2024 Hiv/Aids Update

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Disclosures:

None

456.033 HIV

- Modes of transmission
- Screening procedures to diagnosis hiv
- Infection control

  behavioral-reducing condom less sex, dec # of partners, dec sex trade, dec IVDU frequency-treating OUD,

  biomedical- TasP, PrEP, PEP, Tx STD & T&T

  structural- universal precautions to safe blood supply, clean syringe programs, funding HIV test
- Clinical management – identify a regime for a patient newly dx
- Prevention
- Florida Law

Who should be routinely screened for HIV according to CDC guidelines?

1. All individuals regardless of risk
2. All individuals if written consent & post test counseling is done
3. Only those who request
4. High risk individuals (mandatory) & voluntary screening for ` everyone else
5. MSM: AA males > 13yo

Which test is recommended for initial HIV testing?

1. Western Blot
2. 2nd Generation HIV antibody test
3. 4th Generation HIV antibody/p24 antigen test
4. HIV 1 nucleic acid test (RNA)

What is the most accurate regarding the timing of ART initiation in person newly dx with acute hiv

1. ART should be initiated 4 weeks after dx
2. ART should begin on the same day of tx initiation for most opportunistic infections
3. ART initiation should be delayed in the setting of new dx of cancer
4. ART should be initiated at the time of diagnosis

What information is needed prior to treating + Hiv rapid test (Test & Treat) ?

- 1. CD4 count
- 2. HIV1 RNA
- 3. HIV genotype
- 4. HLAB 5701 status
- 5. all the above
- 6. none of the above

What 3 drug regimen is recommended for initial tx of adults who are ART naïve?

1. Chemokine receptor 5 antagonist, integrase strand transfer inhibitor & protease inhibitor
2. Integrase strand transfer inhibitor, nucleoside & nucleotide reverse transcriptase inhibitor, & fusion inhibitor
3. Integrase strand transfer inhibitor & two nucleotide reverse transcriptase inhibitors
4. Fusion inhibitor & nonnucleoside reverse transcriptase inhibitor

Which of the following individual is an appropriate candidate for PrEP?

- 1. HIV (-) male who has unprotected sex with multiple male sex partners in past yr.
- 2. HIV (-) female in a monogamous relation who has recently treated for HSV2 and uses cocaine
- 3. HIV (+) male who admits to sex with multiple partners
- 4. HIV (-) female who admits to unprotected sex with one male of uncertain HIV status.

The use of emtricitabine/tenofovir FTC/TAF (descovy) for HIV pre-exposure prophylaxis is not FDA approved for?

1. at risk MSM
2. person at risk for acquiring hiv infection from receptive vaginal sex
3. at risk heterosexual men

Modes of transmission

- Body fluids are:
  - Blood
  - Semen (*cum*) and pre-seminal fluid *(pre-cum)*
  - Rectal fluids
  - Vaginal fluids
  - Breast milk

- One can only get HIV by coming into direct contact with certain body fluids from a person with HIV who has a detectable viral load.

Modes of Transmission

- Homosexual and heterosexual intercourse (anal, vaginal, oral)
- Injection drug use
- Vertical transmission (pregnancy, delivery, breast feeding)
- Contaminated blood products/ transfusion
- Occupational transmission involving health-care workers exposed to HIV-infected specimens

CDC HIV RISK

Estimated Per-Act Probability of Acquiring HIV from an Infected Source, by Exposure Act*

Type of Exposure	Risk per 10,000 Exposures
Parenteral	
Blood Transfusion	9,250
Needle-Sharing During Injection Drug Use	63
Percutaneous (Needle-Stick)	23
Sexual	
Receptive Anal Intercourse	138
Insertive Anal Intercourse	11
Receptive Penile-Vaginal Intercourse	8
Insertive Penile-Vaginal Intercourse	4
Receptive Oral Intercourse	Low
Insertive Oral Intercourse	Low
Other^	
Biting	Negligible
Spitting	Negligible
Throwing Body Fluids (Including Semen or Saliva)	Negligible
Sharing Sex Toys	Negligible

* Factors that may increase the risk of HIV transmission include sexually transmitted diseases, acute and late-stage HIV infection, and high viral load. Factors that may decrease the risk include condom use, male circumcision, antiretroviral treatment, and pre-exposure prophylaxis. None of these factors are accounted for in the estimates presented in the table.

^ HIV transmission through these exposure routes is technically possible but unlikely and not well documented.

Source:

- Patel P, Borkowf CB, Brooks JT. Et al. Estimating per-act HIV transmission risk: a systematic review. AIDS. 2014. doi: 10.1097/QAD.0000000000000298.
- Pretty LA, Anderson GS, Sweet DJ. Human bites and the risk of human immunodeficiency virus transmission. Am J Forensic Med Pathol 1999;20(3):232-239.

Universal HIV screening

- In all health-care settings, screening for HIV infection should be performed routinely for all
  - 15-65 yo USPSTF
  - 13-64 yo CDC
- Health-care providers should initiate screening unless prevalence of undiagnosed HIV infection in their patients has been documented to be <0.1%. In the absence of existing data for HIV prevalence, health-care providers should initiate voluntary HIV screening until they establish that the diagnostic yield is <1 per 1,000 patients screened, at which point such screening is no longer warranted.
- Screen those women who present in labor or at delivery whose hiv status is unknown
- All patients initiating treatment for TB should be screened routinely for HIV infection.
- All patients seeking treatment for STDs, including all patients attending STD clinics, should be screened routinely for HIV during each visit for a new complaint, regardless of whether the patient is known or suspected to have specific behavior risks for HIV infection.

Universal screening

- All pregnant women in the United States should be screened for HIV infection
- A second HIV test during the third trimester for women in settings with elevated HIV incidence (>17 cases per 100,000 person-years) is cost-effective and might result in substantial reductions in mother-to-child HIV transmission .
- Prevention counseling is no longer required before HIV testing in health care settings. There is no written separate form for hiv testing. Patients are notified that HIV testing is planned and can opt-out of testing.
- If HIV testing is declined, then document in the medical record patient denial

Repeat HIV screening annually

- Persons likely to be at high risk include injection-drug users and their sex partners, persons who exchange sex for money or drugs, sex partners of HIV-infected persons, and MSM or heterosexual persons who themselves or whose sex partners have had more than one sex partner since their most recent HIV test.
- Health-care providers should encourage patients and their prospective sex partners to be tested before initiating a new sexual relationship.
- Repeat screening of persons not likely to be at high risk for HIV should be performed based on clinical judgment. Unless recent HIV test results are immediately available, any person whose blood or body fluid is the source of an occupational exposure for a health-care provider should be informed of the incident and tested for HIV infection at the time the exposure occurs.

FS 381.004 opt out HIV testing

- No written consent in healthcare settings
- Inform the patient that you recommend the testing as per CDC guidelines – frame it as part of their yearly screening labs
- Inform if HIV (+) report DOH
- Encourage voluntary disclosure to all current & past partners and HCW
- Only 2 states in USA do not have “opt out” testing, Nebraska & NY

FS 381.004 HIV required by state law

- 1. Persons convicted of prostitution or of procuring another to commit prostitution
- 2. Pregnant females
- 3. Test by medical examiners autopsy
- 4. Occupational exposure
- 5. Inmates before release from prison
- 6. Court ordered as in sexual battery cases

3rd degree felony 381.0041(11)(b) & 384.24

- Any person who, knowing him/herself HIV (+) & is aware of the risk of transmission through sexual intercourse, to have intercourse without informing his/her partner of his/her HIV status and receiving consent.
- Any person who, knowing him/herself to be HIV (+) & knowing that HIV may be transmitted through donating blood, plasma, organs, skin or other human tissue, donates blood, plasma, organs, skin or other human tissue is guilty of a felony of the 3rd degree.

Patient based barriers

- identified cost as the most important barrier to HIV-testing,
- followed by not knowing where to receive specialty care,
- not feeling at risk,
- concern that testing would reflect badly on them as a person,
- improved treatment options
- personal risk, denial hiv existence, ignorance
- stigmatization shame fear

National Institute of Health

Strategies to overcome barriers

- Systemic approach expand opt out testing (no separate consent form requirements)- universal opt out hiv screening is associated with higher test rates
- Educate practitioners on current testing
- Increase public funding
- Increase health care access
- Expand rural outreach

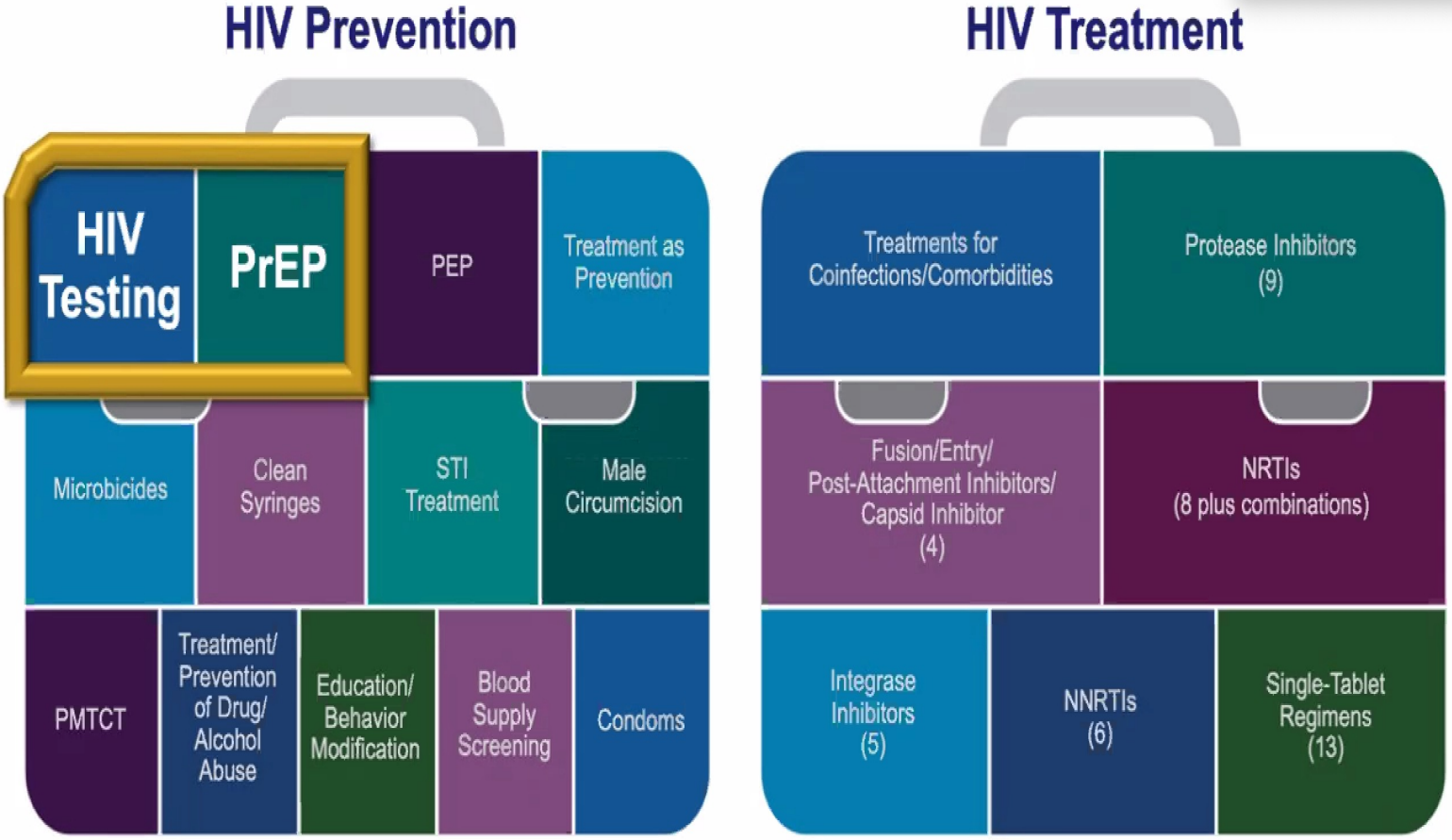
Strategies to overcome barriers

- Patient education- frame screening as we screen for cholesterol & diabetes to all not screened prior
- Risk discordant couples
- Behavior risk factor
- Testing privacy
- Message effective tolerable treatments
- Low-income assistance programs
- If hiv test returns (+), if one does not feel comfortable with treating, make an appointment with a local colleague who does, providing “linkage to care”

Benefits of universal screening

- Earlier dx HIV
- Reduces stigma associated with testing that requires assessment risks & behaviors
- Improves survival
- Cost effective QOL not just tx OI
- Earlier linkage to care
- Decrease transmission via reducing community viral load
- Reduce risk HIV thru mother to child transmission

Some of the Tools for Achieving Status Neutral HIV Prevention and Care



"Simplifying HIV From Screening to ART Initiation" –Clinical Care Options accessed 12/30/2023

Origin and spread of HIV

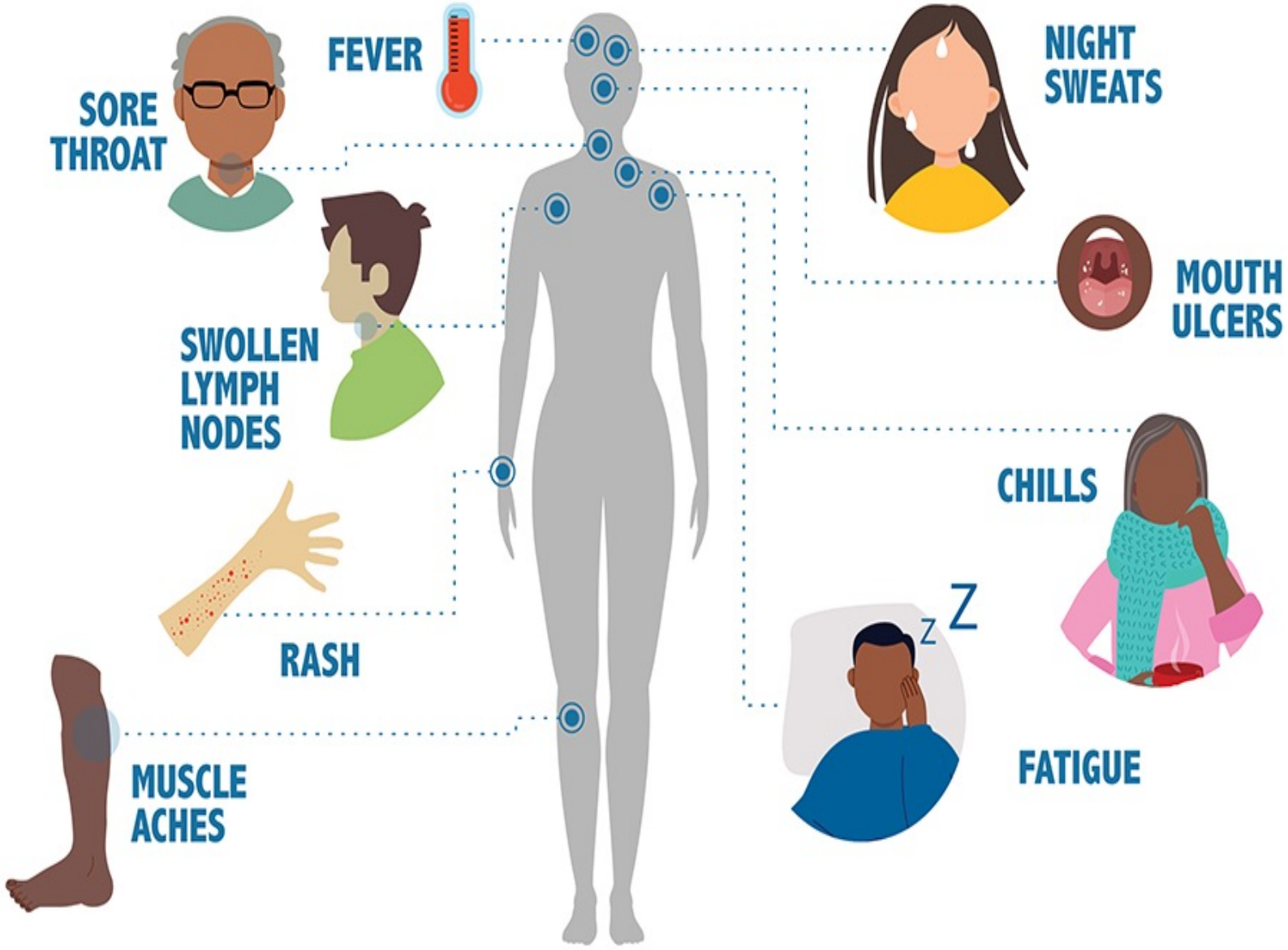
- AIDS outbreak becomes pandemic
  - Initially seen in Europe, United States
  - Spread to Asia and the Americas
  - HIV discovered in 1981 (family Retroviridae genus Lentivirus)
  - Clinical syndrome defined by CDC in 1982
  - Epidemiology transmission via blood, semen, vaginal secretions, and breast milk from a person with detectable HIV viral load

