

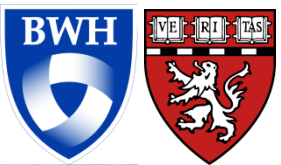
HIV Disease: An Overview

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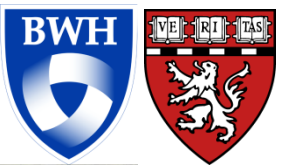
Jennifer A. Johnson, MD



- University of California at San Francisco Medical School
- Internal Medicine residency at BWH
- Infectious Disease Fellowship at MGH/BWH
- HIV Subspecialty Fellowship at BWH
- Assistant Professor of Medicine at HMS
 - Clinical Director of Ambulatory Services for Infectious Disease at BWH
 - Medical Director of Antibiotic Stewardship Program at BWH
 - Research in vaccines, including HIV vaccines

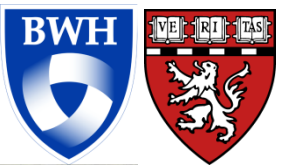


No financial disclosures



What's coming:

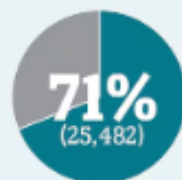
- Current epidemiology of the HIV epidemic and public health goals
- Current state of HIV testing
- Current recommendations for initial antiretroviral therapy (ART)
- Approach to complications of HIV, aging with HIV
- Current approaches to HIV prevention



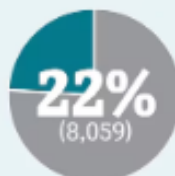
Overall Goal: Decrease the number of new HIV diagnoses to 9,588 by 2025 and 3,000 by 2030.



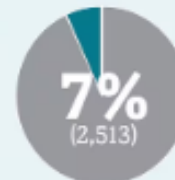
There were **36,136 new HIV diagnoses*** in the US and dependent areas in 2021. Of those:



were among gay, bisexual, and other men who reported male-to-male sexual contact[†]



were among people who reported heterosexual contact



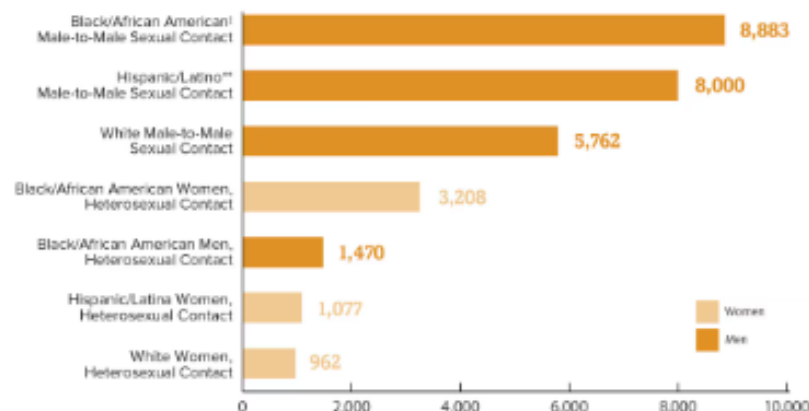
were among people who inject drugs

*Among people aged 13 and older.

†Includes infections attributed to male-to-male sexual contact and injection drug use (men who reported both risk factors).

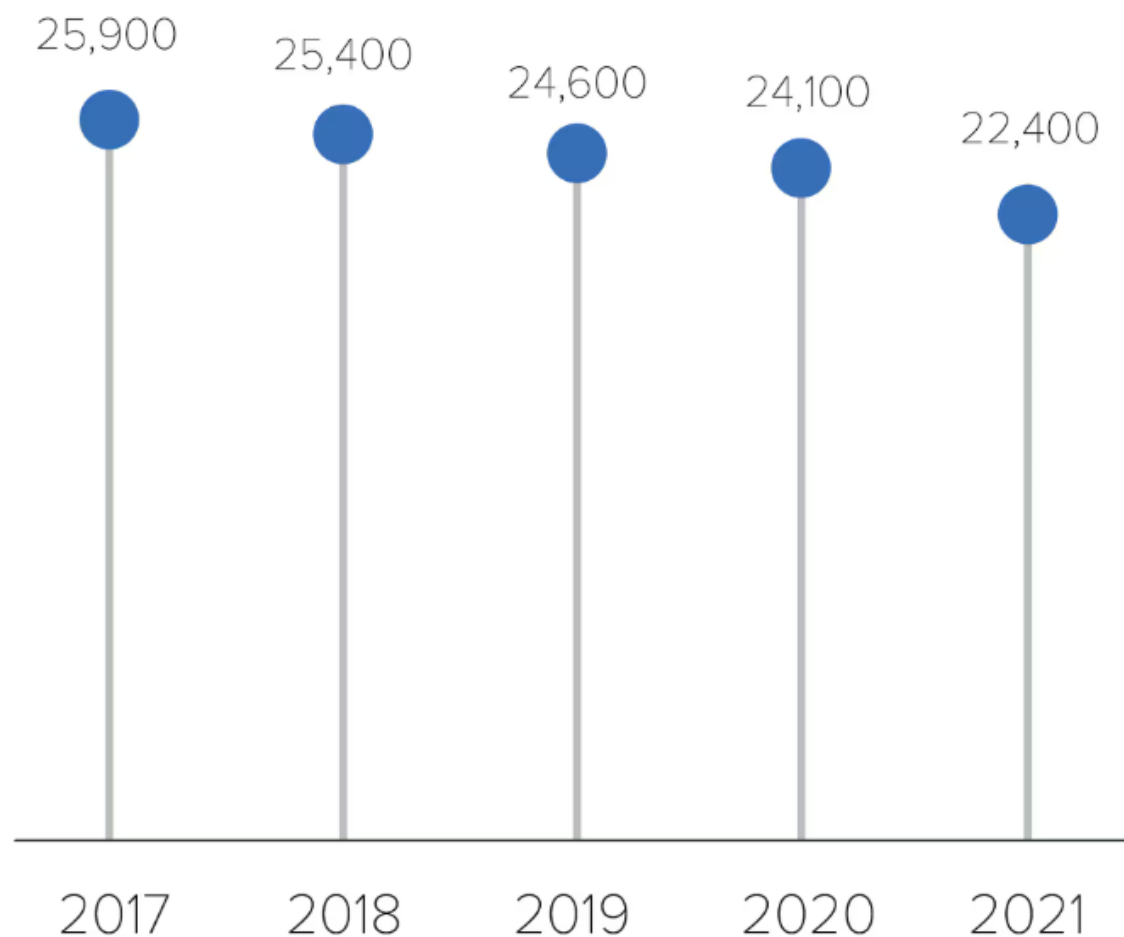
New HIV Diagnoses in the US and Dependent Areas for the Most-Affected Subpopulations, 2021*[†]

Gay and bisexual men are the population most affected by HIV.



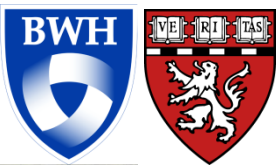
<https://www.cdc.gov/hiv/statistics/overview/ata glance.html>

Estimated HIV Infections Among Gay and Bisexual Men in the US, 2017-2021*



* Among people aged 13 and older.

Source: CDC. [Estimated HIV incidence and prevalence in the United States, 2017–2021](#). *HIV Surveillance Supplemental Report*, 2023; 28(3).



Rural Indiana Struggles to Contend With H.I.V. Outbreak

Series of HIV outbreaks in people who inject drugs shows that 'complacency is the new problem'



HIV outbreak in Lawrence, Lowell is bigger than officials thought



Outbreak of HIV found among Boston drug users

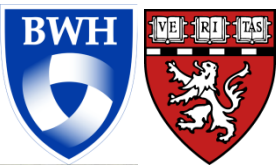
Containers holding discarded syringes in Lawrence, Ind. Aaron P. Bernstein for The New York Times



AIDS 2018

Glasgow
Athens
Bucharest
Dublin
Luxembourg
g
Tel Aviv
Saskatchewan
an

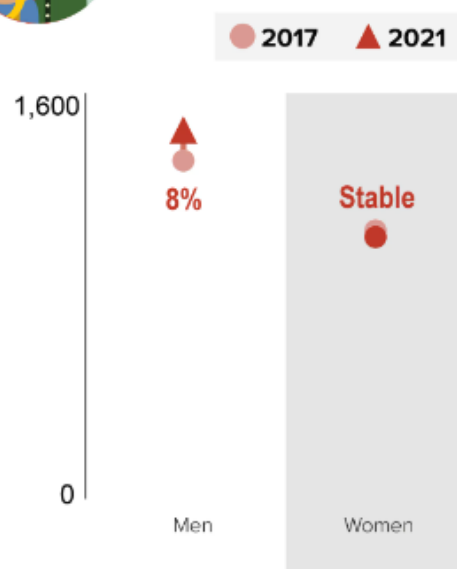
HIV OUTBREAK



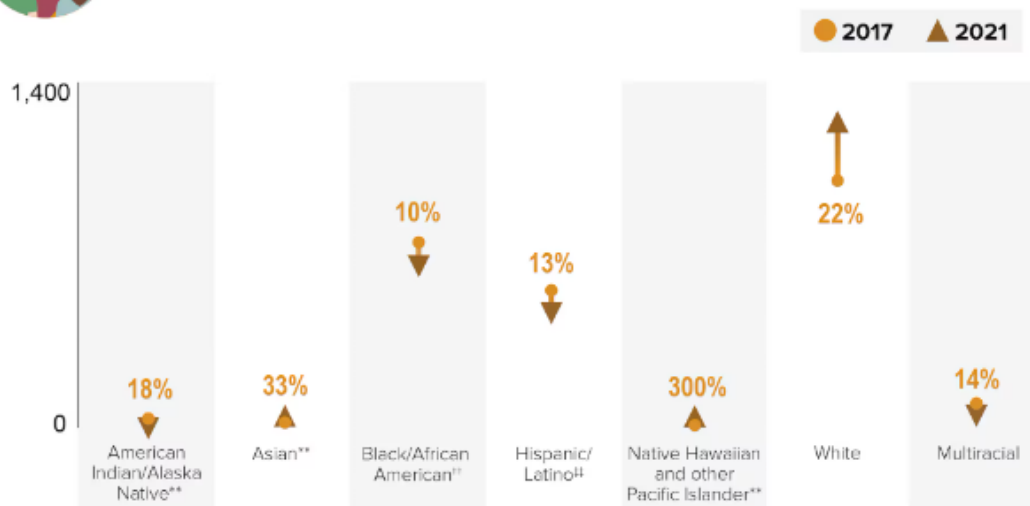
Trends in HIV Diagnoses Among People Who Inject Drugs in the US and Dependent Areas, 2017-2021^{*†‡}



Trends by Sex



Trends by Race and Ethnicity



* Among people aged 13 and older.

