with a partner with HIV on ART with HIV RNA suppressed below detection asks you about starting pre-exposure prophylaxis (PrEP).

Which of these PrEP regimens do you recommend?

- A. Nothing – PrEP is not indicated
- B. **PrEP with tenofovir (TDF)/emtricitabine daily**
- C. PrEP with tenofovir (TAF)/emtricitabine “on demand”
- D. PrEP with bictegravir/tenofovir (TAF)/emtricitabine daily

31

CDC Guidance for PrEP:

- Inform all sexually active adults and adolescents about PrEP
- Before starting:
 - Exclude acute and chronic HIV infection (by HIV testing and symptoms)
 - Assess baseline CrCl, screen for STIs and HBV infection
- Prescribe PrEP for people with ongoing risk from sex or injecting drugs:
 - **Tenofovir (TDF)/FTC** for ♂ and ♀ (daily; some guidelines recommend “on-demand”)
 - **Tenofovir (TAF)/emtricitabine** for ♂ ONLY (daily)
 - **IM cabotegravir** for ♂ and ♀ (every 2 months)
 - Provide risk reduction, adherence counseling, condoms
- On PrEP:
 - HIV testing every 3-4 months, monitor CrCl every 6 (age > 50 or CrCl < 90) or 12 months
 - Risk reduction, condoms, STI assessments/treatment
 - Evaluate the need to continue PrEP

<https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2021.pdf>

32

38 Antiretroviral Therapy for Special Populations

Speaker: Roy Gulick, MD, MPH

Conclusions

- 1. Acute (and recent) HIV – ART recommended
- 2. Acute OI – ART within 2 weeks of diagnosis reduces mortality; caution with CNS opportunistic infections
- 3. TB – Early ART prolongs survival; caution with rifamycin drug interactions.
- 4. Hepatitis B and C co-infection – Consider antiviral activity, drug-drug interactions, drug toxicities
- 5. Pregnancy – Treat and reduce MTCT; modify ART recommendations based on safety and experience
- 6. Post-exposure prophylaxis (PEP) – ART within 72 hours; give for 4 weeks; adjust for known drug resistance
- 7. Pre-exposure prophylaxis (PrEP) – TDF/FTC (♂+♀), TAF/FTC (♂), IM CAB (♂+♀)

33

Acknowledgments

- Cornell HIV Clinical Trials Unit (CCTU)
- Division of Infectious Diseases
- Weill Cornell Medicine
- AIDS Clinical Trials Group (ACTG)
- HIV Prevention Trials Network
- Division of AIDS/NIAID/NIH
- The patient volunteers!

rgulick@med.cornell.edu



Weill Cornell
Medicine



34