Origin and spread of HIV

- HIV variants emerge
  - HIV-1
    - Isolated in 1983
    - Origin chimpanzee
    - Most prevalent strain worldwide
  - HIV-2
    - Isolated in 1985
    - Origin in the sooty mangabey
    - Dominant in West Africa

Clinical features of acute HIV infection-AHI

Feature	Frequency
Fever	70-80%
Fatigue	66-70%
Rash	50%
Myalgia	50%
Sore throat	40-80%
Headache	45%
Lymphadenopathy	40%
GI symptoms (n/v, diarrhea)	30%


SORE THROAT
FEVER
NIGHT SWEATS
SWOLLEN LYMPH NODES
MOUTH ULCERS
CHILLS
RASH
MUSCLE ACHES
FATIGUE

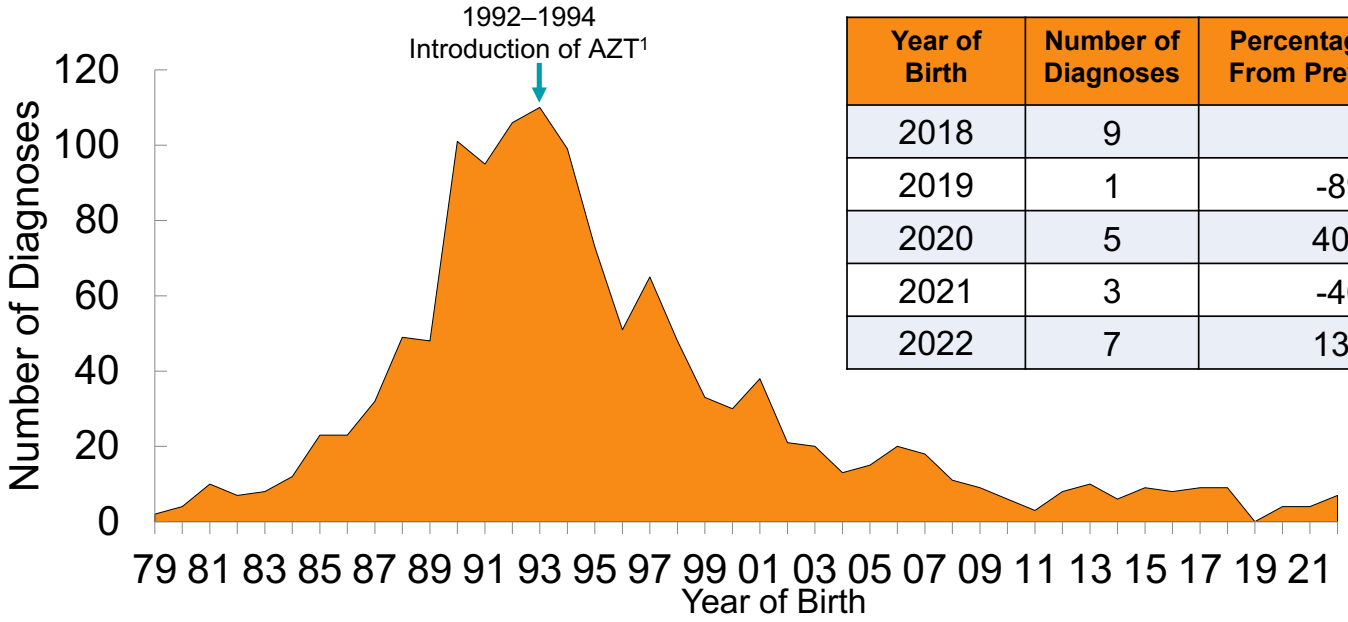
HIV testing

- 4^{th} generation HIV antibody/p24 antigen test
- HIV antibodies test for both HIV1 & HIV2
- Window period 10-33 days
- Detects 95% of infections at 4wks after exposure
- HIV VL (PCR) is more sensitive than p24 Ag
- HIV VL turns (+) 3 days – 4 weeks post exposure which is 5 days prior to 4^{th} generation HIV antibody test (use if suspect AHI)

EVIDENCE OF UNIVERSAL TESTING BENEFITS

- PRENATAL AND PERINATAL HIV TESTING HAS BEEN HUGE SUCCESS
- 1988-1993 USA 1000-2000 CHILDREN ANNUALLY BECAME INFECTED WITH HIV FROM MOTHER TO CHILD
- SINCE 2006 MOTHER TO CHILD ROUTE HAS DECREASED

Perinatally Acquired HIV Diagnoses 1979–2022, Babies Born in Florida

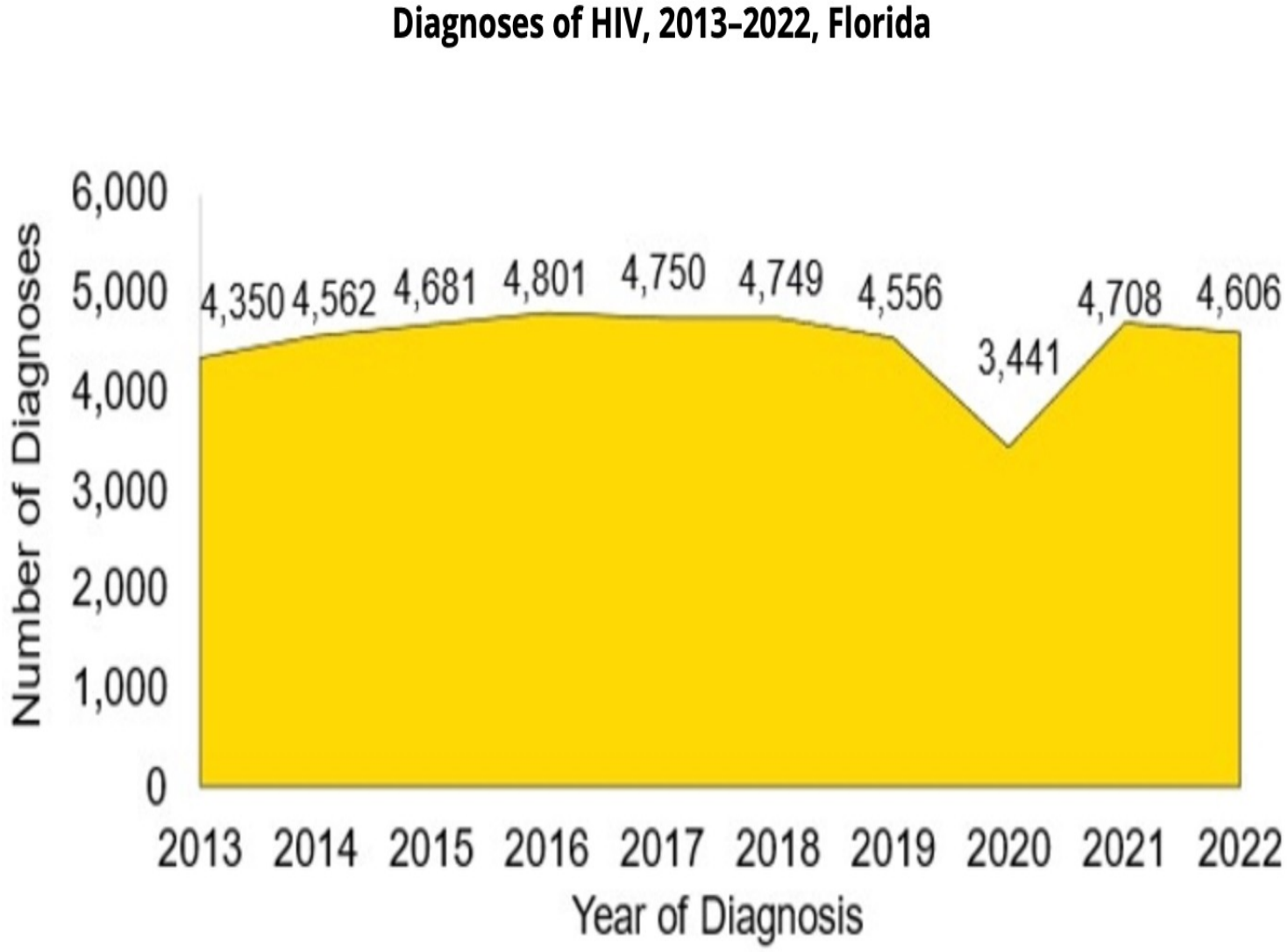


Year of Birth	Number of Diagnoses	Percentage Change From Previous Year
2018	9	
2019	1	-89%
2020	5	400%
2021	3	-40%
2022	7	133%

Florida HEALTH

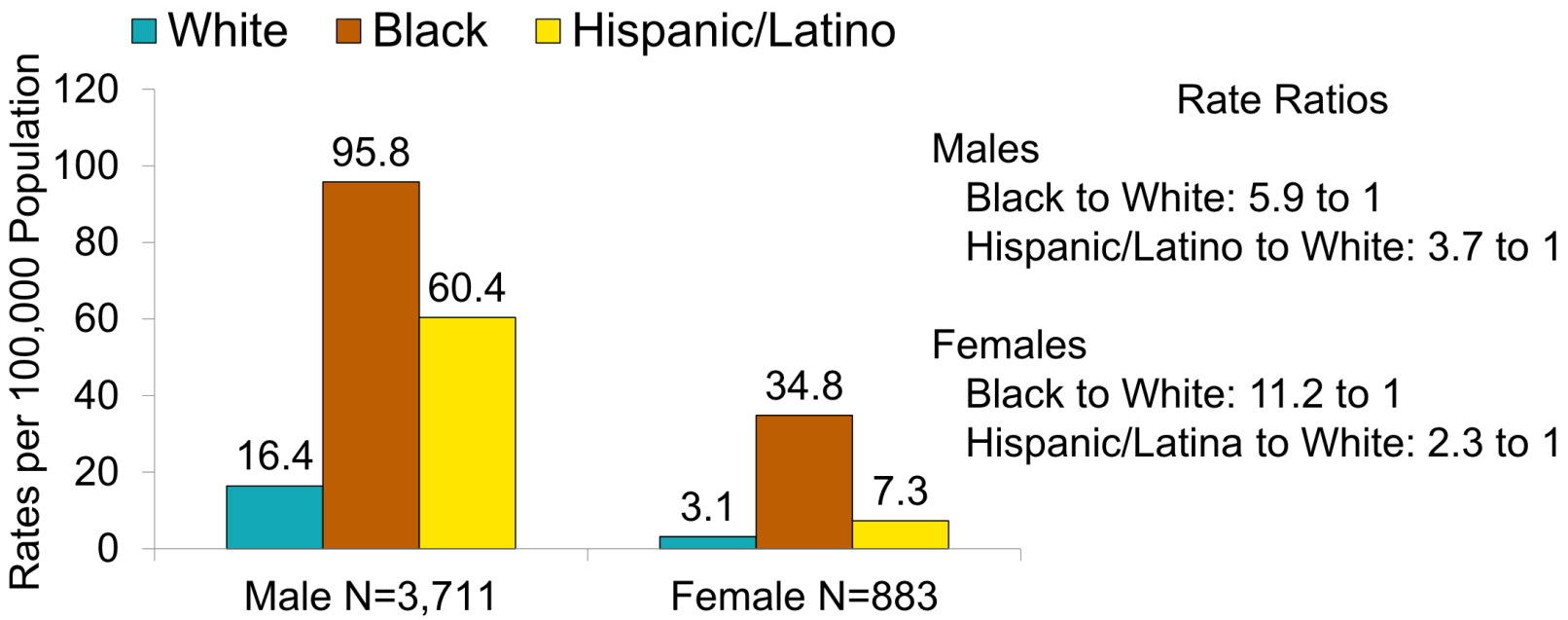
[1]AZT, short for azidothymidine, is an antiretroviral medication used during childbirth to prevent vertical transmission of HIV.