† Includes infections attributed to male-to-male sexual contact *and* injection drug use (men who reported both risk factors).

‡ Based on assigned sex at birth and includes transgender people.

** Changes in subpopulations with fewer HIV diagnoses can lead to a large percentage increase or decrease.

†† *Black* refers to people having origins in any of the Black racial groups of Africa. *African American* is a term often used for people of African descent with ancestry in North America.

‡‡ Hispanic/Latino people can be of any race.

Source: CDC. [Diagnoses of HIV infection in the United States and dependent areas, 2021](#). *HIV Surveillance Report* 2023;34.

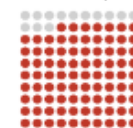


Knowledge of HIV Status in the US, 2021*



In 2021, an **estimated 1.2 million people** had HIV.

Overall, for every 100 people with HIV

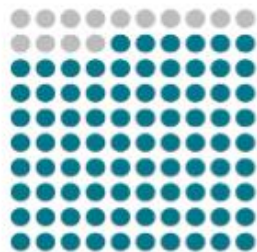


87
knew their
HIV status.

* Among people aged 13 and older.

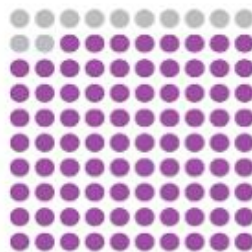
Knowledge of HIV Status in the US by Transmission Category, 2021*

For every 100 people with HIV
attributed to male-to-male
sexual contact



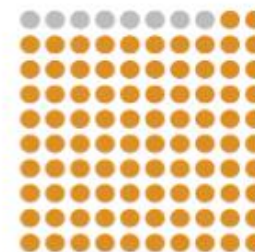
86
knew their
HIV status[†]

For every 100 people with HIV
attributed to
heterosexual contact



88
knew their
HIV status

For every 100 people with HIV
attributed to injection
drug use



92
knew their
HIV status[†]

* Among people aged 13 and older.

[†] Includes infections attributed to male-to-male sexual contact *only*.

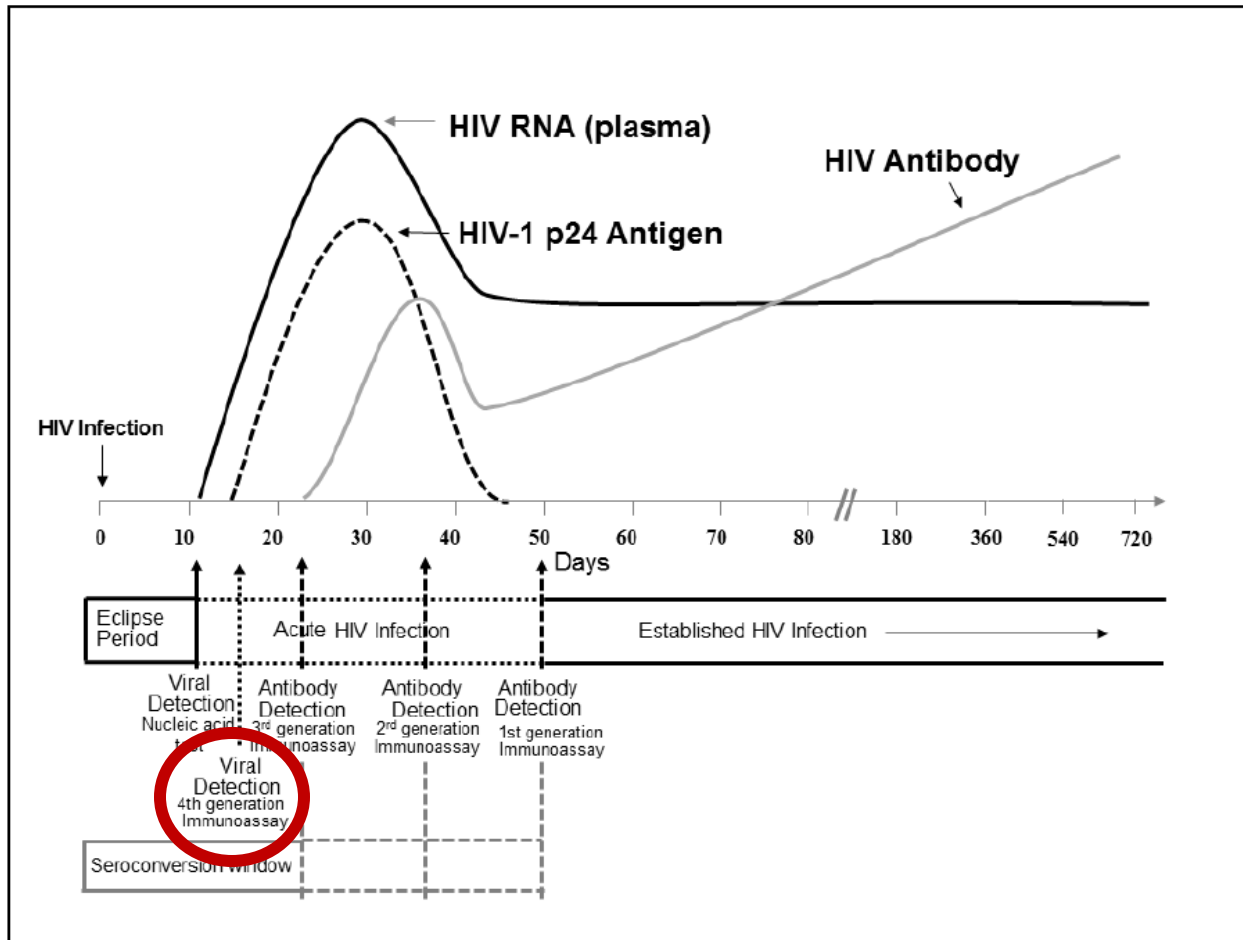
[‡] Includes infections attributed to injection drug use *only*. Among men with HIV attributed to male-to-male sexual contact *and* injection drug use, 92% knew they had HIV.

Source: CDC. [Estimated HIV incidence and prevalence in the United States 2017–2021](#). *HIV Surveillance Supplemental Report* 2023;28(3).



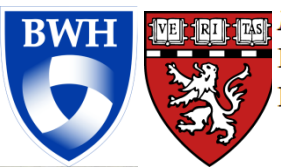
HIV Diagnosis

Figure 1. Sequence of appearance of laboratory markers for HIV-1 infection

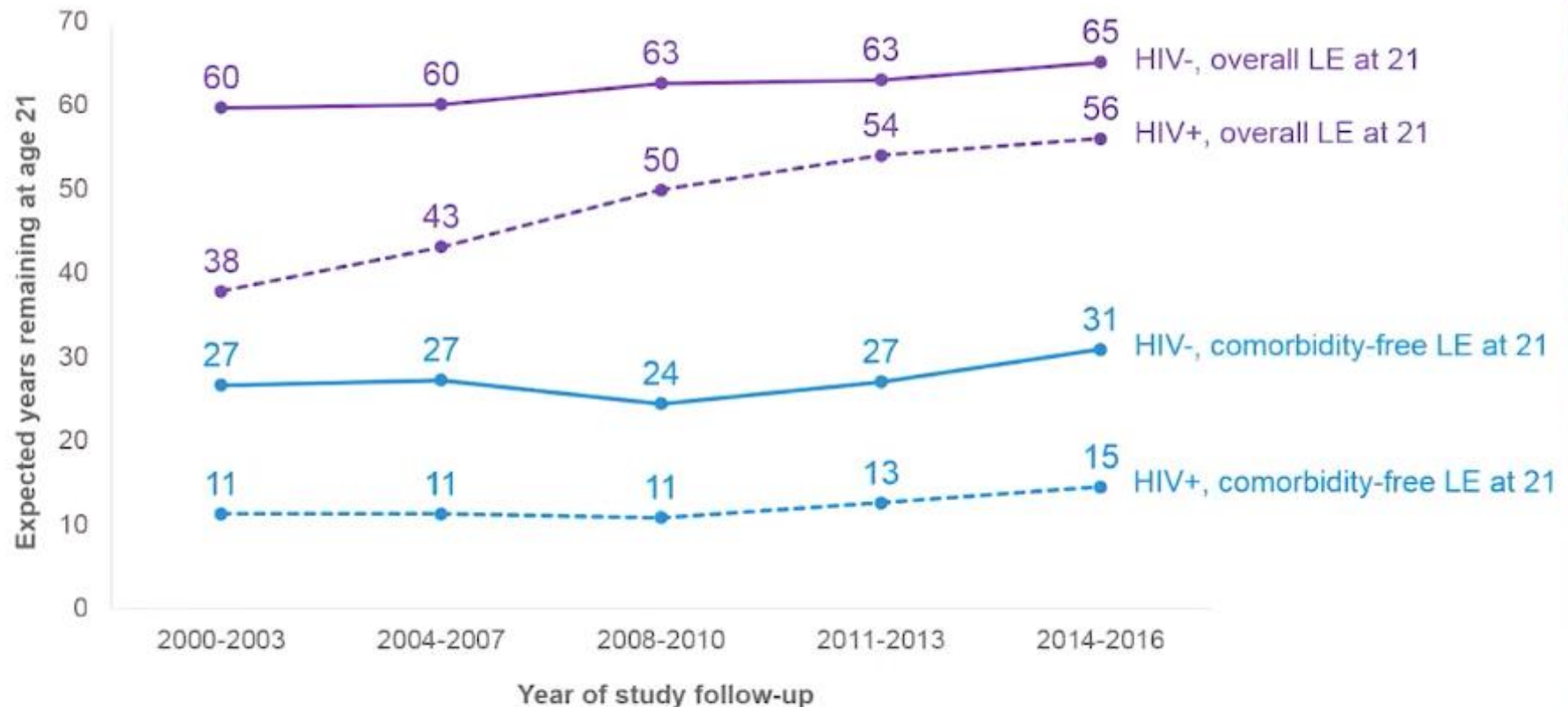


Note. Units for vertical axis are not noted because their magnitude differs for RNA, p24 antigen, and antibody. Modified from MP Busch, GA Satten (1997)⁵⁰ with updated data from Fiebig (2003),⁴⁸ Owen (2008),⁴⁹ and Masciotra (2011, 2013).^{46,66}