Shamarial Roberson, DrPH, MPH Deputy “Florida DOH state of HIV epidemic 2022”



Florida DOH accessed 1/8/2024

Adult HIV Diagnosis Rates by Sex and Race/Ethnicity, 2022, Florida



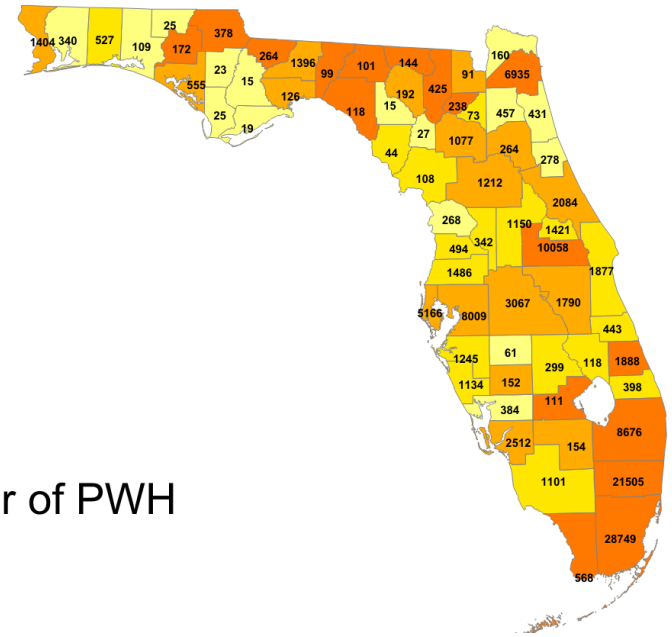
State of Florida Epidemic 2022
accessed 6/13/2024

Rates of PWH by County of Residence
2022, Living in Florida

PWH Rate
per 100,000 Population
State Rate=557.9

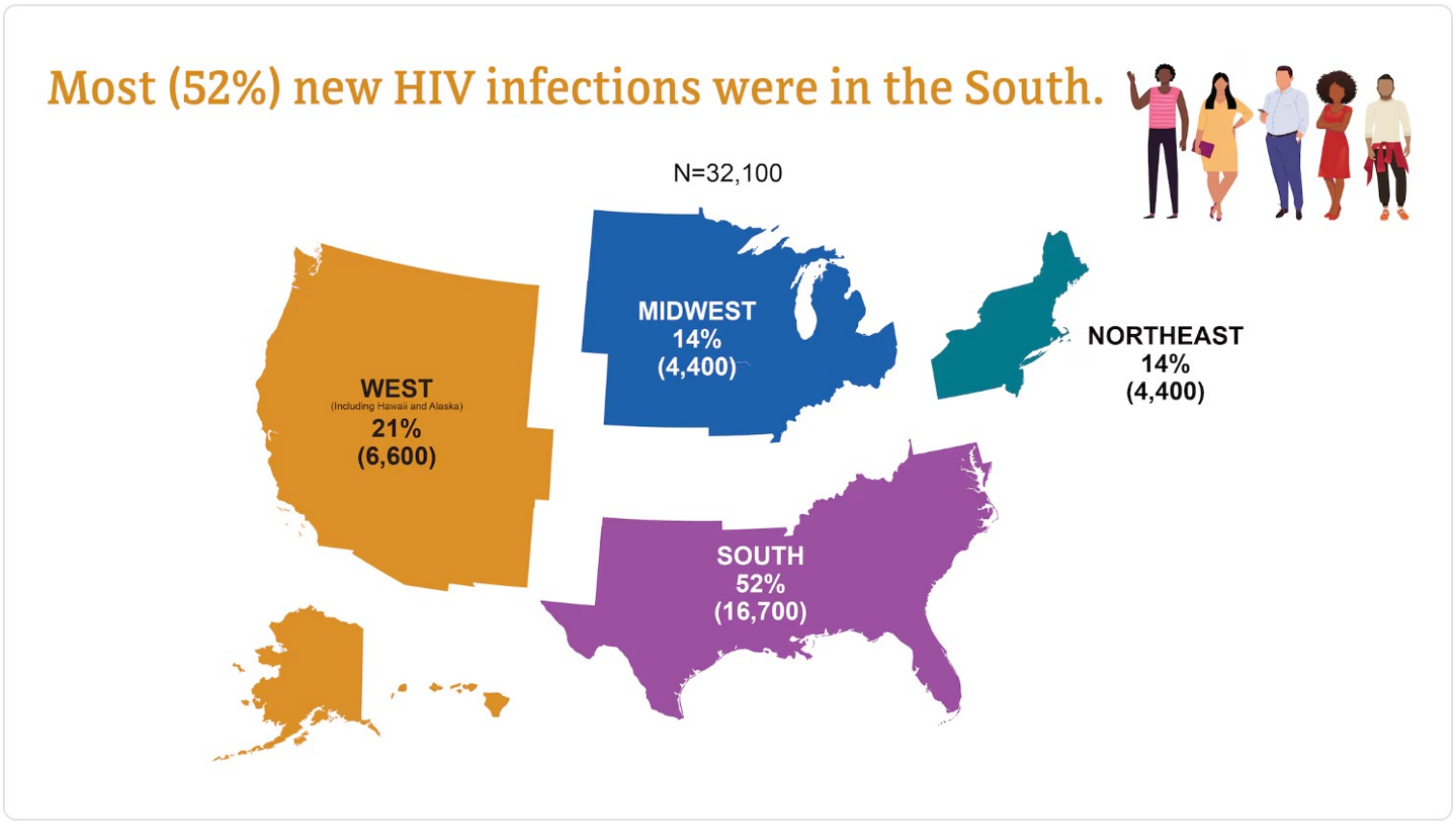
- 0.0
- 0.1–241.5
- 241.6–302.7
- 302.8–532.3
- >=532.4

Numbers on map are number of PWH
State Total N=124,577



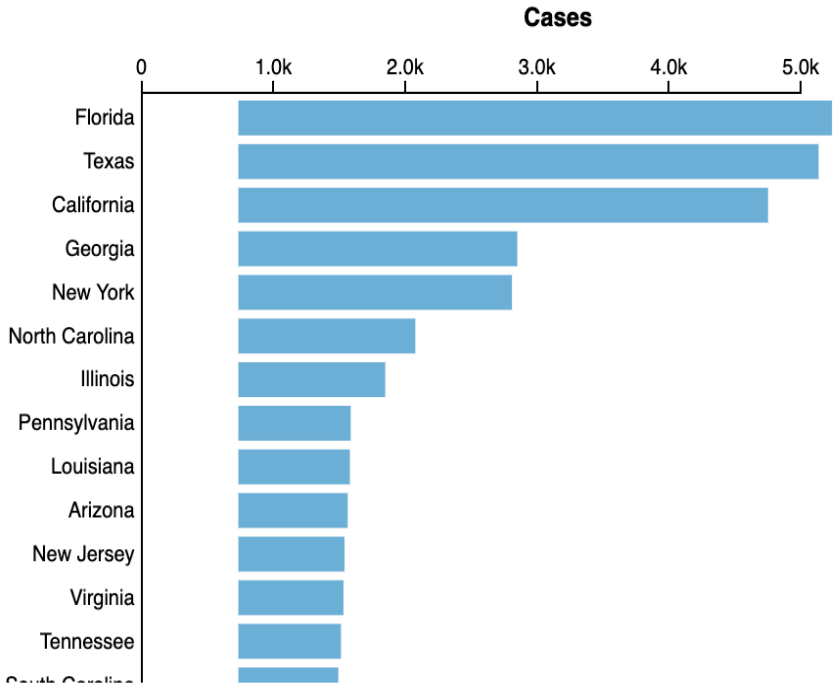
State of Florida Epidemic accessed 5/27/2024

CDC - USA


Most (52%) new HIV infections were in the South.
N=32,100
WEST
(Including Hawaii and Alaska)
21%
(6,600)
MIDWEST
14%
(4,400)
NORTHEAST
14%
(4,400)
SOUTH
52%
(16,700)

CDC

HIV diagnoses | 2023 | Ages 13 years and older | All races/ethnicities | Both sexes | All transmission categories | United States



Footnotes: Data for 2023 are considered preliminary (subject to a 12-month reporting delay). Inclusion of preliminary data in trend assessments is discouraged. Numbers less than 12, and rates and percentages based on these numbers, should be interpreted with caution. HIV diagnoses and PrEP data for the year 2020, which coincided with the onset of the COVID-19 pandemic, should be interpreted with caution due to the impact of the pandemic on access to HIV testing, PrEP prescriptions, and care-related

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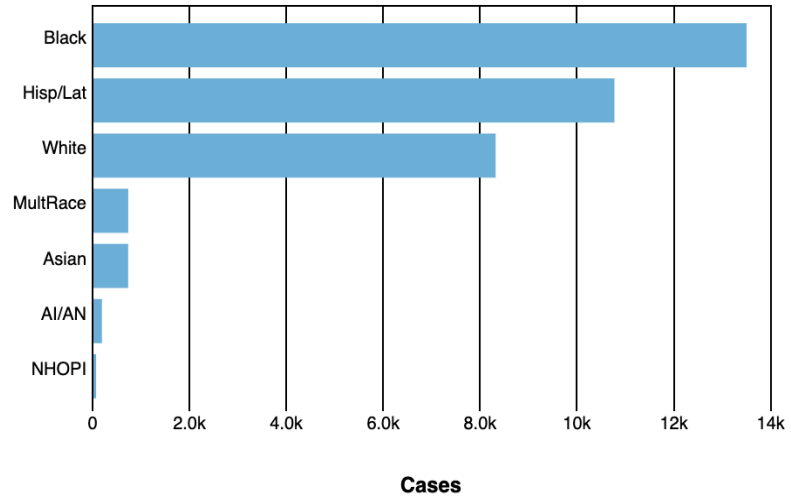

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NA - Not Applicable.

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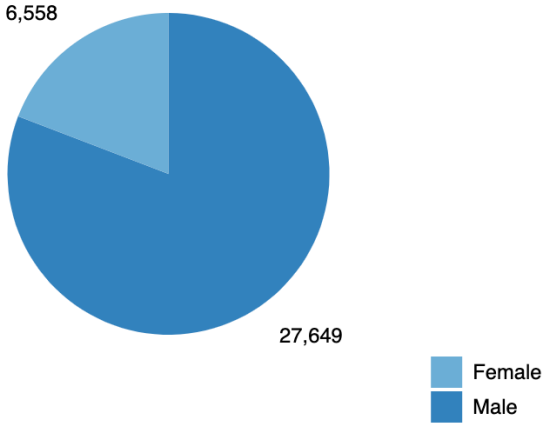

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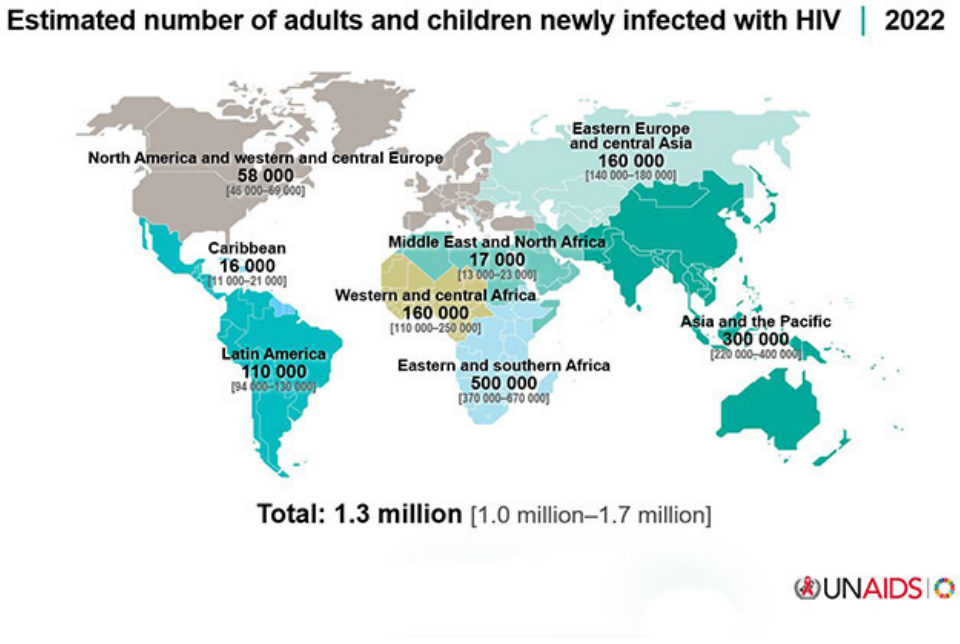
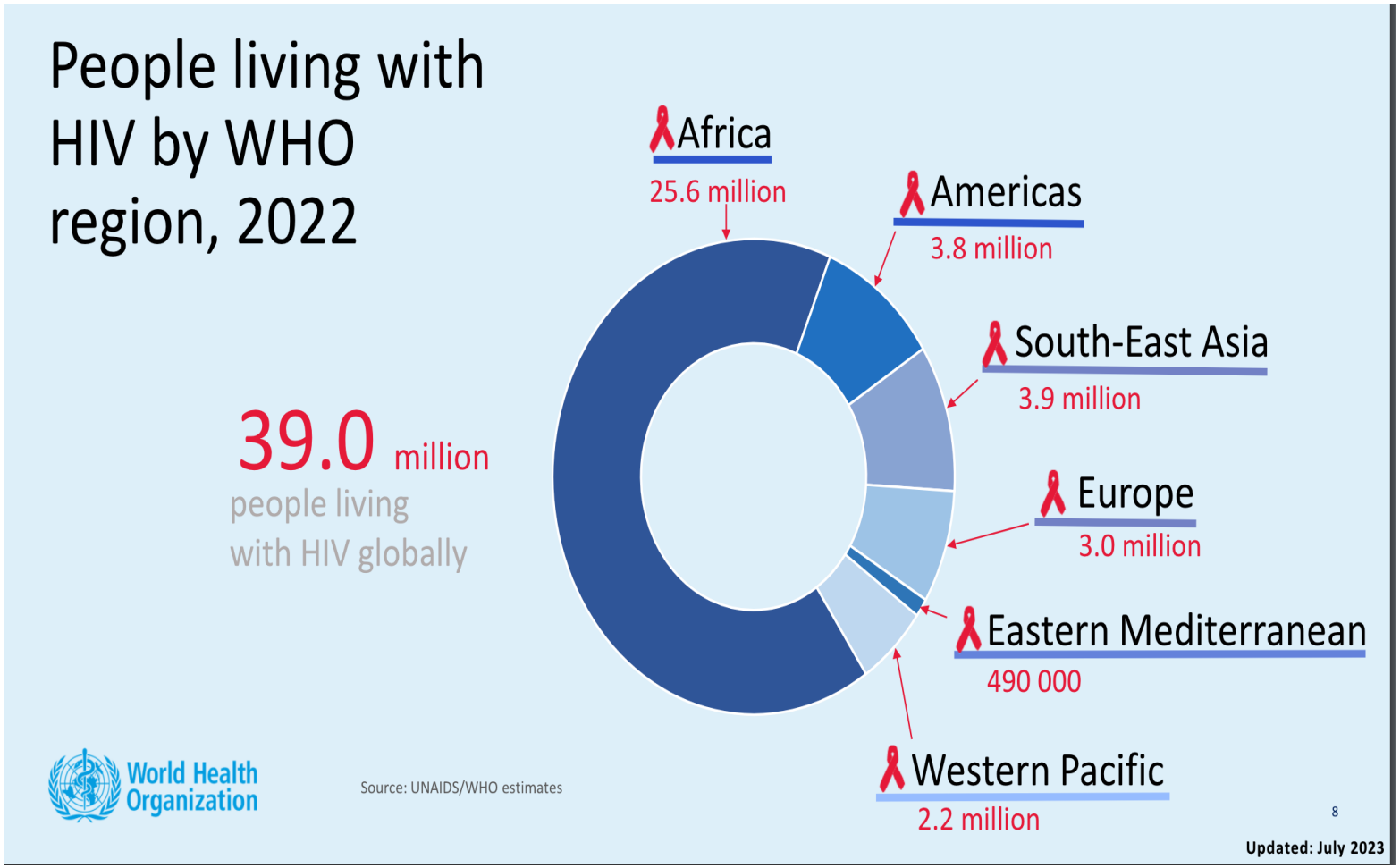
Global map


Estimated number of adults and children newly infected with HIV | 2022
North America and western and central Europe
58 000
[46 000–69 000]
Eastern Europe and central Asia
160 000
[140 000–180 000]
Caribbean
16 000
[11 000–21 000]
Middle East and North Africa
17 000
[13 000–23 000]
Western and central Africa
160 000
[110 000–250 000]
Asia and the Pacific
300 000
[220 000–400 000]
Latin America
110 000
[94 000–130 000]
Eastern and southern Africa
500 000
[370 000–670 000]
Total: 1.3 million [1.0 million–1.7 million]
UNAIDS

Global HIV


People living with HIV by WHO region, 2022
39.0 million
people living with HIV globally
Africa
25.6 million
Americas
3.8 million
South-East Asia
3.9 million
Europe
3.0 million
Eastern Mediterranean
490 000
Western Pacific
2.2 million
World Health Organization
Source: UNAIDS/WHO estimates
8
Updated: July 2023

Underlying Factors Affecting HIV/AIDS Disparities

- Amount of HIV already in the community
- Late diagnosis of HIV or AIDS*
- Access to/acceptance of care*
- Stigma, denial*
- Discrimination, homophobia*
- HIV/AIDS complacency*
- Poverty and unemployment

***Factors that HIV/AIDS initiatives can impact.**

Florida HEALTH

Primary Mode Prevention- Condoms

- 1997 meta-analyses of condom effectiveness suggest that condoms are 60 to 70% effective when used for HIV prophylaxis, these studies do not isolate consistent condom use, and therefore provide only a lower bound on the true effectiveness of correct and consistent condom use.
- Reexamination of HIV seroconversion studies suggests that condoms are 90 to 95% effective when used consistently, i.e. consistent condom users are 10 to 20 times less likely to become infected when exposed to the virus than are inconsistent or non-users.

https://pubmed.ncbi.nlm.nih.gov/9141163/#:~:text=A%20reexamination%20of%20HIV%20seroconversion,are%20inconsistent%20or%20non%2Dusers.

Behavioral - Prevention - CONDOMS

- Despite awareness campaigns 50% gay men do not use & reported condom usage is higher than actual use
- Females anal sex 11% reported use of condoms
- 60% teenagers use condom
- Problem is anal sex understudied

Behavioral-Prevention-condoms

- Blame, ignorance, apathy or irresponsibility ?
- Bias -do not like the feelings of condoms, lack of spontaneity, unpleasant taste, loss of erection, seen as sign of sexual promiscuity, or as a declaration of distrust or infidelity
- Believe that they will not acquire HIV- sense immortality
- Negotiate sex
- Feeling of vulnerability fear of being identified as high risk or as a part of stigmatized population

BEHAVIORAL-PREVENTION-CONDOMS

- Condom fatigue
- Strategies to reinforce condom use
- Check out their HIV status and check the status of their partner as their sense of responsibility
- Proper usage can decrease dx 70%- 95%
- Consistent usage of latex condoms continue to be advocated for primary prevention

Biomedical-Prevention

- Vaccines
- Microbicides
- Screening
- Treatment of sexually transmitted infections (STIs)
- Post-exposure prophylaxis (PEP)
- PrEP
- Test & treat
- Treatment as prevention (TasP)

Biomedical prevention

- Vaccines- **No. There is currently no vaccine available that will prevent HIV infection or treat those who have it.**

Vaginal microbicide

long-acting vaginal rings that continuously release one or more antiretroviral drugs over time.

- The ring at the most advanced stage of research is the monthly dapivirine ring, which was tested in two large clinical trials, including the NIH-funded ASPIRE study.
- This study and another trial called The Ring StudyExit Disclaimer found that the dapivirine ring reduced the risk of HIV acquisition by roughly 30% overall in women ages 18 to 45 years and was well-tolerated.
- WHO endorsed –not available in USA

The dapivirine ring, pictured here, is made of flexible silicone and continuously releases the anti-HIV drug dapivirine in the vagina.
Credit: International Partnership for Microbicides

Occupational PEP
Non occupation PEP

- HIV status source should be determined
- Should be started as soon as possible after occupation exposure <72 hours
- Test HIV repeat 6 weeks & may be concluded 4 months post exposure if 4th generation (p24 antigen & HIV AB) testing is used
- Three drug therapy for 28 days

  Raltegravir RAL (400 mg twice daily) + emtricitabine /tenofovir disoproxil fumarate 300/200 FTC/TDF daily x 28 day

  Dolutegravir 50 mg + FTC/TDF daily x 28 days

The 5 P's for Sexual Behavior History Taking

Partners- preference men, women or both, how many partners

Practices – vaginal, oral, or rectal

Prevention of Pregnancy

Protection from STD

Past Hx of STD

STD screening

PWH with a Co-occurring Diagnosis of an STI by Type and Year of STI Report, 2018–2022, Florida

Year of STI Report	HIV/ Early Syphilis[1]	HIV/ Chlamydia	HIV/ Gonorrhea
2018	3,165	2,679	2,885
2019	3,339	3,322	3,915
2020	3,476	2,974	3,343
2021	4,376	3,896	4,133
2022	4,237	4,339	4,565
Percentage Change	+34%	+62%	+58%

Florida HEALTH

[1]Primary, secondary, and early non-primary, non-secondary syphilis.

Who Is at Substantial Risk of Acquiring HIV Infection

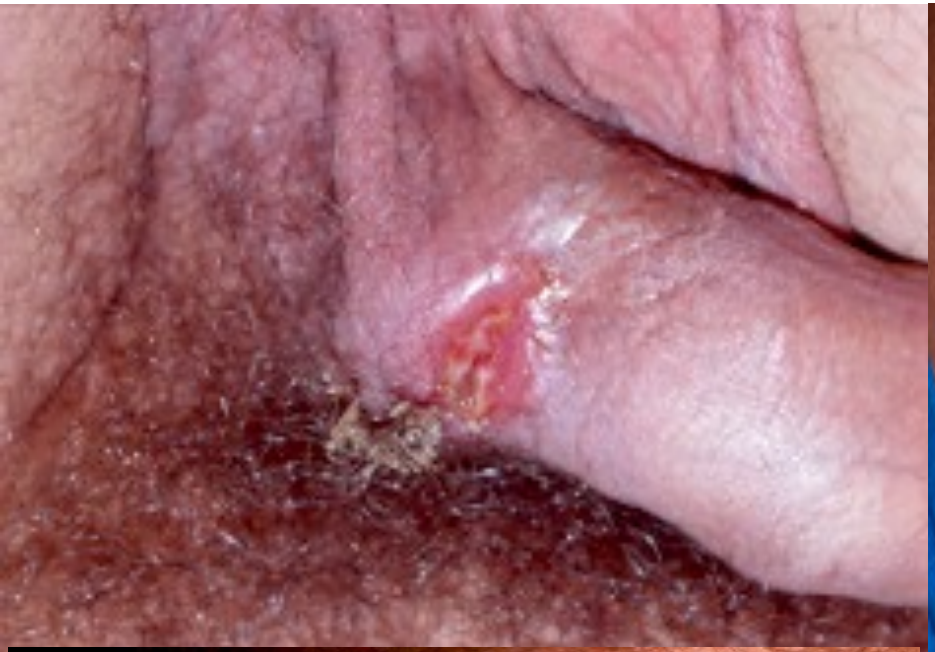
- Sexually active adults and adolescents who had anal or vaginal sex in the past 6 months **AND** any of the following
  - Sexually active partner with HIV (especially if partner has an unknown or detectable viral load)
  - Bacterial STI in past 6 months
  - History of inconsistent or no condom use with sexual partner(s)
- PWID
  - Partner with HIV **OR** sharing injection equipment

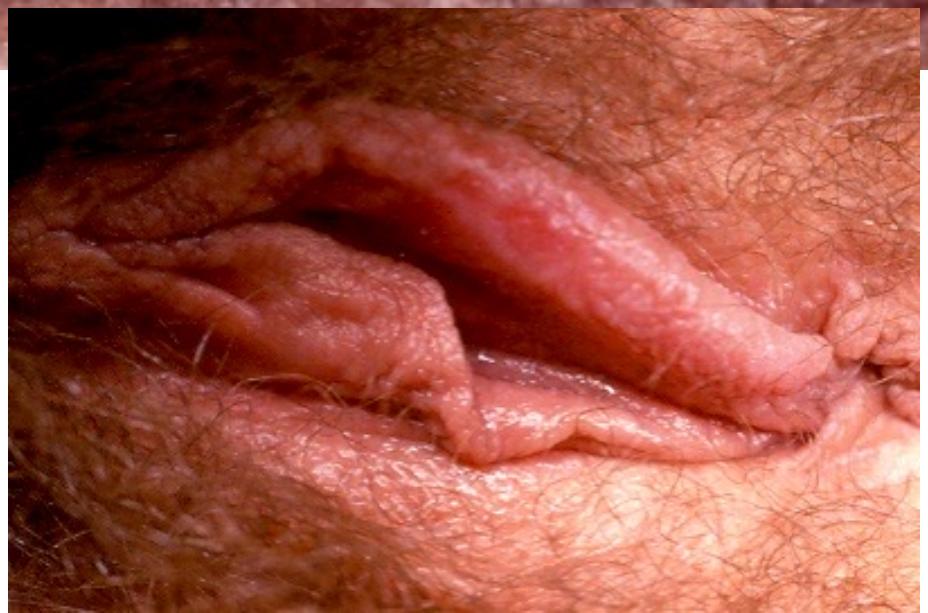
Previous Guidance

- MSM
  - Sexual partner with HIV
  - Recent bacterial STI
  - High number of sexual partners
  - History of inconsistent or no condom use
  - Commercial sex work
- Heterosexual women and men
  - Same as MSM plus in a high HIV prevalence area/network
- PWID
  - Injecting partner with HIV
  - Sharing injection equipment

Screen when std, sti testing

Healing Chancres, Darkfield negative





Randomized controlled trials DOXY-PEP

Randomized controlled trials on the use of doxycycline as PEP to reduce bacterial STIs

	Design	Participants	Intervention	Primary Endpoint	Findings	Limitations	Quality of Evidence
iPrEx Trial France 2018(1)	RCT	N=232 MSM and TGW on TDF/FTC as PrEP (HIV-)	Doxycycline hyclate 200mg orally once within 24-72 hours after having condomless anal or oral sex versus no prophylaxis	First STI infection (gonorrhea, chlamydia or syphilis) during a 10-month follow-up period	Reduced risk of acquiring chlamydia and syphilis by 70% (HR 0.30 (95% CI 0.13-0.70) and 73% (HR 0.27 (95% CI 0.07-0.98), respectively. No significant difference in gonorrhea	Open-label Short follow-up	High
DoxyPeP USA 2023(2)	RCT	N=554 MSM and TGW (N=360 on PrEP; N=194 HIV+)	Doxycycline hyclate 200mg orally once within 72 hours after having condomless sex versus no prophylaxis	Relative risk of an STI infection per quarter.	PrEP: 65 STI endpoints (29.5%) occurred in controls and 47 (9.6%) in doxyPEP participants (RR 0.33; 95%CI 0.23-0.47; p<0.0001). HIV: 30 STI endpoints (27.8%) in controls and 31 (11.7%) in doxyPEP participants (RR 0.42; 95% CI 0.25-0.75; p=0.0014).	Open-label Short follow-up	High
DOXYVAC France CROI 2023(3)	RCT	N=502 MSM on HIV PrEP (HIV-)	Doxycycline monohydrate 200mg orally within 24-72 hours after sex versus no PEP versus 4CMenB vaccine versus no vaccine	Impact of doxycycline as PEP on time to first episode of syphilis or chlamydia and impact of 4CMenB vaccine on first episode of gonorrhea	Doxycycline as PEP reduced gonorrhea, chlamydia and syphilis infections (aHR of 0.49 (95% CI 0.32-0.76), 0.11 (95% CI 0.04-0.30) and 0.21 (95% CI 0.09-0.47), respectively). Receipt of 4CMenB was associated with a reduction in gonococcal infection (incidence 9.8/100 person years vs 19.7/100 person years in the study arm that did not receive vaccine; aHR 0.49 (95% CI 0.27-0.88)	Open-label Short follow-up	High
dPEP Kenya CROI 2023 (4)	RCT	N= 449 Cisgender women	Doxycycline hyclate 200mg orally within 72 hours after sex versus no doxycycline PEP	Any incident C. trachomatis, N. gonorrhoeae or T. pallidum	All bacterial STIs (RR 0.88; 95%CI 0.60-1.29), C. trachomatis (RR 0.73; 95% CI 0.47-1.13); N. gonorrhoeae (RR 1.64; 95% CI 0.78-3.47). There were only two syphilis infections during the study.	Open label, short follow-up	High

https://www.cdc.gov/std/treatment/doxycycline-as-pep-toe.htm accessed 1/17/2024

Doxy PEP

- Doxy PEP is a post-exposure preventative treatment for syphilis, chlamydia, and gonorrhea.
- **Think of it as a morning-after pill but for bacterial STIs instead of pregnancy**:
- Take one dose after a condomless sexual encounter to greatly reduce your risk of contracting bacterial STIs

PrEP -

- Truvada (emtricitabine /tenofovir disoproxil fumarate) aka FTC/TDF approved July 2012 for Pre exposure prophylaxis
- Descovy (emtricitabine / tenofovir alafenamide) aka FTC/ TAF approved in Oct 2019 in at risk adult & adolescent HIV (-) men and transgender women >35kg
- Descovy for PrEP does not include use in individuals at risk of HIV-1 from receptive vaginal sex (not studied)
- Studies show PrEP decreased risk of HIV from sex 99% daily use
- IVDU PrEP reduces risk of getting HIV at 74% when taken daily.

Pre-exposure prophylaxis

- **Truvada FTC/TDF 200/300** must be taken daily if CrCl>60ml/min
  - Sero-discordant heterosexual couples at time of conception/pregnancy
  - MSM
  - Adult heterosexual active men & women at risk

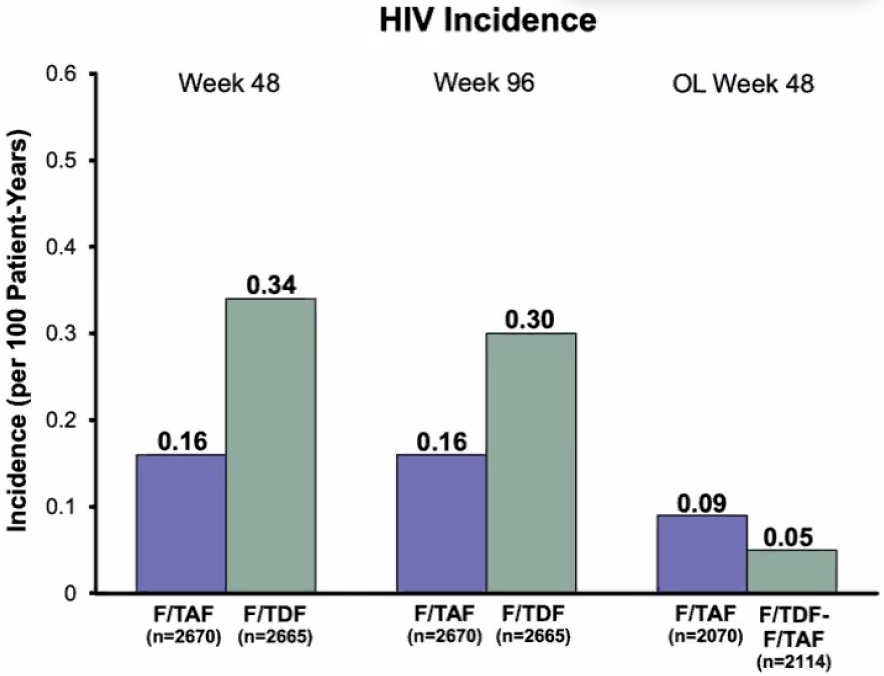
- **Descovy FTC/TAF 200/25** CrCl>30
  - At risk patients to reduce risk of HIV-1 infection from sex, excluding those at risk from receptive vaginal sex

PrEP oral

- 7 days of daily use- gives one maximum protection from HIV for receptive (bottoming) anal sex
- 21 days of daily use- receptive vaginal sex and injection drug use
- There is full prevention potential PrEP
- Renal dose adjustment precautions & osteoporosis
- Patients seen every 3 months for follow up and including HIV testing and Rx refills
- Test for hepatitis Hep A, HepBsAg, HepBcAB, HepBsAB, RPR, HIV, GC/Chlamydia & renal status
- Best choice of regimen for any given patient is the one to which they can best adhere to.
- Risk reduction counseling, adr, sti

DISCOVER Trial: Daily Oral F/TDF Versus F/TAF for PrEP

- Double-blind, phase 3, non-inferiority study with open-label extension after week 96
  - HIV-negative MSM and transgender women at risk for HIV
  - eGFR: ≥60 mL/min
- F/TAF was non-inferior to F/TDF for HIV prevention at both week 48 and 96
  - F/TAF had significantly better bone and renal safety outcomes (P<0.001) and greater weight gain
- Switching from F/TDF to F/TAF
  - Low HIV incidence rate
  - Improvements in eGFR and BMD indices
  - Increases in LDL-C, HDL-C, and body weight



Mayer KH, et al. *Lancet*. 2020;396:239-254.
Ogbuagu O, et al. *Lancet HIV*. 2021;8:e397-e407.
Spinner C, et al. *J Int AIDS Soc*. 2021;24(suppl 4):29. Abstract OALC0501.