CDC Laboratory Testing for the Diagnosis of HIV Infection: Updated recommendations, 2014



Narrowing gap in overall but not comorbidity-free life expectancy by HIV status

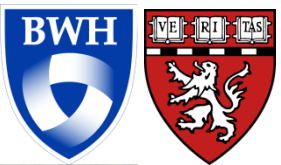


CROI 2020

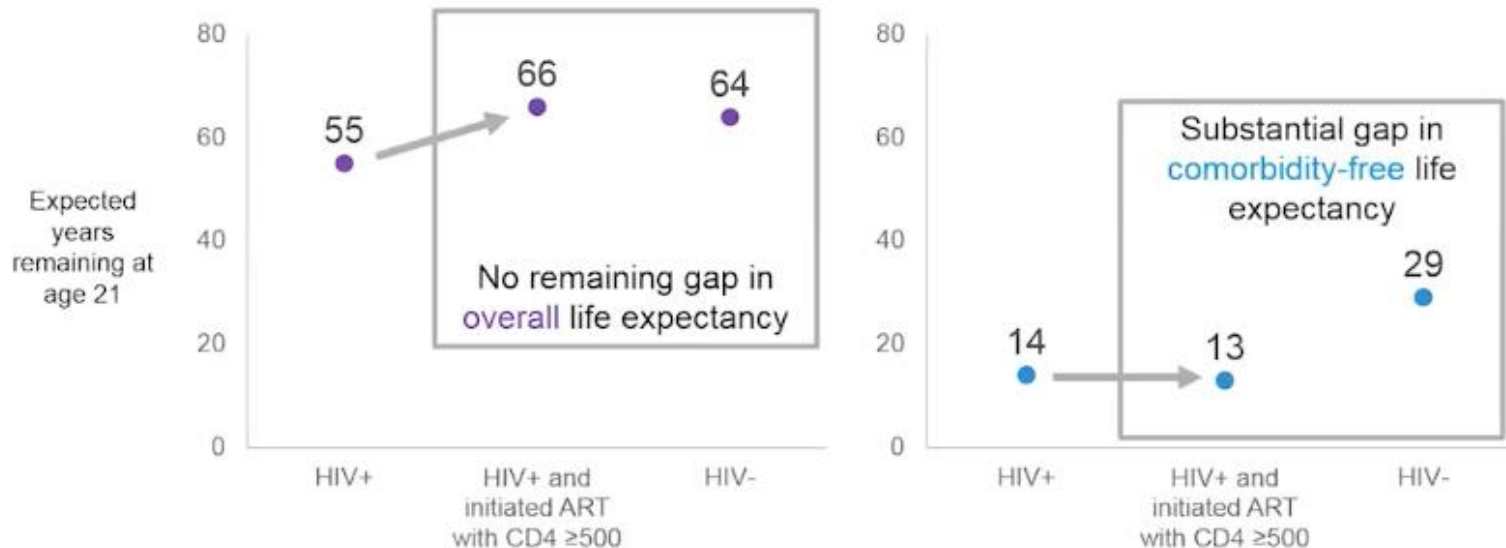
For live Q & A at the end of the session, please email Questions to: CROIroom310@gmail.com

Marcus JL, Leyden W, Anderson AN, et al. Increased overall life expectancy but not comorbidity-free years for people with HIV. Conference on Retroviruses and Opportunistic Infections (CROI). March 8-11, 2020. Boston. Abstract 151.

http://www.natap.org/2020/CROI/croi_134.htm



Overall and comorbidity-free life expectancy for PWH who initiated ART with CD4 \geq 500, 2011-2016



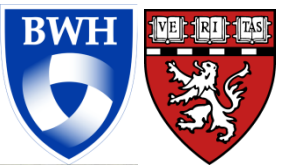
For PWH who initiated ART with CD4 \geq 500, improved **comorbidity-free** life expectancy for **cancer** and **cardiovascular disease** but not diabetes or liver, kidney, or lung disease

CROI 2020

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Marcus JL, Leyden W, Anderson AN, et al. Increased overall life expectancy but not comorbidity-free years for people with HIV. Conference on Retroviruses and Opportunistic Infections (CROI). March 8-11, 2020. Boston. Abstract 151.

http://www.natap.org/2020/CROI/croi_134.htm



Case 1

26yo man clinic visit for new HIV diagnosis. 2 weeks prior had STI testing for rectal discharge, + gonorrhea by NAAT on rectal swab, and HIV screening same day was positive. Received IM ceftriaxone, drew more labs: CD4 470, HIV-1 VL 12,743, no resistance mutations. Syphilis serology, HCV Ab and HBSAg all negative. Which of the following would be appropriate?

- A. Initiate antiretroviral therapy with tenofovir/emtricitabine/bictegravir
- B. Initiate sulfamethoxazole/trimethoprim daily for prophylaxis and to ensure medication adherence, return in 6 months to discuss ART
- C. Initiate post-exposure prophylaxis with tenofovir/emtricitabine/raltegravir for 28 day course
- D. No medications, follow-up in 12 months for repeat bloodwork

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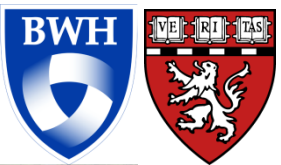
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Case 1 – answer explanation

- **A) All HIV-positive patients should be offered ART. In this case his CD4 cell count is > 350 so not immediate risk of opportunistic infections, but evidence supports benefits of initiation of ART even at high CD4 cell count, and risks of drug resistance and ART-toxicities are low with current treatments. From public health perspective this also decreases his risk of transmission to others.**
- B) SMX/TMP prophylaxis for PCP not necessary or of benefit at CD4 count > 200 , and there is no evidence to support test of adherence prior to initiation of ART
- C) Patient already has documented HIV infection, too late for PEP
- D) 12 months is too long to wait for follow-up, even for patient who elects not to start ART immediately.

Who should be treated with ART?

ALL HIV-POSITIVE PERSONS



How urgently should ART be initiated?

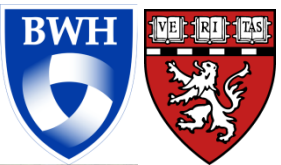
Urgently

- For those with risk of AIDS-related complications
 - CD4 < 200-350
 - Current opportunistic infection (OI) – start within 2 weeks
- For pregnant women or others at high risk of transmission
- (Acute HIV)
- Hep B or hep C coinfection
- If any HIV-related complications
 - HIV Associated Neurocognitive Disorder (HAND)
 - HIV Associated Nephropathy (HIVAN)

There's time to breath

- CD4 > 500, asymptomatic, not pregnant

Patients starting ART should ideally be willing and able to commit to lifelong treatment; for stable patients clinicians may postpone therapy if needed to manage problems that may interfere with medication adherence (eg. Psychiatric, substance abuse...).



What ART to start?

First-line regimens:

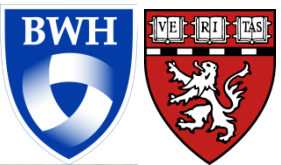
- 1 integrase inhibitor (INSTI) – bicetgravir or dolutegravir

+

- 1-2 nucleos(t)ide reverse transcription inhibitor(s) (NRTI):

- TAF + FTC
- TAF or TDF or ABC + 3TC
- 3TC alone - except if HIV RNA >500,000, HBV coinfection, or without HIV resistance testing

- If prior INSTI exposure (cabotegravir for PrEP) then pre-tx resistance testing or use boosted-PI based regimen (darunavir/cobicistat/TAF/FTC)



Single tablet regimens

Single-Tablet Regimens						Long-Acting Injectable Regimens
Atripla⁺ (EFV/TDF/FTC) 	Biktarvy (BIC/TAF/FTC) 	Complera (RPV/TDF/FTC) 	Delstrigo (DOR/TDF/3TC) 	Dovato (DTG/3TC) 	Genvoya (EVG/COBI/TAF/FTC) 	Cabenuva (CAB/RPV) 
Juluca (DTG/RPV) 	Odefsey (RPV/TAF/FTC) 	Stribild (EVG/COBI/TDF/FTC) 	Symtuza (DRV/COBI/TAF/FTC) 	Triumeq (DTG/ABC/3TC) 		

CIMDUO
(tenofovir disoproxil fumarate + lamivudine)
One tablet once a day. Each tablet contains 300 mg tenofovir disoproxil fumarate + 300 mg lamivudine. Take with or without food.

COMBIVIR *
(zidovudine + lamivudine)
One tablet twice a day. Each tablet contains 300 mg zidovudine + 150 mg lamivudine. Take with or without food.

DESCOVY
(tenofovir alafenamide + emtricitabine)
One tablet once a day. Each tablet contains 25 mg tenofovir alafenamide + 200 mg emtricitabine. Take with or without food.