Oral PrEP: Clinical Eligibility

Oral PrEP

F/TDF 701

F/TAF 225

Oral PrEP Eligible
(all conditions must be met)

- Adults and adolescents (≥35 kg)
- Documented negative HIV Ag/Ab test result within 1 week before initially prescribing PrEP
- No signs/symptoms of acute HIV infection
- Estimated creatinine clearance ≥30 mL/min
- No contraindicated medications

CDC. https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2021.pdf. Published December 2021.
Gandhi RT, et al. *JAMA*. 2023;329:63-84.

PrEP inject drugs

- 8 % risk of acquiring risk to HIV via IVDU
- included transfusion of infected blood, sharing equipment during IVDU and percutaneous needle sticks
- Strategies include needle & syringe programs – federal & state funding is low
- Opioid substitution therapy- buprenorphine based regimens/methadone
- Drug resistance data on Truvada – limited to those who had unrecognized acute HIV infection

SCHEDULE ORAL PrEP

Table 5 Timing of Oral PrEP-associated Laboratory Tests

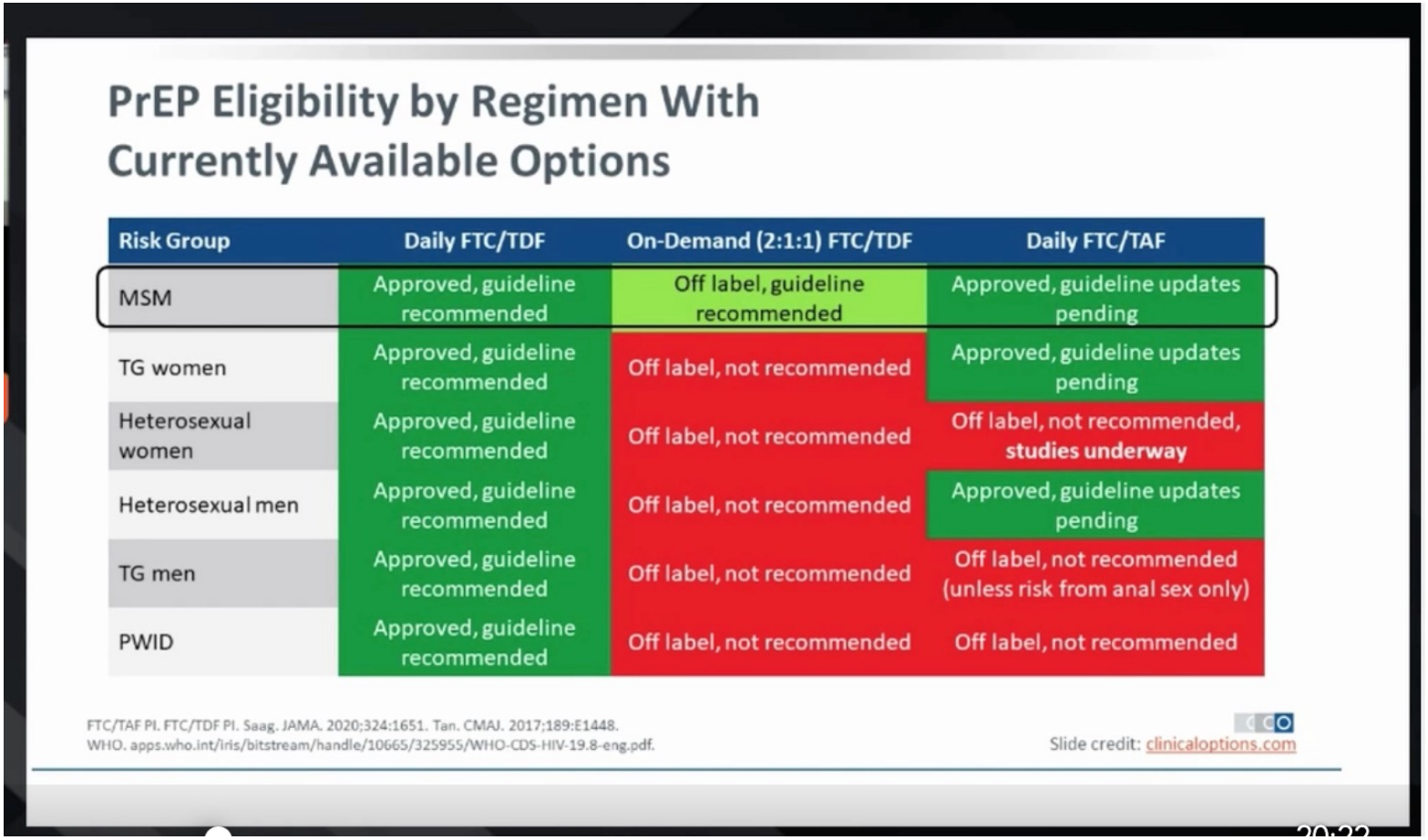
Test	Screening/Baseline Visit	Q 3 months	Q 6 months	Q 12 months	When stopping PrEP
HIV Test	X*	X			X*
eCrCl	X		If age ≥50 or eCrCL <90 ml/min at PrEP initiation	If age <50 and eCrCl ≥90 ml/min at PrEP initiation	X
Syphilis	X	MSM /TGW	X		MSM/TGW
Gonorrhea	X	MSM /TGW	X		MSM /TGW
Chlamydia	X	MSM /TGW	X		MSM /TGW
Lipid panel (F/TAF)	X			X	
Hep B serology	X				
Hep C serology	MSM, TGW, and PWID only			MSM,TGW, and PWID only	

* Assess for acute HIV infection (see Figure 4)

PrEP ON DEMAND

- 2:1:1
- 2 tabs 2-24 hours prior to sex, 1 tab 24 hours after the first 2 tabs, and another 1 tab 24 hours after that
- Ibergay study in gay and bisexual men The IPERGAY trial found that taking PrEP on a **2-1-1 schedule reduced risk of HIV infection by 86% in men** who have sex with men.
- A sub-study confirmed high efficacy among men with less-active sex lives who took doses of PrEP on demand fewer than three times per week on average.
- Endorsed by WHO, British HIV Association, European Aids Clinical Society and International Aids Society-USA

PrEP on demand



PrEP Eligibility by Regimen With Currently Available Options

Risk Group	Daily FTC/TDF	On-Demand (2:1:1) FTC/TDF	Daily FTC/TAF
MSM	Approved, guideline recommended	Off label, guideline recommended	Approved, guideline updates pending
TG women	Approved, guideline recommended	Off label, not recommended	Approved, guideline updates pending
Heterosexual women	Approved, guideline recommended	Off label, not recommended	Off label, not recommended, **studies underway**
Heterosexual men	Approved, guideline recommended	Off label, not recommended	Approved, guideline updates pending
TG men	Approved, guideline recommended	Off label, not recommended	Off label, not recommended (unless risk from anal sex only)
PWID	Approved, guideline recommended	Off label, not recommended	Off label, not recommended

FTC/TAF PI. FTC/TDF PI. Saag. JAMA. 2020;324:1651. Tan. CMAJ. 2017;189:E1448.
WHO. apps.who.int/iris/bitstream/handle/10665/325955/WHO-CDS-HIV-19.8-eng.pdf.

Slide credit: clinicaloptions.com

APRETUDE FOR PrEP 12/20/2021

- Cabotegravir (CAB)
- Vocabria = oral formulation approved optional use for short term lead in or when an injection must be missed (travels)
- 7- day leniency
- 600 mg cabotegravir administered as one 3 ml intramuscular injection in the gluteal muscle for Initial dose, second dose 4 weeks after first dose (month 1 follow-up visit). then every 8 weeks thereafter (month 3,5,7, follow-up visits etc)
- Intramuscular injections of CAB every 2 months for sexually active men, women, and transgender persons with indications for PrEP use.
- For BMI >30 a longer needle, 2 inch, is needed to insure IM not SQ administration otherwise 1.5-inch needle

PrEP injectable

Table 7 Timing of CAB PrEP-associated Laboratory Tests

Test	Initiation Visit	1 month visit	Q2 months	Q4 months	Q6 months	Q12 months	When Stopping CAB
HIV*	X	X	X	X	X	X	X
Syphilis	X			MSM^/TGW~ only	Heterosexually active women and men only	X	MSM/TGW only
Gonorrhea	X			MSM/TGW only	Heterosexually active women and men only	X	MSM/TGW only
Chlamydia	X			MSM/TGW only	MSM/TGW only	Heterosexually active women and men only	MSM/TGW only

* HIV-1 RNA assay
X all PrEP patients
^ men who have sex with men
~ persons assigned male sex at birth whose gender identification is female

Injectable PrEP: Follow-Up Care

1 Month After 1st Injection

- HIV Ag/Ab test
- HIV-1 RNA assay

Every 2 Months*

- HIV Ag/Ab test
- HIV-1 RNA assay

Every 4 Months*

- Bacterial STI screening for MSM and TGW who have sex with men
  - Gonorrhea/chlamydia†
  - Syphilis: blood

Every 5 Months*

- Bacterial STI screening for heterosexually active cisgender women/men
  - Gonorrhea/chlamydia†
  - Syphilis: blood

At Least Every 12 Months

- Assess desire to continue injections for PrEP
- Chlamydia screening
  - Heterosexually active cisgender women/ men (vaginal, urine)

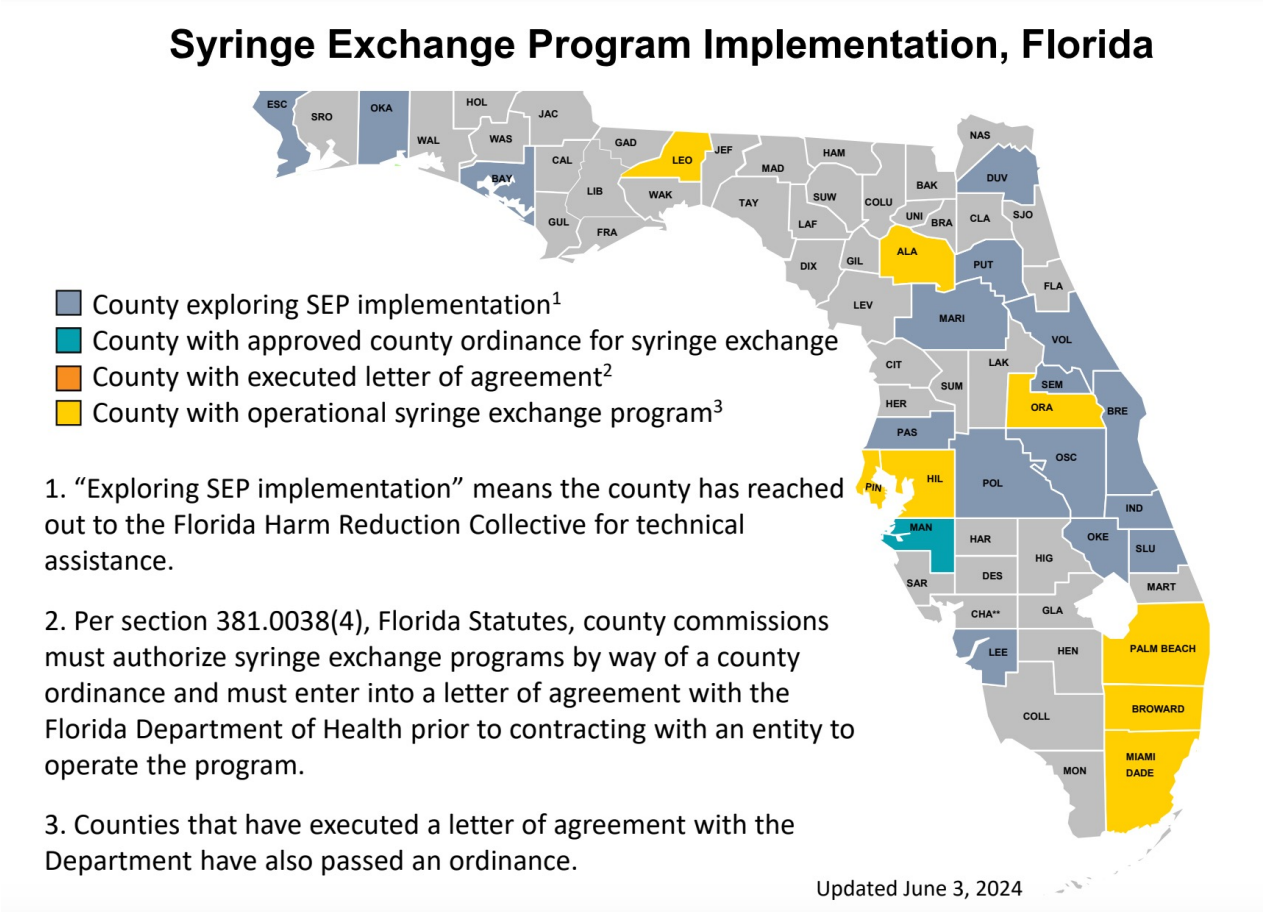
*Beginning with 3rd injection; †oral, rectal, and urine.

CDC. https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2021.pdf. Published December 2021.
Gandhi RT, et al. *JAMA*. 2023;329:63-84.

PrEP

Prevention of Acquisition of HIV: Preexposure Prophylaxis: adolescents and adults at increased risk of hiv	The USPSTF recommends that clinicians prescribe preexposure prophylaxis using effective antiretroviral therapy to persons who are at increased risk of HIV acquisition to decrease the risk of acquiring HIV. See the Practice Considerations section for more information about identification of persons at increased risk and about effective antiretroviral therapy.	A	August 2023 *

Structural prevention- Infectious Disease Elimination Act- 2019



Syringe Services Program

1. Nearly 30 years of research shows that comprehensive SSPs are safe, effective, and cost-saving;
2. Do not increase illegal drug use or crime;
3. Play an important role in reducing the transmission of viral hepatitis, HIV, and other infections.
4. People who use syringe services programs are five times more likely to enter drug treatment and three times more likely to stop injecting drugs.

https://www.hiv.gov/federal-response/policies-issues/syringe-services-programs

Prevention –structural blood donation- FDA

- The May 2023 FDA guidelines recommend asking every potential blood donor the same screening questions. These questions ask about behavior that raises risk for HIV, which can be spread through a transfusion.
- For male donors who would have been deferred for having sex with another man: the agency is changing the recommended deferral period from 12 months to 3 months.
- For female donors who would have been deferred for having sex with a man who had sex with another man: the agency is changing the recommended deferral period from 12 months to 3 months.
- For those with recent tattoos and piercings: the agency is changing the recommended deferral period from 12 months to 3 months.
- Good health at time of donation
- >16 years old and weight >110lbs
- Screened for abo blood groups and Rh type, Hepatitis b&c, hiv, rpr, htlv I&II, & west nile virus

Prevention-Role of voluntary Male Circumcision

- African study of 3274 men/ 1674 underwent circumcision
- Study stopped early after interim analysis 60% reduction in HIV transmission heterosexually acquired in the circumcised group
- Three randomized controlled trials have shown that male circumcision provided by well trained health professionals in properly equipped settings is safe.
- WHO/UNAIDS recommendations emphasize that male circumcision should be considered an efficacious intervention for HIV prevention in countries and regions with heterosexual epidemics, high HIV and low male circumcision prevalence.

  - Penile foreskin contains large numbers of Langerhans' cells with HIV receptors-primary point of viral entry into the penis

Study: Brothers Y Hermanos

- Brothers y Hermanos Study 2,235 Black and Latino MSMs in New York, Philadelphia and Los Angeles May 2005 to April 2006 "Is your penis circumcised or cut?
- There was no evidence that being circumcised was protective against HIV infection among black MSM or Latino MSM.

Journal of Acquired Immune Deficiency Syndromes, December 15, 2007

Circumcision

Male circumcision provides only partial protection, & therefore should be only one element of a comprehensive HIV prevention package which includes:

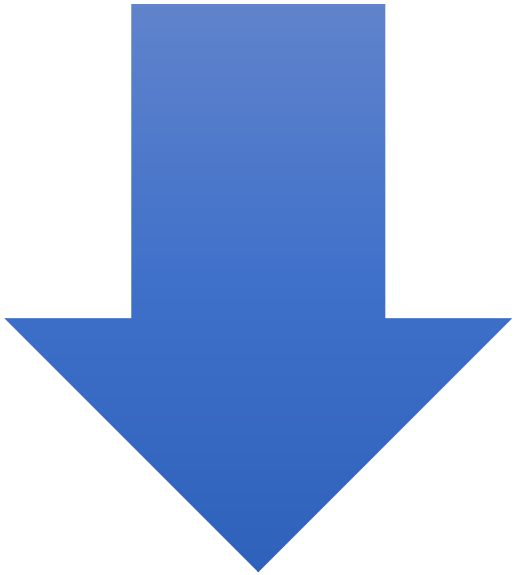
1. the provision of HIV testing and counseling services;
2. treatment for sexually transmitted infections;
3. the promotion of safer sex practices; PrEP & PEP
4. the provision of male and female condoms &
5. promotion of their correct and consistent use.

Prevention-biomedical

Treatment as Prevention

ART

Easier, less toxic, and more potent therapy



TOXICITY

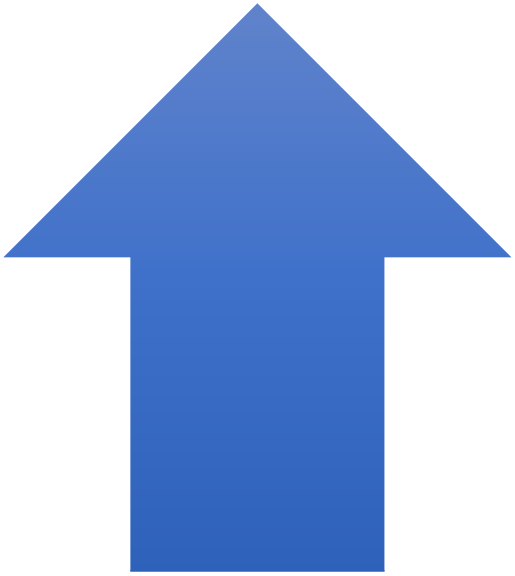
PRESERVATION TX OPTIONS

RISK OF RESISTANCE

DECREASED TRANSMISSION

INCREASED POTENCY

DURABILITY
SIMPLICITY SAFETY
CURRENT TX



Goals of Antiretroviral Therapy

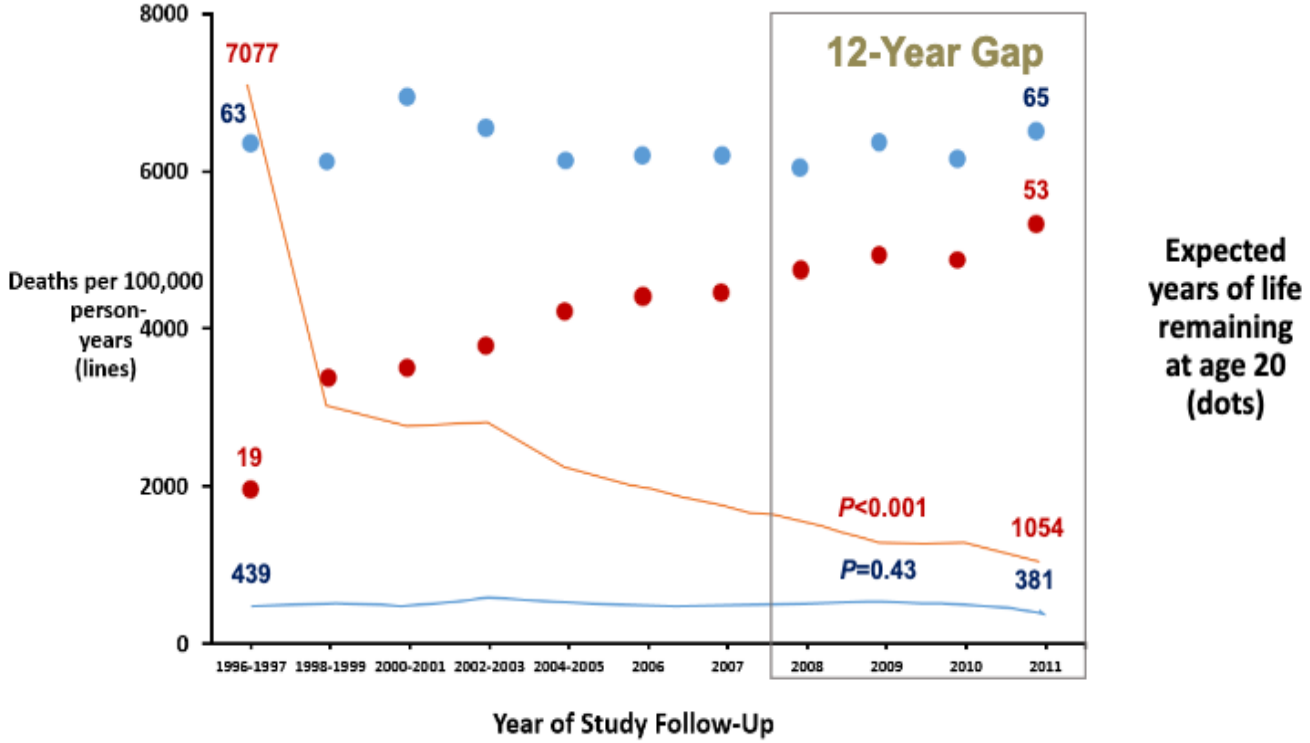
- Maintain or restore the health of people with HIV-1 (PWH) through suppression of HIV-1 replication
- Minimize or eliminate short and long-term adverse effects of the therapy
- Have therapies that are accessible to all PWH
- Prevent transmission of HIV-1 to others via any route of exposure

Joseph Enron's Lecture slide accessed 6/30/2023

Potential Benefits of Early Therapy

- Potential decrease in risk of many complications, including:
  - HIV-associated nephropathy
  - Liver disease progression from hepatitis B or C
  - Cardiovascular disease
  - Malignancies (AIDS defining and non-AIDS defining)
  - Neurocognitive decline
  - Blunted immunological response owing to ART initiation at older age
  - Persistent T-cell activation and inflammation

With Effective ART, Survival of People with HIV Continues to Improve

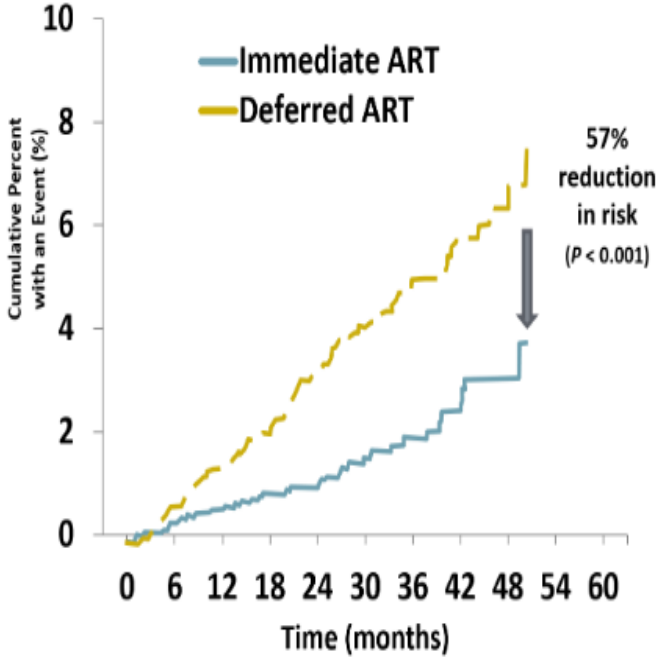


8 year gap with ART initiation at CD4 ≥ 500. Life expectancy ↓ Blacks & IDU.
Gap narrowed further if no hepatitis, drugs/alcohol, or smoking.

Marcus J, et al. J Acquir Immune Defic Syndr. 2016

START Study: Early ART Reduces Risk of AIDS, Serious Non-AIDS Events, or Death

68% of the primary end points occurred in patients with a CD4⁺ count of > 500 cells/mm³



Cancer Event	Immediate ART	Deferred ART
Kaposi's sarcoma	1	11
Lymphoma, NHL + HL	3	10
Prostate cancer	2	3
Lung cancer	2	2
Anal cancer	1	2
Cervical or testis cancer	1	2
Other types*	4	9
Total	14	39

Fewer deaths in the immediate vs. deferred arms (12 vs. 21)

NHL = non-Hodgkin lymphoma; HL = Hodgkin lymphoma.
The INSIGHT START Study Group. *N Engl J Med.* 2015;373(9):795-807;

Recommendations for Initiating ART: Considerations

1. "Patients starting ART should be willing and able to commit to treatment & should understand the benefits & risks of therapy & the importance of adherence."
2. Patients may choose to postpone ART
3. Providers may elect to defer ART, based on an individual patient's clinical or psychosocial factors, but ART should be started as soon as it is feasible so
4. US DHHS guidelines currently recommend universal ART for all people living with HIV (regardless of CD4 count) as soon as possible. Increasing data show a medical benefit to the client when immediate ART is initiated, particularly during acute/early HIV infection.

Initiation of therapy

- Begin therapy at diagnosis or as soon as possible
- Integrase inhibitors are backbone of therapy
- A single pill once daily combination
- Stress adherence importance regimen's barrier to resistance
- Potential adverse effects and drug toxicities, including risk for development of comorbid diseases.
- Known or potential drug interactions with other medications
- Convenience (e.g., pill burden, dosing frequency, availability of a fixed-dose combination or STR formulations, food requirements)
- Cost and access

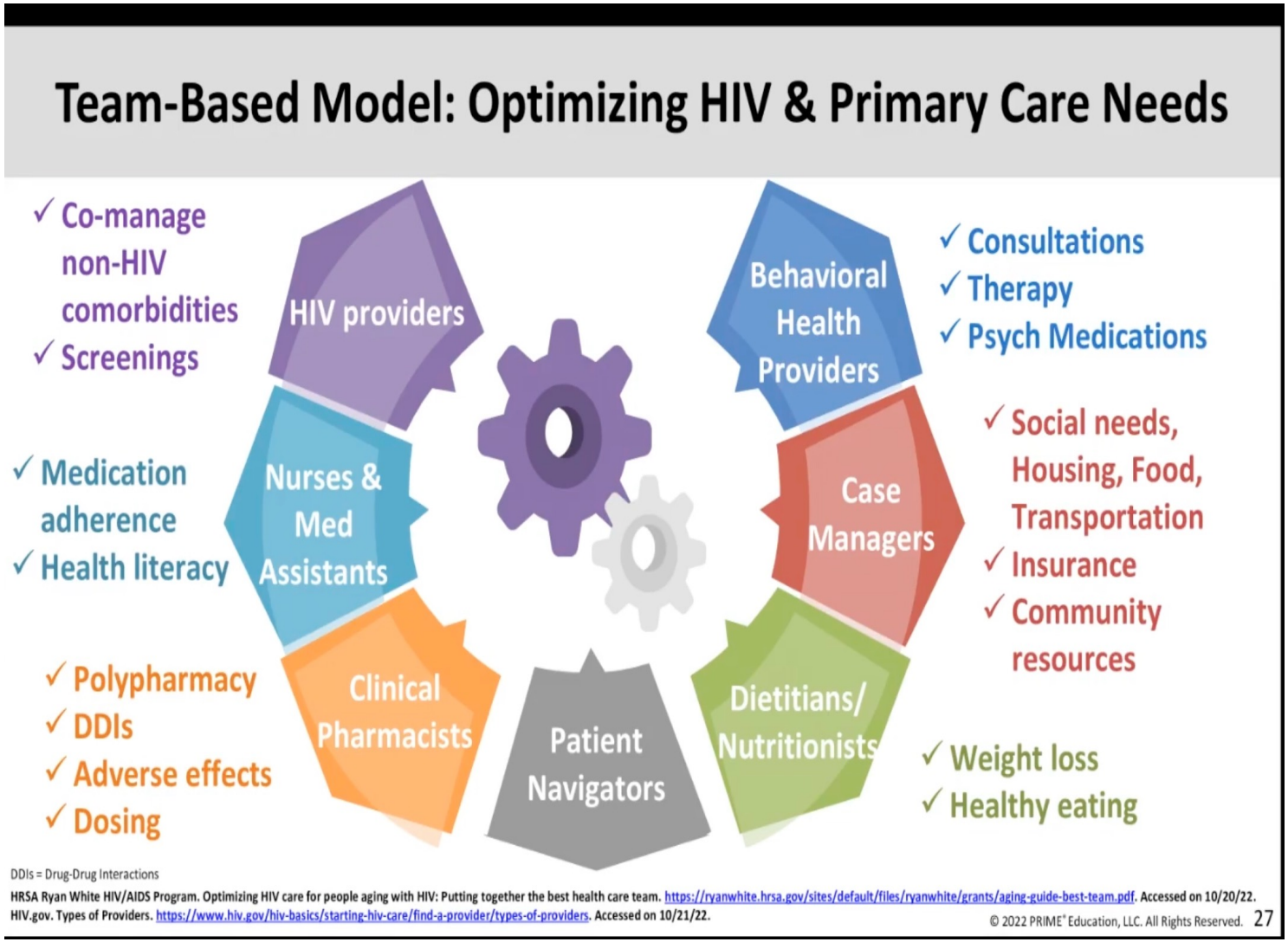
Adherence

- Support and reinforcement
- Simplified dosing strategies
- Reminders, alarms, timers, blister-pak, pillboxes
- Home delivery 90 days med supply
- Ongoing patient education
- Trust in primary care provider

Drug to drug interactions

- Antacids -cobi /integrase inhibitors
- H2blockers
- Proton pump inhibitors
- Alpha adrenergic antagonist
- Rifampin/rifabutin
- Warfarin
- Clopidogrel -all PI
- Beta blockers
- Simvastin &lovastatin contraindicated PWH on EFV/ritonavir/cobistat