EMTRIVA
(emtricitabine; FTC)
One 200 mg capsule once a day. Take with or without food.

EPIVIR *
(lamivudine; 3TC)
One 300 mg tablet once a day, or one 150 mg tablet twice a day. Take with or without food. Also approved for the treatment of hepatitis B virus (HBV) but at a lower dose. People living with both viruses should use the HIV dose.

EPZICOM *
(abacavir + lamivudine)
One tablet once a day. Each tablet contains 600 mg abacavir + 300 mg lamivudine. Take with or without food. Should be used only by individuals who are HLA-B*57:01 negative.

RETROVIR *
(zidovudine; AZT)
One 300 mg tablet twice a day. Take with or without food.

TRIZIVIR *
(abacavir + zidovudine + lamivudine)
One tablet twice a day. Each tablet contains 300 mg abacavir + 300 mg zidovudine + 150 mg lamivudine. Take with or without food. Should be used only by individuals who are HLA-B*57:01 negative.

Protease Inhibitors

APTIVUS
(tipranavir)
Two 250 mg capsules plus two 100 mg Norvir tablets twice a day. Aptivus plus Norvir should be taken with food.

CRIVAN
(indinavir)
Two 400 mg capsules every eight hours, or two 400 mg capsules with either one or two 100 mg Norvir tablets twice a day. Drink at least 48 ounces of water daily to prevent kidney stones. Without Norvir: Take on an empty stomach (no food two hours before or one hour after dosing) or with a low-fat snack. With Norvir: Take with or without food.

EVOTAZ
(atazanavir + cobicistat)
One tablet once a day. Each tablet contains 300 mg atazanavir + 150 mg cobicistat. Take with food.

INVIRASE
(saquinavir)
Two 500 mg tablets plus one 100 mg Norvir tablet twice a day. Take with food or within two hours after a meal.

KALETRA
(lopinavir + ritonavir)
Two tablets twice a day, or four tablets once a day, depending on HIV drug resistance. Each tablet contains 200 mg lopinavir + 50 mg ritonavir. Take with or without food.

LEXIVA
(fosamprenavir)
Two 700 mg tablets twice a day, or two 700 mg tablets plus one or two Norvir tablets once a day, or one 700 mg tablet plus one Norvir tablet twice a day (recommended for individuals who have used other PIs in the past). Take with or without food.

PREZCOBIX
(darunavir + cobicistat)
One tablet once a day. Each tablet contains 800 mg darunavir + 150 mg cobicistat. Take with food.

Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIs, or non-nukes)

EDURANT
(rilpivirine)
One 25 mg tablet once a day. Take with food.

INTELENCE
(etravirine)
One 200 mg tablet twice a day. Take with food.

PIFELTRO
(doravirine)
One 100 mg tablet once a day. Take with or without food.

RESCRIPTOR *
(delavirdine)
Two 200 mg tablets three times a day, or four 100 mg tablets three times a day. Take with or without food. Discontinued by manufacturer; phaseout to be completed by 2020.

SUSTIVA *
(efavirenz)
One 600 mg tablet once a day, or three 200 mg capsules once a day. Take on an empty stomach or with a low-fat snack. Dose should be taken at bedtime to minimize dizziness, drowsiness and impaired concentration.

VIRAMUNE *
(nevirapine)
One 200 mg Viramune immediate release (IR) tablet once a day for the first 14 days, then one 400 mg Viramune extended release (XR) tablet once a day. Take with or without food.

FUZEON
(enfuvirtide)
One 90 mg (1 mL solution) subcutaneous injection twice a day. Take with or without food. Fuzeon comes as a white powder that must be mixed with sterile water in a vial each day.

Entry Inhibitors

Nucleoside/Nucleotide Reverse Transcriptase Inhibitors (NRTIs, or nukes)

TRUVADA
(tenofovir disoproxil fumarate + emtricitabine)
One tablet once a day. Each tablet contains 300 mg tenofovir disoproxil fumarate + 200 mg emtricitabine. Take with or without food.

VIDEX EC *
(didanosine, ddI)
One 400 mg capsule once a day. (One 250 mg capsule once a day for those weighing less than 133 lbs.) Take on an empty stomach (two hours after or one hour before a meal). Brand-name product discontinued; phaseout to be completed by 2020.

VIREAD *
(tenofovir disoproxil fumarate)
One 300 mg tablet once a day. Take with or without food.

ZERIT *
(stavudine; d4T)
One 40 mg capsule twice a day. (One 30 mg capsule twice a day for those weighing less than 133 lbs.) Take with or without food. Brand-name product discontinued; phaseout to be completed by 2020.

ZIAGEN *
(abacavir)
One 300 mg tablet twice a day, or two 300 mg tablets once a day. Take with or without food. Should be used only by individuals who are HLA-B*57:01 negative.

Protease Inhibitors

PREZISTA
(darunavir)
One 800 mg tablet (or two 400 mg tablets) plus one 100 mg Norvir tablet, or one 150 mg Tybost tablet once a day, or one 600 mg tablet plus one 100 mg Norvir tablet twice a day, depending on drug resistance. Take with food.

REYATAZ *
(atazanavir)
Two 200 mg capsules once a day, or one 300 mg capsule plus one 100 mg Norvir tablet, or one 150 mg Tybost tablet once a day. Take with food.

VIRACEPT
(nelfinavir)
Two 625 mg tablets twice a day, or five 250 mg tablets twice a day, or three 250 mg tablets three times a day. Take with food.

PK Boosters

NORVIR *
(ritonavir)
Six 100 mg tablets twice a day. The full dose of Norvir is rarely used. It is most often used at lower doses to boost the levels of other ARVs in the blood. Take with food.

TYBOST
(cobicistat)
One 150 mg tablet once a day in combination with ARVs that require boosting. Used only to boost other drugs. Take with food.

Entry Inhibitors

SELZENTRY
(maraviroc)
One 150 mg, 300 mg or 600 mg tablet twice a day, depending on other meds used. Take with or without food.

TROGARZO
(ibalizumab)
Administered intravenously as a single loading (or initial) dose of 2,000 mg followed by a maintenance dose of 800 mg every two weeks.

Integrase Inhibitors

ISENTRESS
(raltegravir)
Two 600 mg Isentress HD tablets (above) once a day for those who are treatment naive or whose virus has been suppressed on an initial regimen. One 400 mg Isentress tablet twice daily for people with HIV treatment experience. Take with or without food.

TIVICAY
(dolutegravir)
One 50 mg tablet once a day for those first starting ARV therapy or for those who have not used an integrase inhibitor in the past. One 50 mg tablet twice a day for treatment-experienced individuals who have HIV that is resistant to other integrase inhibitors and when taken with certain ARVs. Take with or without food.

So many antiretroviral agents/formulations...

Long-Acting Cabotegravir and Rilpivirine for HIV-1

PHASE 3, OPEN-LABEL, MULTICENTER, RANDOMIZED TRIAL

616

Participants receiving
antiretroviral therapy
without virologic failure

Long-acting therapy
(cabotegravir and rilpivirine
intramuscular injections
every 4 wk)



(N=308)

Current oral therapy



(N=308)

**HIV-1 RNA
≥50 copies/ml
at 48 wk**

1.6%

1.0%

Adjusted difference, 0.6 percentage points; 95% CI, -1.2 to 2.5

83% of participants who received long-acting therapy reported injection-site reactions

A few selected drug interactions

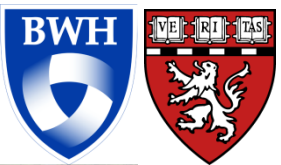
- Tenofovir alafenamide – lower risk of nephrotoxicity and osteopenia than with TDF
- Oral rilpivirine – requires fatty meal for optimal absorption, not absorbed well in presence of any antacids (H2B, PPI, etc)

The screenshot shows a web application for drug interactions. At the top is a navigation bar with tabs: Home, Drug Interactions (selected), IV Compatibility, Drug ID, Drug Comparison, CareNotes, and Tox & D Product. Below the navigation bar is the title 'Drug Interactions'. A text box prompts the user to 'Type the drug name (brand or generic) in the search field. Select the drug and click the (Add) button.' Below this is a search input field with the placeholder 'Enter search term:'. A dropdown menu shows 'Matching drug names: (4967)' with a list of items including 'A & D', 'A & D Jr.', 'A & D Ointment', 'A Thru Zinc', 'A To Z', 'A&B Otic', 'A+D (Dimethicone/Zinc Oxide)', 'A+D (Lanolin/Petrolatum)', 'A+D First Aid Ointment', 'A-200 Pyrinax', 'A-25', 'A-3 Revised', 'A-4 Revised', 'A-42 Revised', and 'A.C.D. Modified Process'. To the right of the dropdown is a 'Drugs to check:' box with an 'Add Allergies' button. Below the dropdown are navigation arrows. At the bottom are 'Clear' and 'Submit' buttons. A note at the bottom states 'Capitalized item with asterisk (*) indicates allergy.'

- Ritonavir and cobicistat – potent CYP 450 inhibitors, interact with **MANY** medications

Dolutegravir at conception

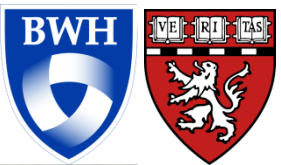
- Data from Botswana presented at IAS 2018 showed increased neural tube defects (0.95%) with dolutegravir exposure in first trimester
- Subsequent data presented at IAS 2019 showed risk of neural tube defects is much lower than initially thought (0.67%)
- Follow-up data and review of limitations (lack of folate fortification) in these data alleviated concerns regarding dolutegravir – **now recommended as first-line therapy including during pregnancy**



Zash R, et al. *N Engl J Med*. 2018 Sep 6;379(10):979-981
Zash R, et al. *N Engl J Med*. 2019; Jul 22

Treatment failure

- Assess adherence (discuss with patient, call pharmacy, review viral load trend)
- Assess drug-drug interactions
- Drug resistance testing:
 - HIV genotype (with integrase resistance testing)
- New regimen should include ideally 3 active agents



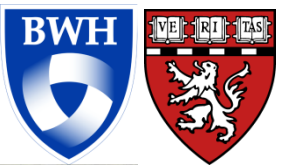
Complications of HIV

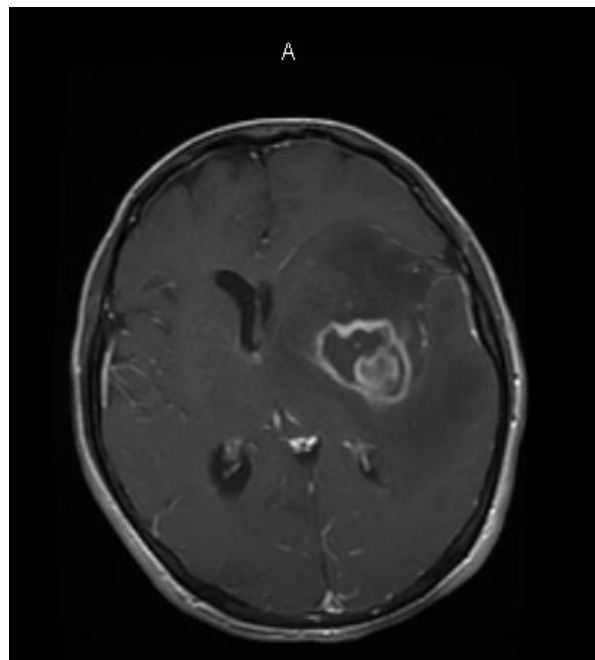
On ART and Off ART

- **Cardiovascular disease**
- Malignancies (lung, anal, oropharyngeal, liver, skin)
- Toxicities of ART: bone demineralization (TDF), renal toxicity (TDF), metabolic syndrome

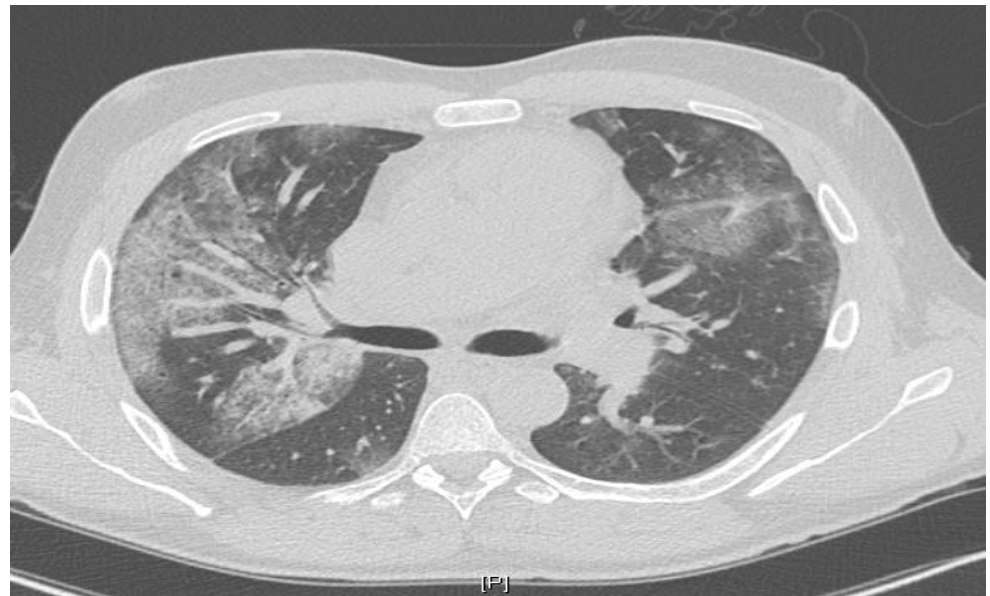
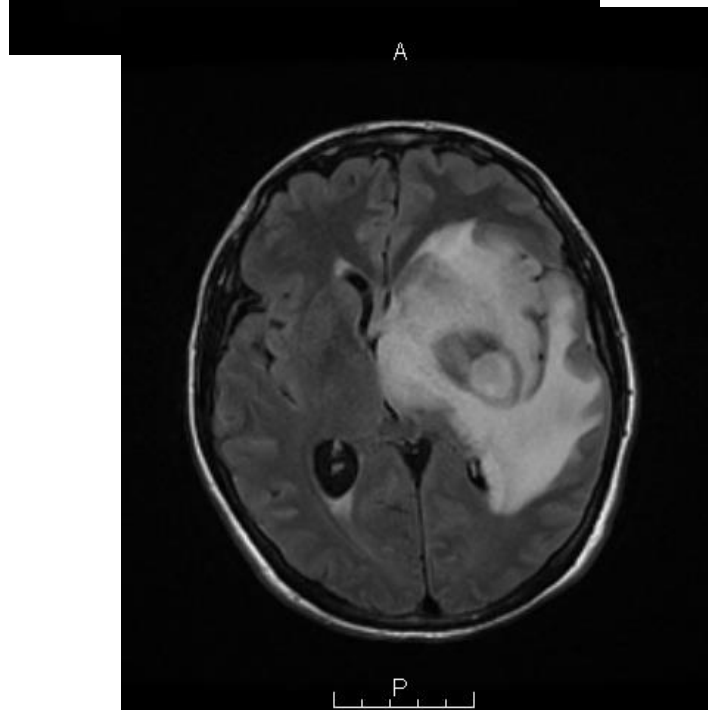
Off ART

- Opportunistic infections (PCP, MAI, cryptococcal meningitis, toxoplasmosis)
- Malignancies (Kaposi's sarcoma, non-Hodgkin lymphoma)
- HIV-associated dementia (HAD)



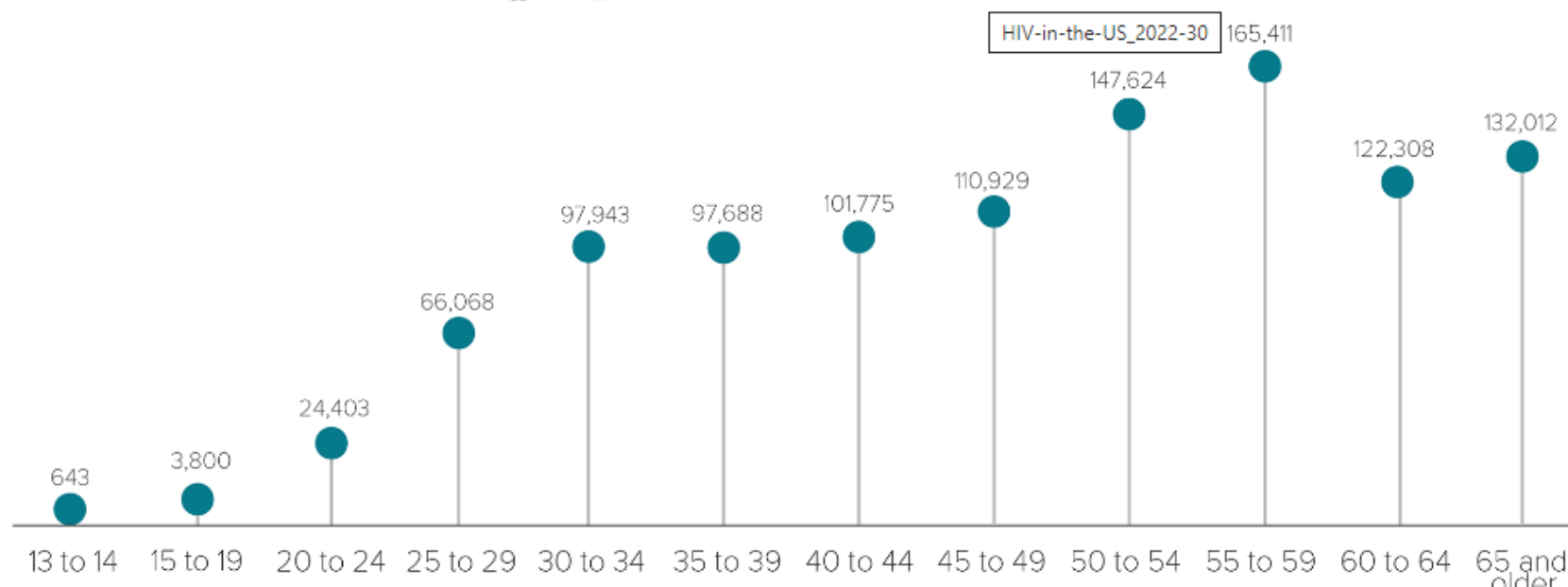


CD4 count	Opportunistic Infections
Any CD4	TB, bacterial pneumonia, other STIs
< 200	Pneumocystis pneumonia, candidal infections
< 100	Toxoplasma encephalitis
< 50	CMV infections, disseminated MAI, cryptococcal meningitis



People with Diagnosed HIV in the US and Dependent Areas by Age, 2020

People with diagnosed HIV are living longer, healthier lives because of effective HIV treatment.
At the end of 2020, over half of people with diagnosed HIV were aged 50 and older.



Case 2

22yo man, generally healthy, MSM, presents for evaluation of rash and fever. Found to have secondary syphilis with RPR 1:128.