Team based care

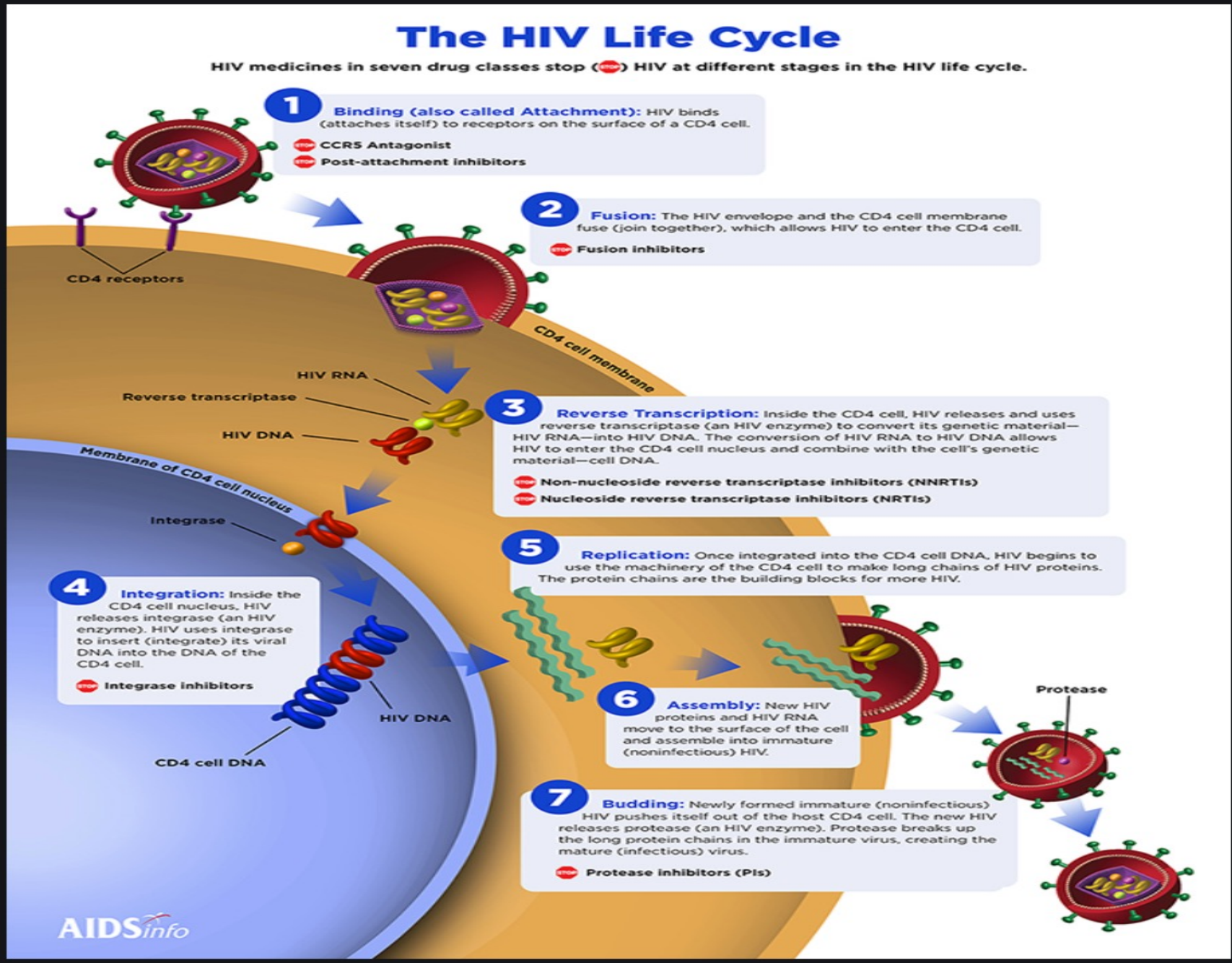


Rating Scheme for Recommendations

- Strength of recommendation:
  - A: Strong
  - B: Moderate
  - C: Optional
- Quality of evidence:
  - I: ≥1 randomized controlled trials
  - II: ≥1 well-designed nonrandomized trials or observational cohort studies with long-term clinical outcomes
  - III: Expert opinion

The HIV Life Cycle

HIV medicines in seven drug classes stop (STOP) HIV at different stages in the HIV life cycle.



Approved ART: 2024*

nucleoside/tide RTIs (NRTIs)

- zidovudine (ZDV, AZT)
- lamivudine (3TC)
- abacavir (ABC)
- emtricitabine (FTC)
- tenofovir (TAF, TDF)

NNRTIs

- nevirapine (NVP)
- efavirenz (EFV)
- etravirine (ETR)
- rilpivirine (RPV)
- doravirine (DOR)

protease inhibitors (PIs)

- saquinavir (SQV)
- ritonavir (RTV)
- indinavir (IDV)
- nelfinavir (NFV)
- lopinavir/r (LPV/r)
- atazanavir (ATV)
- tipranavir (TPV)
- darunavir (DRV)

integrase inhibitors (IIs)

- raltegravir (RAL)
- elvitegravir (EVG)
- dolutegravir (DTG)
- bictegravir (BIC)
- cabotegravir (CAB)

entry inhibitors (EIs)

- enfuvirtide (T-20, fusion inhibitor)
- maraviroc (MVC, CCR5 antagonist)
- ibalizumab (IBA, CD4 post-attachment inhibitor)
- fostemsavir (FTR, CD4 attachment inhibitor)

capsid inhibitors (CIs)

- lenacapavir (LEN)

Opman 2024

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*ddI, ddC, d4T, DLV, APV, and FPV discontinued from market

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capsid inhibitors (CIs)

- lenacapavir (LEN)

*ddI, ddC, d4T, DLV, APV, and FPV discontinued from market

Basics of ART

The *best* regimens consist of:

- A nucleoside reverse transcriptase inhibitor pair:
  - Usually tenofovir AF or DF/emtricitabine (TAF/FTC or TDF/FTC)
  - Tenofovir AF has less renal, bone toxicity than DF; associated with greater weight gain
- An integrase strand transfer inhibitor (INSTI) – bictegravir (BIC) or dolutegravir (DTG)
  - Bictegravir only comes in a combination pill with tenofovir AF/emtricitabine
- One exception (for certain patients): Two-drug treatment with dolutegravir/lamivudine

NRTIs

Tenofovir TDF TAF (Viread Vemlidy*)

Emtricitabine, FTC (Emtriva)

Truvada
Descovy*

Lamivudine, 3TC (Epivir)

Integrase Inhibitors

Bictegravir, BIC

Dolutegravir, DTG (Tivicay)

NRTIs

Tenofovir TDF TAF
(Viread Vemlidy*)

Emtricitabine, FTC (Emtriva)

Lamivudine, 3TC (Epivir)

Abacavir, ABC (Ziagen)

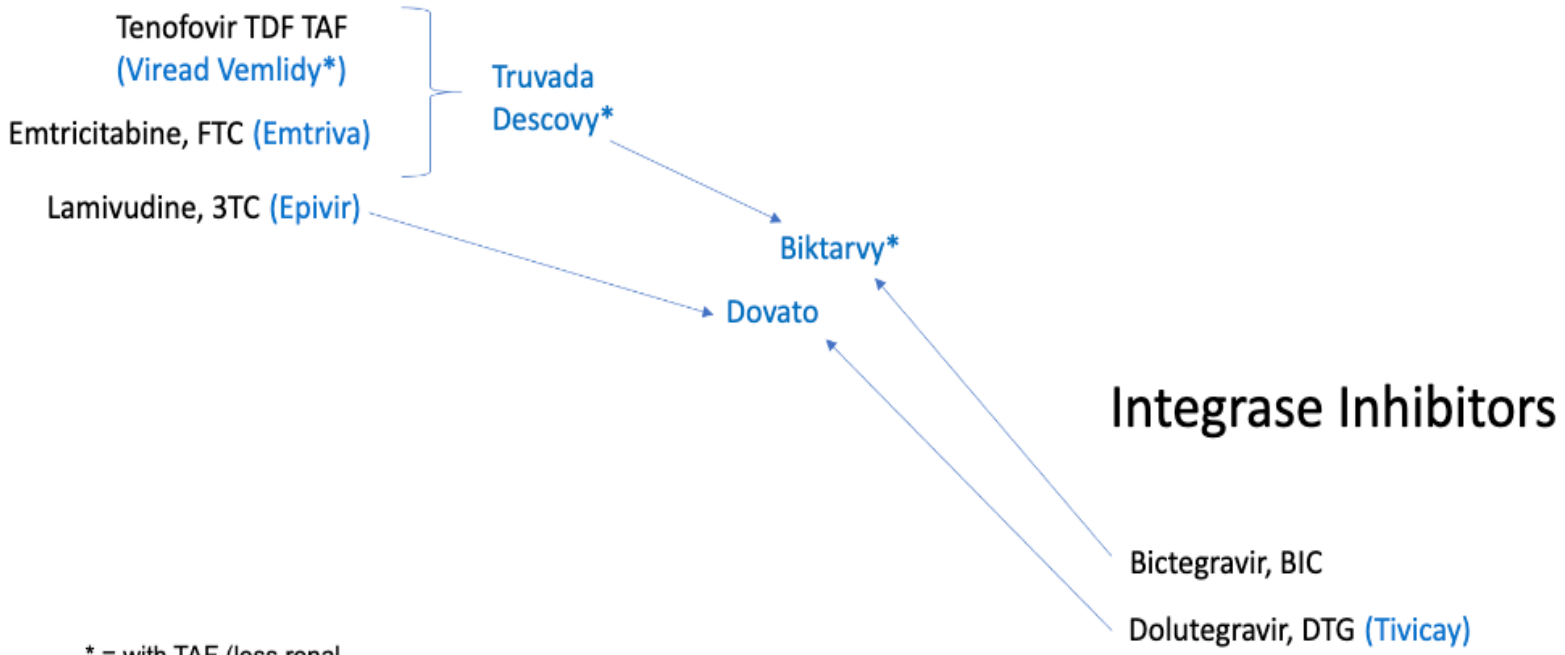
Integrase Inhibitors

Elvitegravir/c, EVG/c (Viteka)

Bictegravir, BIC

Dolutegravir, DTG (Tivicay)

NRTIs



* = with TAF (less renal, bone toxicity) rather than TDF (less weight)

Best Regimens for Starting Therapy in 2021: One Opinion (mine)

tenofovir AF/emtricitabine

\+

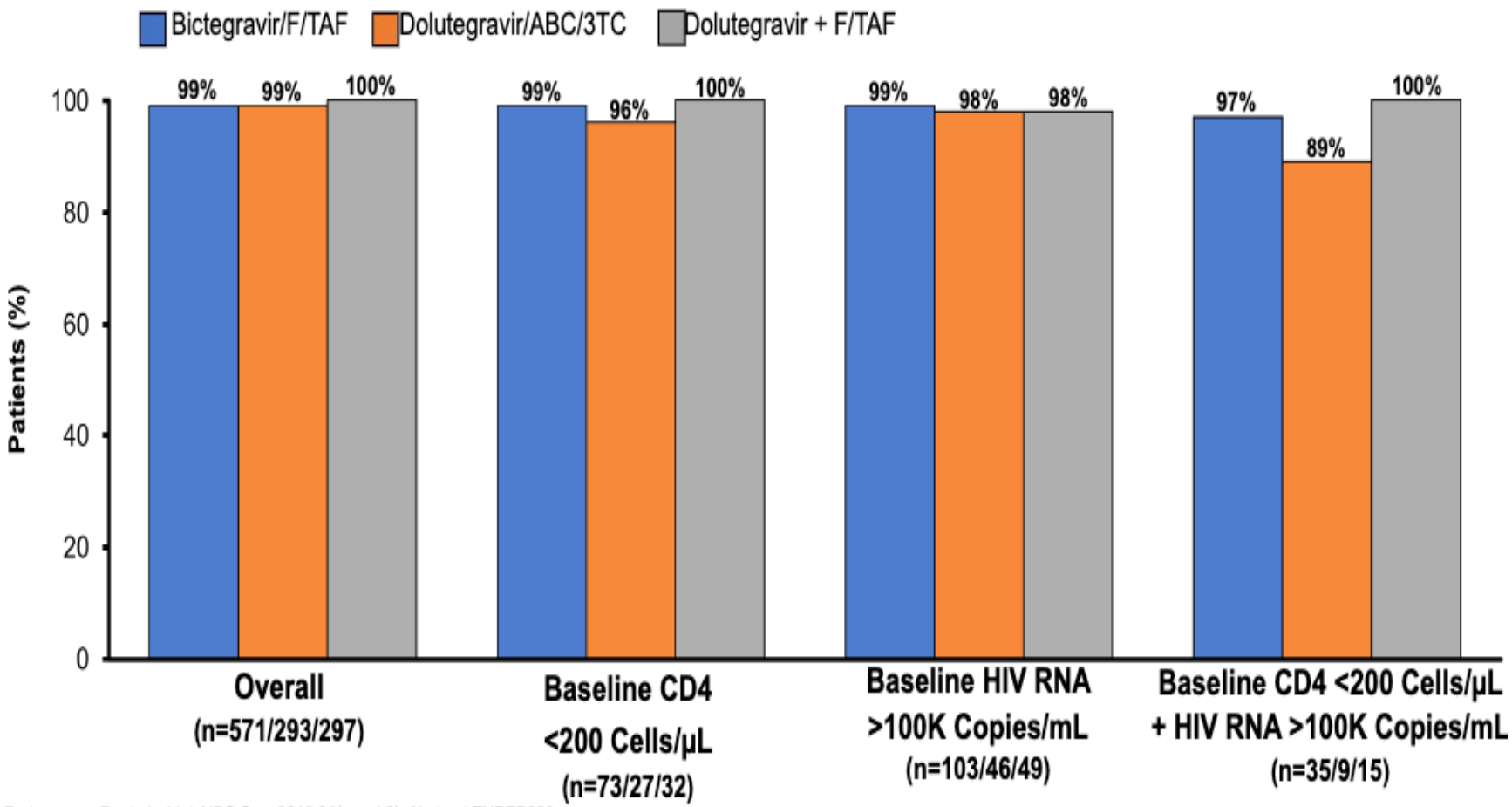
dolutegravir

OR

bictegravir/tenofovir AF/emtricitabine

- Reasons
  - Once daily
  - Clinically significant transmitted drug resistance extremely rare
  - Well-tolerated
  - No treatment-emergent resistance in clinical trials
  - Reduced renal and bone toxicity c/w TDF
  - No known excess cardiovascular risk c/w ABC
  - Small tablet sizes
  - Taken with or without food
  - Active vs hepatitis B
  - Ideal for same-day ART

BIC and DTG-based Regimens Are Extraordinarily Effective



Podzamczer D, et al. *J Int AIDS Soc*. 2018;21(suppl 6). Abstract THPEB038.