Treated with IM penicillin. In discussion reports > 6 sex partners in last 6 months, 50% condom use. Interested in HIV risk reduction, including PrEP. The next best steps are:

- A. Initiate tenofovir/emtricitabine today, return in 3 mo for HIV test
- B. HIV Ag/Ab and HIV viral load (RNA) today, initiate tenofovir/emtricitabine/raltegravir x 28 days for PEP then transition to tenofovir/emtricitabine for PrEP
- C. HIV Ag/Ab and HIV RNA today, initiate tenofovir/emtricitabine if HIV-negative, return in 3 months for repeat HIV test
- D. HIV Ag/Ab and HIV RNA today, risk reduction counseling and condoms for now, return in 3 months to start PrEP if still interested

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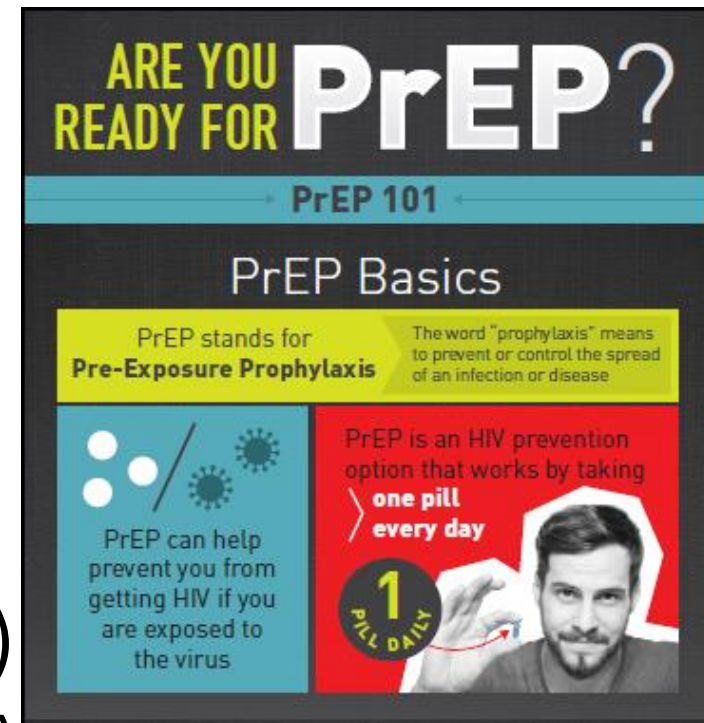
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- D. HIV Ag/Ab and HIV RNA today, risk reduction counseling and condoms for now, return in 3 months to start PrEP if still interested

Case 2

- **C) Baseline HIV test is critical to confirm patients starting PrEP are not already infected with HIV. Other routine baseline bloodwork and STI screening is also important. Once these are reviewed and HIV-negative confirmed, no reason to delay PrEP for this high-risk individual, should start right away. Needs HIV testing every 3 months while on PrEP and other STI testing at least every 6 months.**
- A) Do not initiate PrEP before confirming that patient is HIV-negative
- B) Unclear date of last exposure, no indication for PEP, should start PrEP once confirmed HIV-negative
- D) No reason to delay PrEP if HIV-negative and interested.

HIV Prevention

- Risk reduction counseling
- Needle exchange programs
- Barrier protection (condoms)
- Pre-exposure prophylaxis (PrEP)
- Post-exposure prophylaxis (PEP)
- Prevention of mother-to-child transmission (PMTCT)
- Treatment as prevention (TASP)
- Male circumcision
- (HIV vaccines? Someday...)



<http://www.cdc.gov/actagainstaids/pdf/campaigns/starttalking/stsh-prep-infographic-basics.pdf>

<https://wwwn.cdc.gov/hivrisk/>

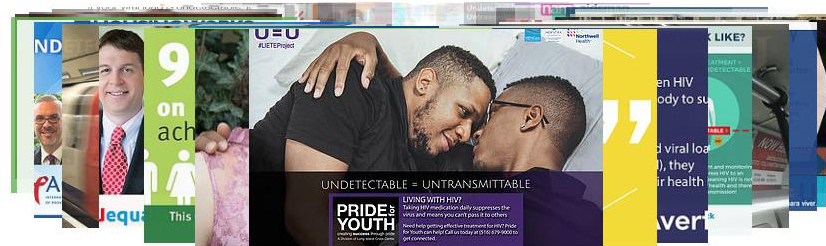
U=U: Undetectable = Untransmittable



Undetectable = Untransmittable



Celebrate Love U=U
Moses Supercharger with
the Stigmaless Band
Kampala, Uganda

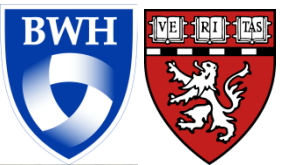


Click on the photos to scroll through examples of Community Partner U=U campaigns.
For an extensive list of U=U messaging from around the world see our [U=U Message Guide](#).

#UequalsU

"People who take ART daily as prescribed and achieve and maintain an undetectable viral load have effectively no risk of sexually transmitting the virus to an HIV-negative partner." The U.S. [Centers for Disease Control and Prevention \(CDC\)](#) (September, 2017)

- "The science really does verify and validate U=U." Anthony S. Fauci, M.D., Director, NIAID, NIH [Speech at United States Conference on AIDS](#) (September, 2017)

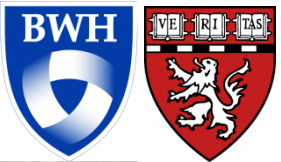


<https://www.preventionaccess.org/undetectable>

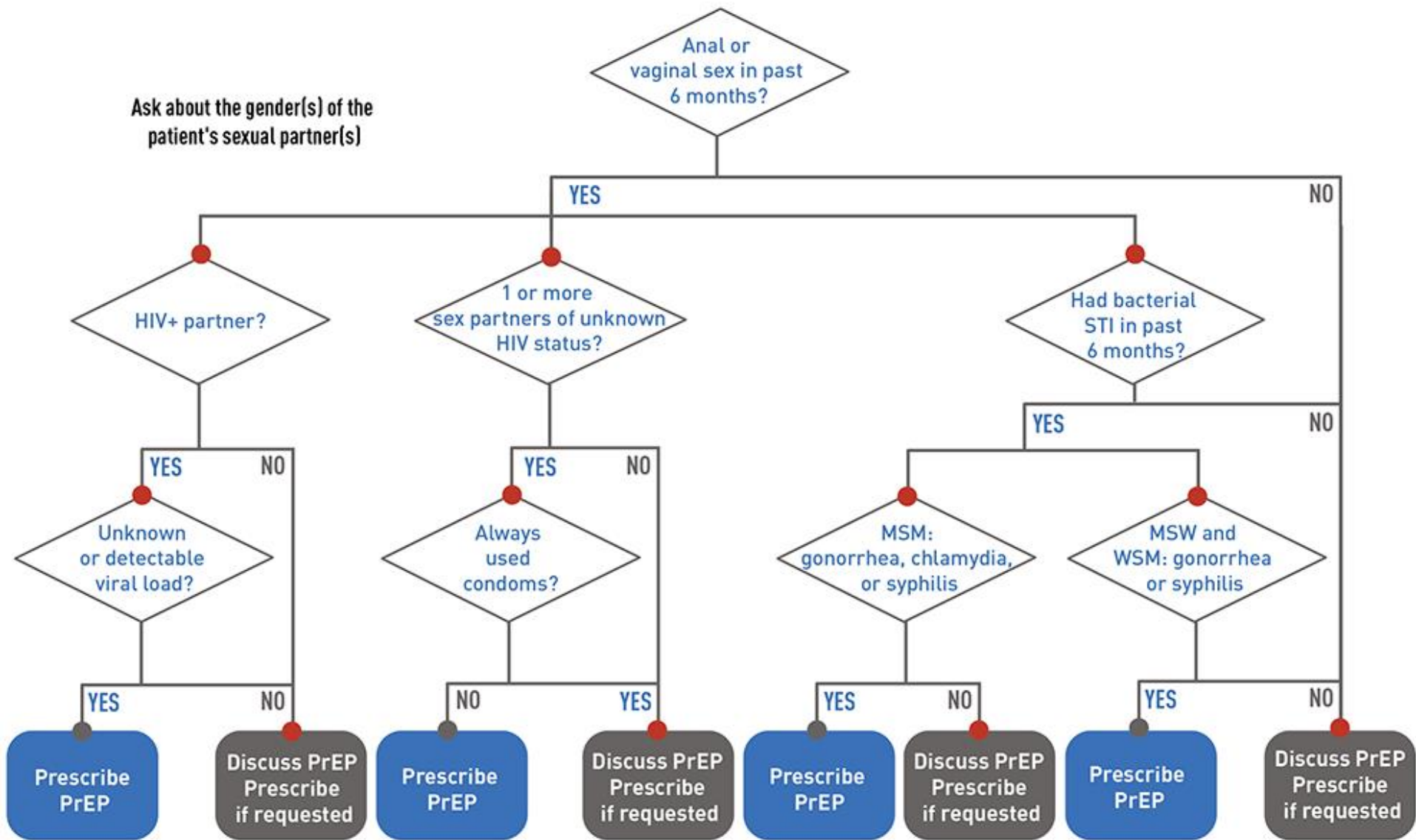
PrEP

- **Pre-testing:** HIV Ag/Ab test and HIV-1 RNA for patients who are high risk for recent exposure (most patients) or recently receiving PrEP
- **Prescribe PrEP:**
 - **Oral options:** emtricitabine/tenofovir disoproxil fumarate (Truvada) or emtricitabine/tenofovir alafenamide (Descovy) – Descovy not studied in cis-gender females with heterosexual exposure or PWID. Dosing is once daily continuous. OFF-LABEL on-demand dosing for MSM on 2-1-1 schedule
 - **Injectable option:** cabotegravir (Apretude) IM once every 2 months for patients with difficulty taking oral PrEP regimen or renal disease
 - **Start SAME-DAY** when feasible
- **Monitoring:** STI testing every 3-6 months, HIV Ag/Ab AND RNA every 2-3 months, kidney function every 6-12 months, lipid panel annually for Descovy

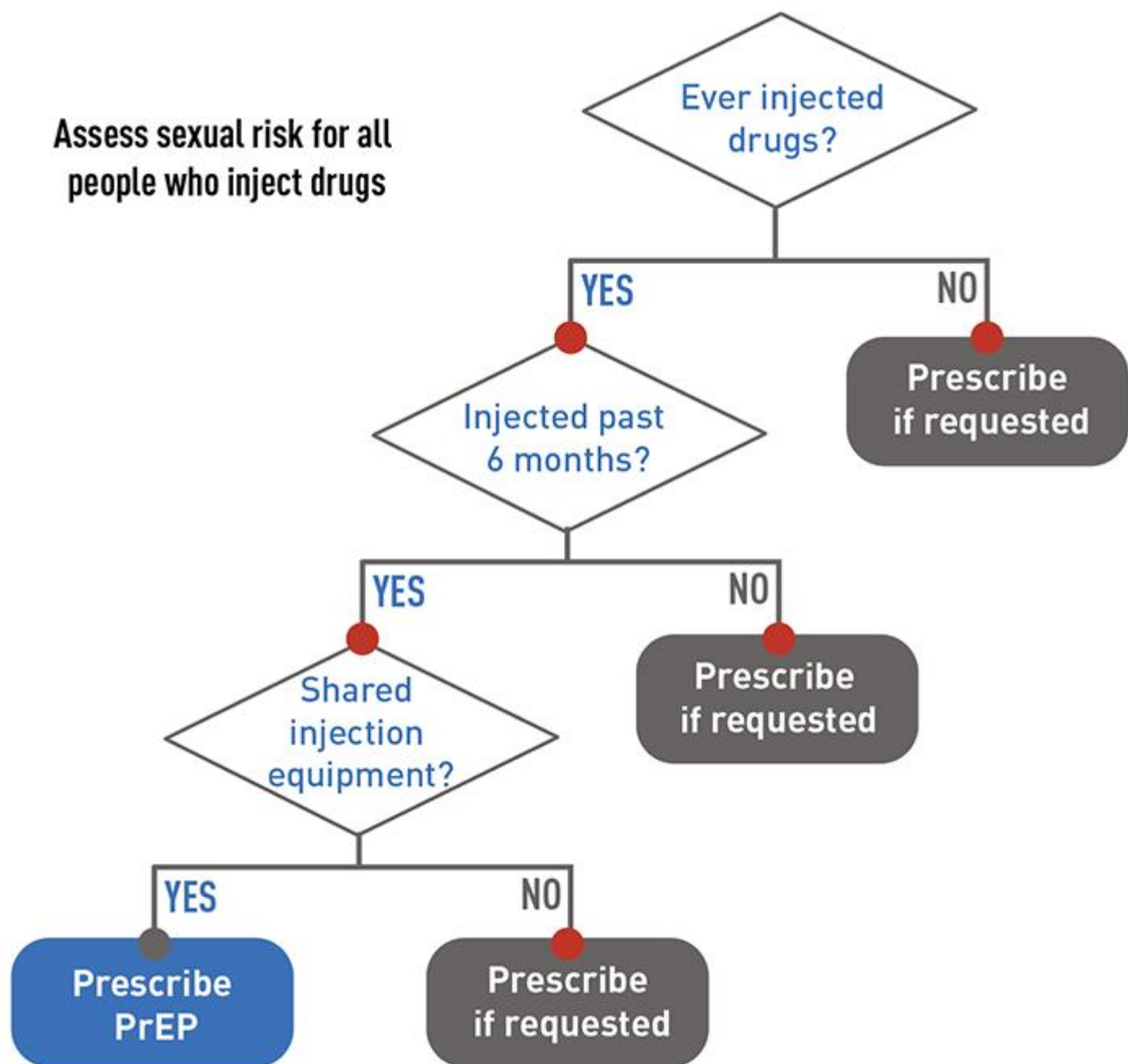
Transmission Route	Effectiveness Estimate	Interpretation
Sexual	~99%	Very high levels of adherence to PrEP provide maximum effectiveness.
Injection drug use	74% – 84%	These estimates are based on tenofovir alone and not necessarily when taken daily. The effectiveness may be greater for the two-drug oral therapy and if used daily.



Ask about the gender(s) of the patient's sexual partner(s)



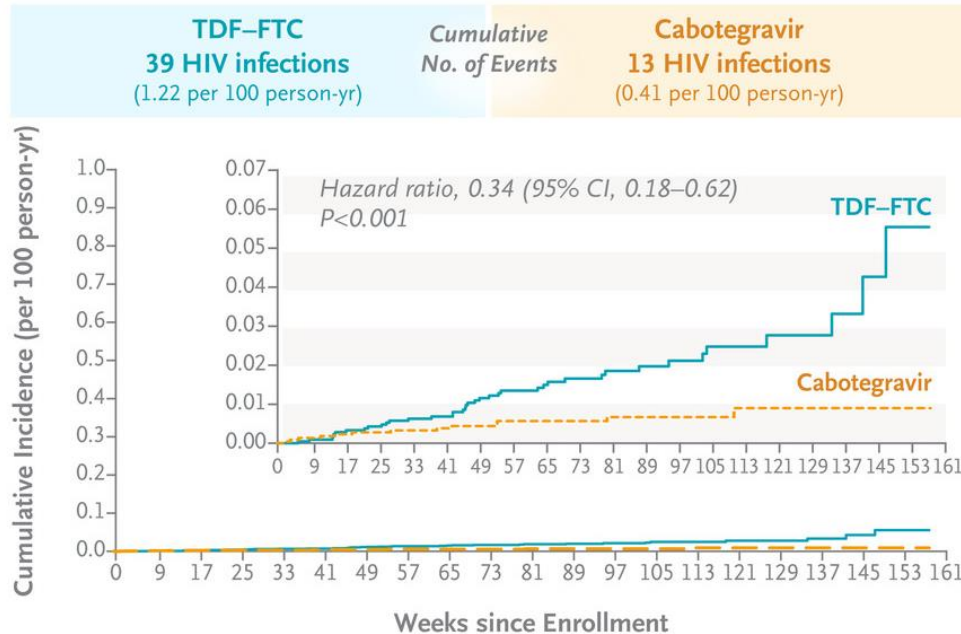
Assess sexual risk for all
people who inject drugs



Cabotegravir for HIV Prevention in Cisgender Men and Transgender Women

Landovitz RJ et al. DOI: 10.1056/NEJMoa2101016

Incident HIV Infection



Adverse Events	TDF-FTC (N=2282)	Cabotegravir (N=2280)
	no. (%)	no. (%)
Any adverse event of grade 2 or higher	2216 (92.7)	2106 (92.4)
Any adverse event of grade 3 or higher	767 (33.6)	727 (31.9)
Serious adverse event	121 (5.3)	120 (5.3)
Adverse events of special interest		
Seizure	5 (0.2)	2 (0.1)
Liver-related adverse event resulting in discontinuation of oral tablets or both oral tablets and injections	48 (2.1)	47 (2.1)

CONCLUSIONS

Injectable cabotegravir given every 8 weeks was superior to daily oral TDF-FTC for preventing HIV infection among high-risk cisgender men and transgender women who have sex with men.



PEP


- If potential exposure, evaluate and offer PEP within 72 hours
- In most cases PEP = tenofovir/emtricitabine + raltegravir or dolutegravir x 28 days

Kuhar DT, Infect Control Hosp Epidemiol 2013.


P

E


P




PEP involves taking anti-HIV drugs as soon as possible after having been exposed.




You can get PEP from your doctor's office, emergency rooms, urgent care clinics, or a local HIV clinic.




To be effective, PEP must begin within 72 hours of exposure, before the virus has time to rapidly replicate in your body.



The medications have serious side effects that can make it difficult to finish the program.

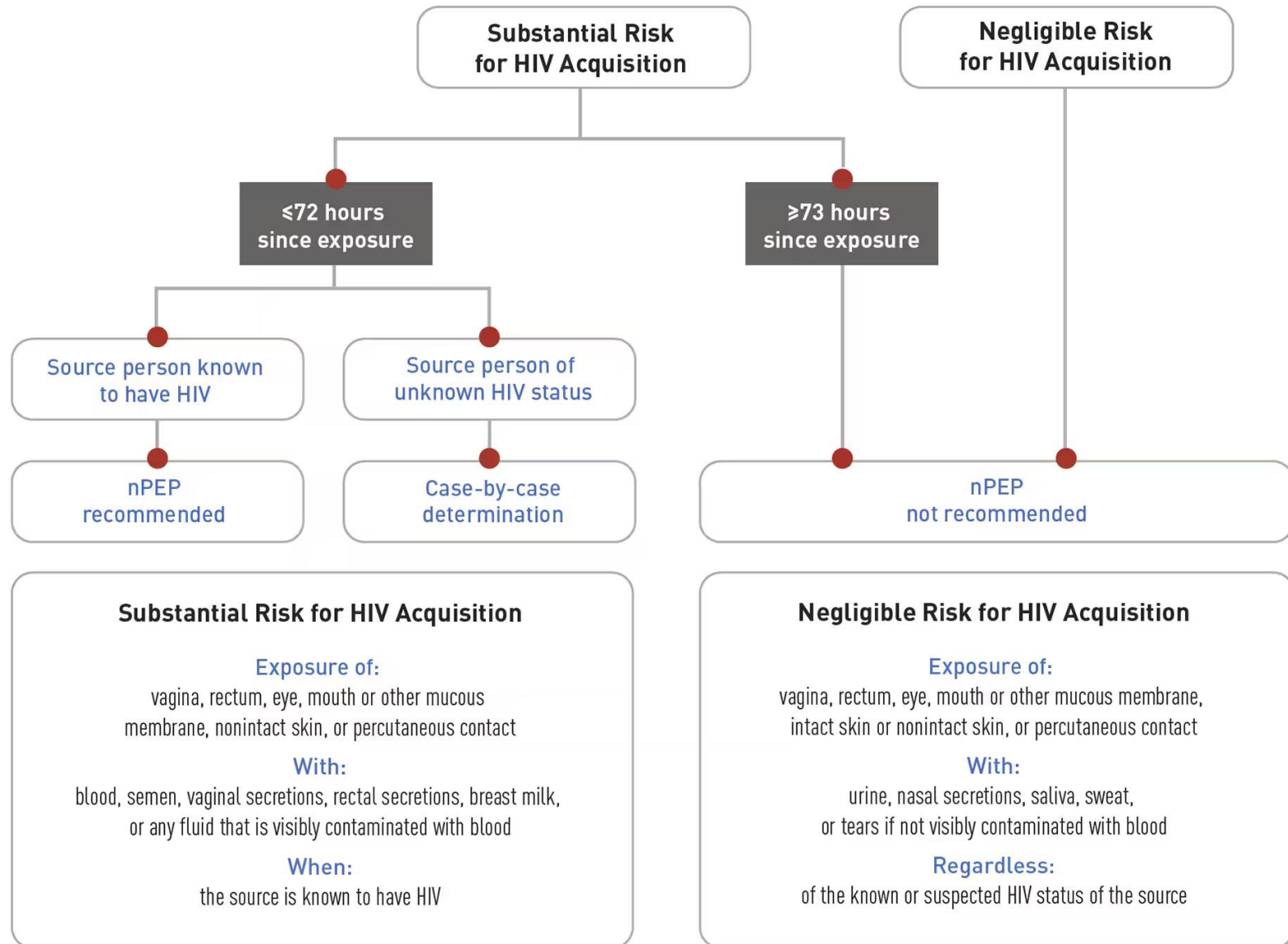


PEP consists of 2-3 antiretroviral medications taken for 28 days.



PEP is not 100% effective. It does not guarantee someone exposed to HIV will not become infected with HIV.

Algorithm for Evaluation and Treatment of Possible Nonoccupational HIV Exposures

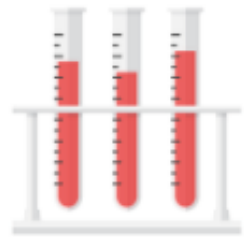


Prevention Challenges

Stigma, homophobia, and discrimination put gay and bisexual men of all races/ethnicities at risk for multiple physical and mental health problems and affects whether they seek and receive high-quality health services, including HIV testing, treatment, and other prevention services. In addition to stigma and other risk factors affecting [all gay and bisexual men](#), several factors are particularly important for African American gay and bisexual men. These include the following:



Delay in linkage to HIV medical care. According to [an MMWR](#), only 67% of African American gay and bisexual men with newly diagnosed HIV, and 58% with previously diagnosed HIV, were linked to HIV medical care within 90 days of the diagnosis. Early linkage to HIV medical care is essential to achieving viral suppression.



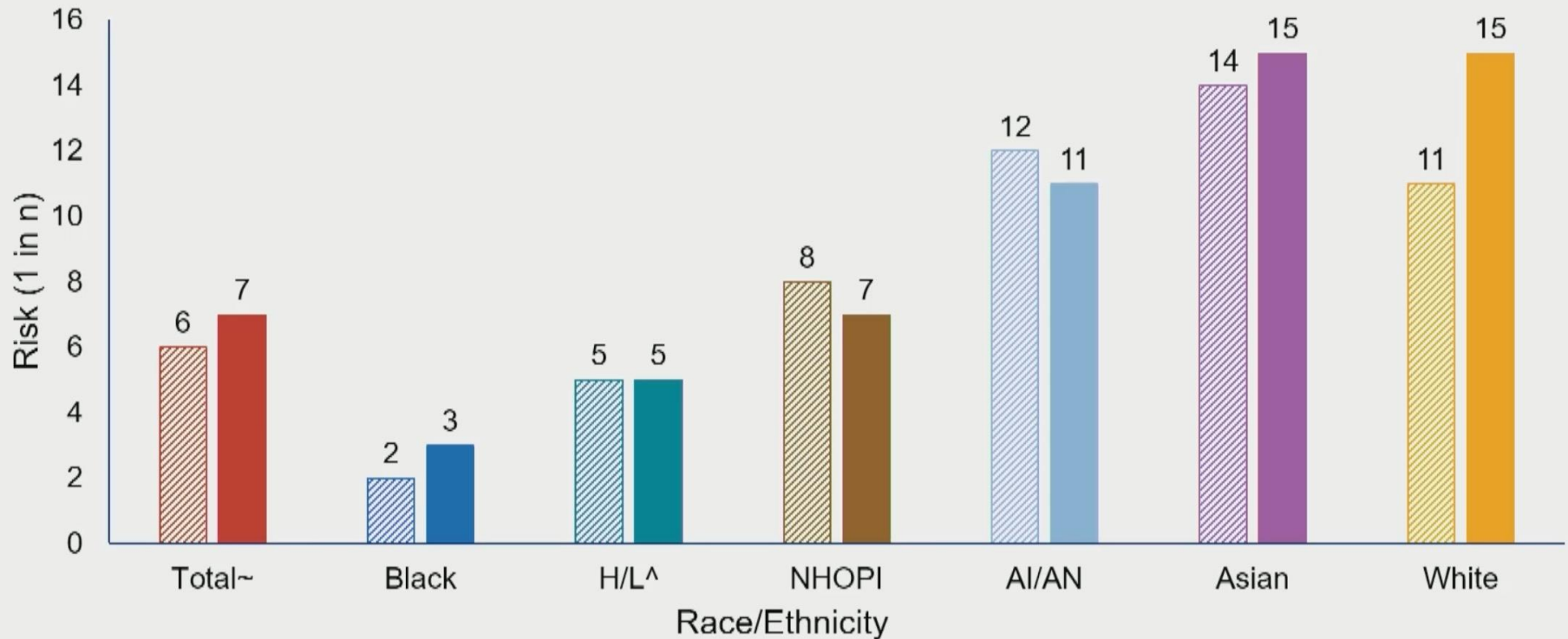
Low percentages of viral suppression. African American gay and bisexual men have lower percentages of viral suppression compared to gay and bisexual men of other races/ethnicities. Because of the low percentages of viral suppression, the higher prevalence of HIV in that population, and the greater likelihood of having sexual partners of the same race, compared with other races/ethnicities, African American gay and bisexual men are at greater risk of being exposed to HIV.



Socioeconomic factors. The poverty rate among African Americans is high. The **socioeconomic factors** associated with poverty—including limited access to high-quality health care, housing, and HIV prevention education—directly and indirectly increase the risk for HIV infection and affect the health of people living with and at risk for HIV. These factors may explain why African Americans have worse outcomes on the **HIV continuum of care**, including lower rates of linkage to care and viral suppression.

Still a long way to go

Lifetime Risk of an HIV Diagnosis Among MSM by Race/Ethnicity, 2010–2014* vs. 2017–2021

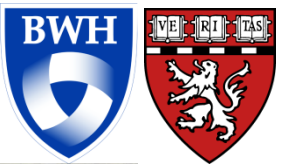


AI/AN – American Indian/Alaskan Native; H/L – Hispanic/Latino; NHOPI – Native Hawaiian/Other Pacific Islander

*Hess, et al. Lifetime risk of a diagnosis of HIV infection in the United States. *Ann Epidemiol* 2017;27(4):238–243

~Includes 4,181 multiracial persons for 2017–2021 and 4,572 multiracial persons for 2010–2014

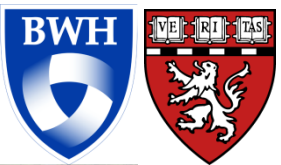
^Hispanic/Latino persons can be of any race



<https://www.croiconference.org/abstract/estimating-lifetime-risk-of-a-diagnosis-of-hiv-infection-among-msm-united-states-2017-2021/>

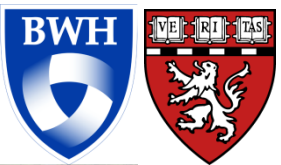
MOC Reflective Statements

- Most new HIV diagnoses in the US are among men who have sex with men – US incidence is slowly decreasing.
- Routine HIV screening with combination HIV Ag/Ab testing is critical to early diagnosis of HIV, to decrease risk of HIV-related complications
- All patients with HIV should be offered antiretroviral therapy which is available in many forms including many co-formulated single tablet regimens and injectable cabotegravir-rilpivirine which may be ideal for some patients
- It is important to review all new medications for drug-interactions for patients taking antiretroviral therapy.
- ART nonadherence is the most common cause for virologic failure and is often difficult to manage, new viral drug resistance is uncommon.
- Patients living with HIV are at increased risk of cardiovascular disease, even when HIV is well-controlled.
- There are many strategies for effective prevention of transmission of HIV, including pre-exposure prophylaxis with antiretroviral medications such as injectable cabotegravir



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- HIV Testing: <https://www.cdc.gov/hiv/guidelines/testing.html>
- Life expectancy with HIV: http://www.natap.org/2020/CROI/croi_134.htm
- HIV Treatment Guidelines: <https://stacks.cdc.gov/view/cdc/44065>
- HIV Medication Charts: <https://aidsetc.org/resource/hiv-medication-chart-pad>
- Injectable cabotegravir/rilpivirine for HIV-1 treatment: S Swindells et al. NEJM 2020;382;1112-1123
- Dolutegravir and conception:
 - Zash R, et al. *N Engl J Med*. 2018 Sep 6;379(10):979-981
 - Zash R, et al. *N Engl J Med*. 2019; Jul 22
- HIV risk: <https://wwwn.cdc.gov/hivrisk/>
- U=U: <https://www.preventionaccess.org/undetectable>
- PrEP: <https://www.cdc.gov/hiv/clinicians/prevention/prep.html>
- Injectable cabotegravir for PrEP: RJ Landovitz et al. NEJM 2021;385(7):595-608
- PEP: <https://www.aids.gov/hiv-aids-basics/prevention/reduce-your-risk/post-exposure-prophylaxis/>
- Lifetime risk of HIV: <https://www.croiconference.org/abstract/estimating-lifetime-risk-of-a-diagnosis-of-hiv-infection-among-msm-united-states-2017-2021/>



Thank you!