Initial Regimen

U.S. DHHS Treatment Guidelines: Recommended Initial Regimens (for most people)

1-2 NRTI + integrase inhibitor

- **Integrase inhibitor-based**
  - **bictegravir**/TAF/FTC
  - **dolutegravir**/ABC/3TC
  - **dolutegravir** + tenofovir (TAF or TDF) + (FTC or 3TC)
  - **dolutegravir**/3TC

U.S. DHHS HIV Treatment Guidelines 9/21/22
www.clinicalinfo.hiv.gov

Alternative Regimens (Certain Situations) (1)

- Integrase inhibitor-based (INSTI + 2 NRTI)
  - **elvitegravir**/cobicistat/tenofovir (TAF or TDF)/emtricitabine
  - **raltegravir** + tenofovir (TAF or TDF) + (lamivudine or emtricitabine)

- Protease inhibitor-based (Boosted PI + 2 NRTI)
  - In general, boosted darunavir preferred over boosted atazanavir
  - **darunavir**/(ritonavir or cobicistat) + tenofovir (TDF or TAF) + (lamivudine or emtricitabine)
  - **darunavir**/(ritonavir or cobicistat) + abacavir*/lamivudine
  - **atazanavir**/(ritonavir or cobicistat) + tenofovir (TDF or TAF) + (lamivudine or emtricitabine)

U.S. DHHS HIV Treatment Guidelines 9/21/22
www.clinicalinfo.hiv.gov

Single tablet - complete regimes - once daily

- Atripla- efavirenz tenofovir emtricitabine EVF/FTC/TDF
- Triumeq -abacavir dolutegravir lamivudine ABC/DTG/3TC
- Complera- rilpivirine FTC/RPV/TDF
- Odefsy- rilpivirine FTC/RPV/TAF
- Stribild- elvitegravir EVG/COBI/FTC/TDF
- Genvoya - elvitegravir EVG/COBI/FTC/TAF
- Symtuza darunavir DRV/COBI/FTC/TAF
- Juluca dolutegravir rilpivirine DTG/RPV
- Dovato -dolutegravir lamivudine DTG/3TC
- Biktarvey - bictegravir BIC/FTC/TAF
- Delstrigo - doravirine DOR/3TC/TDF

New and Emerging Treatments for HTE Patients

[Updated December 2022]

All agents are indicated, or are being studied for, treatment of HTE patients with MDR HIV failing current treatment and are to be given in combination with other antiretrovirals

Drug	Mechanism	Administration	Development stage
Fostemsavir	Gp120-directed attachment inhibitor	Oral, twice daily	FDA-approved 2020
Ibalizumab	CD4-directed post-attachment inhibitor	Intravenous, every 2 weeks	FDA-approved 2018
Lenacapavir	Capsid inhibitor	Subcutaneous, every 6 months *plus oral loading doses*	**FDA approved December 2022**

HTE = Heavily Treatment-Experienced; MDR = Multidrug-Resistant; NDA = New Drug Application; NNRTI = Non-Nucleoside Reverse Transcriptase Inhibitor; NRTTI = Nucleoside Reverse Transcriptase Translocation Inhibitor

Rukobia (fostemsavir). [Package insert]. 07/2020; Trogarzo (ibalizumab-uiyk). Montreal; QC. Theratechnologies. 04/2021; Molina JM, et al. IAS 2021; Abstract OALX01LB02; ClinicalTrials.gov. Doravirine/Islatravir (DOR/ISL) in Heavily Treatment-Experienced (HTE) Participants for Human Immunodeficiency Virus Type 1 (HIV-1) Infection (MK-8591A-019). https://https://clinicaltrials.gov/ct2/show/NCT04233216. Accessed 08/21/2022; FDA. FDA Approves New HIV Drug for Adults with Limited Treatment Options. Released 12/22/2022. https://www.fda.gov/news-events/press-announcements/fda-approves-new-hiv-drug-adults-limited-treatment-options. Accessed 12/30/2022.

Lenacapavir FDA approved 12/22/2022

- **Sunlenca® (lenacapavir) Receives FDA Approval as a First-in-Class, Twice-Yearly Treatment Option for People Living With Multi-Drug Resistant HIV**
- ***Sunlenca is the First and Only Approved Capsid Inhibitor-Based HIV Treatment Option***
- ***New Drug Application Approval Based on High Rates of Sustained Virologic Suppression in the CAPELLA Trial –***

Hiv pregnant naive

ART Initiation:
Treatment-Naïve Pregnant Women with HIV

ART should be initiated in all pregnant women regardless of CD4 or viral load

Earlier initiation more effective in preventing perinatal transmission

DHHS: Preferred ARVs in Pregnancy

Two NRTIs:

- ABC/3TC
- **TAF/FTC, TAF/3TC** or
- TDF/FTC, TDF/3TC

IMPAACT 2010/VESTED trial: *Fewer adverse pregnancy outcomes with DTG + FTC/TAF vs. DTG + FTC/TDF and EFV/FTC/TDF*

PLUS

Integrase Inhibitor:

- RAL (twice daily) or
- DTG

or

Protease Inhibitor:

- DRV/r (twice daily) or
- ATV/r

ARVs with limited data in pregnancy:

- Bictegravir
- Doravirine
- Oral or IM cabotegravir + rilpivirine

ARVs that should not be started in pregnancy:

- Cobicistat (PK concerns)
- Older ARVs with significant toxicity (d4T, DDI)

ART = Antiretroviral Therapy; NRTI = Nucleoside Reverse Transcriptase Inhibitor; ABC = Abacavir; FTC = Emtricitabine; 3TC = Lamivudine; TDF = Tenofovir Disoproxil Fumarate; INSTI = Integrase Strand Transfer Inhibitor; DTG = Dolutegravir; RAL = Raltegravir; BIC = Bictegravir; TAF = Tenofovir Alafenamide; PI = Protease Inhibitor; DRV = Darunavir; ATV = Atazanavir; LPV = Lopinavir; RTV = Ritonavir; Cobi =Cobicistat; BID = Twice Daily

Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents with HIV. Department of Health and Human Services.
Available at https://clinicalinfo.hiv.gov/sites/default/files/inline-files/AdultandAdolescentGL.pdf. Accessed 10/6/2022.

Women before pregnancy

ART Continuation:
Women with HIV Receiving ART Before Pregnancy

Existing ART should be continued in pregnancy, provided it is well tolerated, safe, and effective

- ***Prospective study of >8000 mothers with HIV in France found zero perinatal transmission when ART was started before conception, continued during pregnancy, and when HIV-1 RNA <50 copies/mL at delivery***

Exceptions which need increased monitoring or discontinuation during pregnancy:

Cobicistat

- Switch to different regimen
- OR ↑ frequency of viral load monitoring

Oral 2 drug regimens (DTG/RPV, DTG/3TC)

- ↑ frequency of viral load monitoring

ARVs with significant toxicity (d4T, DDI)

- Switch to different regimen

Long-acting injectable CAB/RPV

- Switch to different regimen per extremely limited data in pregnancy

- **ART changes during pregnancy can increase the risk of perinatal HIV transmission**
- **When considering ART change, support informed decision-making through patient counseling**

ART = Antiretroviral Therapy; ARV = Antiretroviral; DTG = Dolutegravir; RPV = Rilpivirine; 3TC = Lamivudine; d4T = Stavudine; DDI = Didanosine; CAB = Cabotegravir.

Floridia M, et al. *HIV Clin Trials*. Nov-Dec 2010;11(6):303-311; Panel on Antiretroviral Guidelines for Adults and Adolescents. Guidelines for the Use of Antiretroviral Agents in Adults and Adolescents with HIV. Department of Health and Human Services. Available at https://clinicalinfo.hiv.gov/sites/default/files/inline-files/AdultandAdolescentGL.pdf. Accessed 10/6/2022; Mandelbrot L, et al. *Clin Infect Dis*. 2015;61:1715-1725.

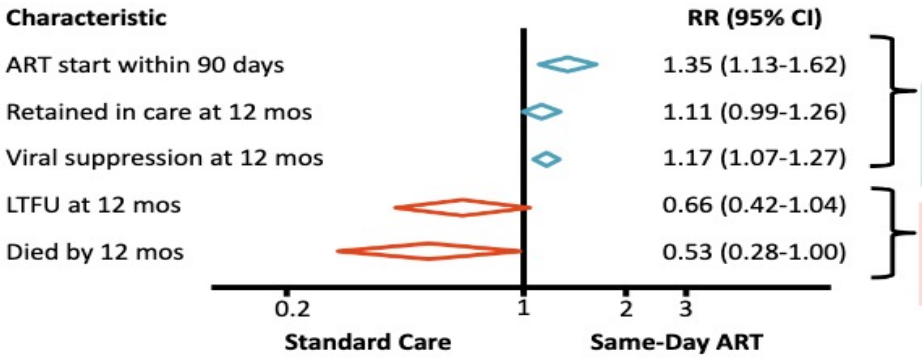
Test & Treat

- T&T is a clinical program providing immediate linkage to HIV primary care and initiation of Antiretroviral Therapy (ART) at the time of HIV diagnosis or a return to care after a gap in services.
- The program benefits the patient's health and the community by providing initial ART while working through the issues of eligibility and linkage to ongoing HIV primary care.
- ART initiation should be initiated at the time of diagnosis

Improved Clinical Outcomes With Rapid ART Initiation

- Systematic review of rapid ART initiation (including 4 RCTs) [1]

Same-day ART associated with:

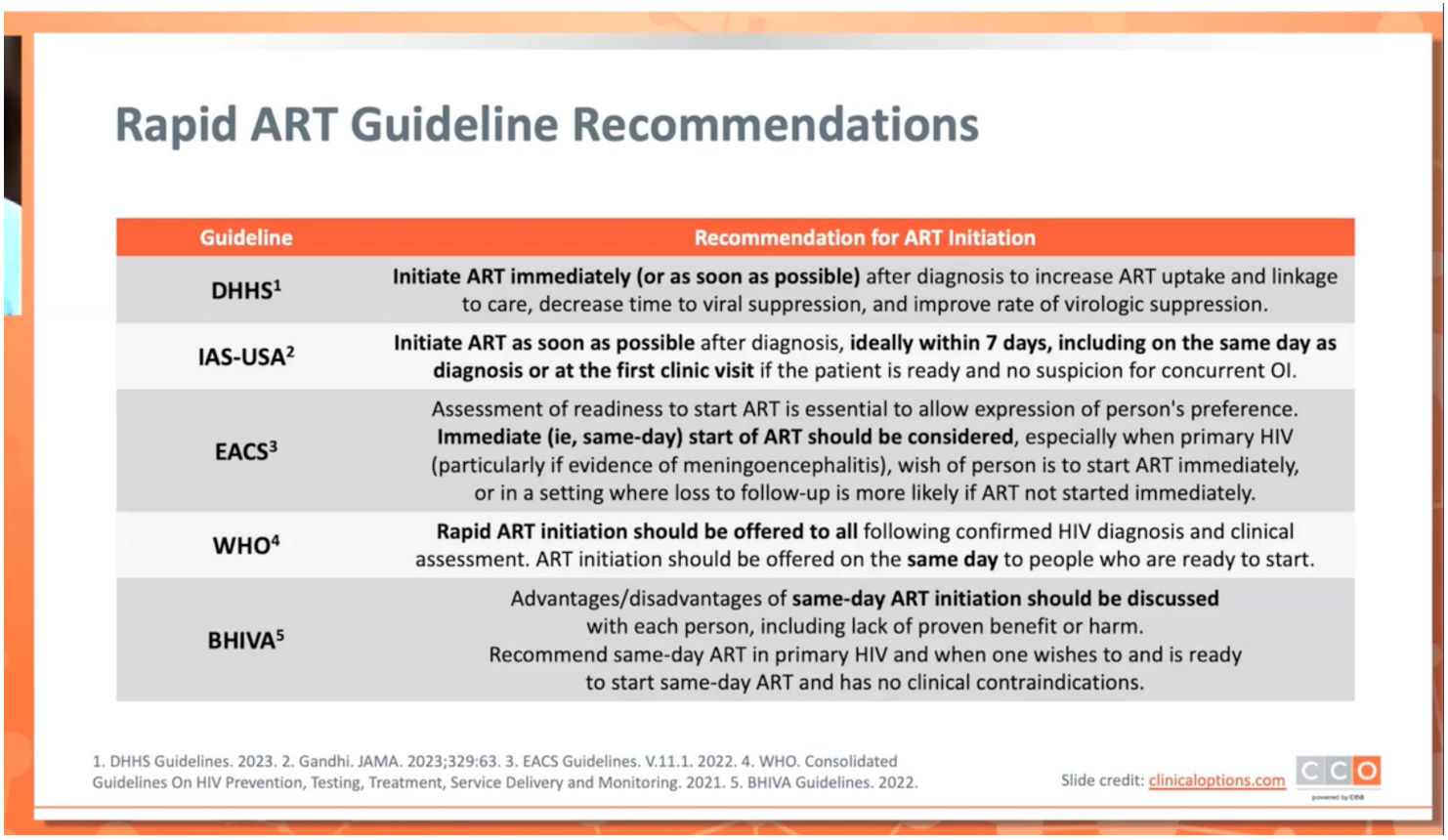


- **Increased** likelihood of ART initiation, retention in care, viral suppression
- **Decreased** likelihood of loss to follow-up and death

- In addition, earlier ART initiation reduces the viral reservoir in the individual [2-5]

1. Ford. AIDS. 2018;32:17. 2. Tagarro. JAIDS. 2018;79:269. 3. Luo. BMC Infect Dis. 2019;19:257.
4. Jain. J Infect Dis. 2013;208:1202. 5. Buzon. J Virol. 2014;88:10056.

Rapid start


Rapid ART Guideline Recommendations
Guideline
Recommendation for ART Initiation
DHHS[1]
Initiate ART immediately (or as soon as possible) after diagnosis to increase ART uptake and linkage to care, decrease time to viral suppression, and improve rate of virologic suppression.
IAS-USA[2]
Initiate ART as soon as possible after diagnosis, ideally within 7 days, including on the same day as diagnosis or at the first clinic visit if the patient is ready and no suspicion for concurrent OI.
EACS[3]
Assessment of readiness to start ART is essential to allow expression of person's preference. Immediate (ie, same-day) start of ART should be considered, especially when primary HIV (particularly if evidence of meningoencephalitis), wish of person is to start ART immediately, or in a setting where loss to follow-up is more likely if ART not started immediately.
WHO[4]
Rapid ART initiation should be offered to all following confirmed HIV diagnosis and clinical assessment. ART initiation should be offered on the same day to people who are ready to start.
BHIVA[5]
Advantages/disadvantages of same-day ART initiation should be discussed with each person, including lack of proven benefit or harm. Recommend same-day ART in primary HIV and when one wishes to and is ready to start same-day ART and has no clinical contraindications.
1. DHHS Guidelines. 2023. 2. Gandhi. JAMA. 2023;329:63. 3. EACS Guidelines. V.11.1. 2022. 4. WHO. Consolidated Guidelines On HIV Prevention, Testing, Treatment, Service Delivery and Monitoring. 2021. 5. BHIVA Guidelines. 2022.
Slide credit: clinicaloptions.com
CCO

TEST AND TREAT MEDICATIONS (revised September 2021)

Brand Name	Generic Name	Therapeutic Class	Pharmacologic Class	Samples and Vouchers
BIKTARVY	bictegravir/emtricitabine/ tenofovir alafenamide	antiretroviral	INSTI/NRTI combo	Samples
DESCOVY	emtricitabine/tenofovir alafenamide	antiretroviral	NRTI combo	Samples
SYMTUZA	darunavir/cobicistat/ emtricitabine/tenofovir alafenamide	antiretroviral	PI/NRTI combo	Samples and vouchers, can get both
TIVICAY	dolutegravir	antiretroviral	INSTI	No samples or vouchers
TRUVADA	emtricitabine/tenofovir disoproxil fumarate	antiretroviral	NRTI combo	No samples or vouchers
DOVATO	dolutegravir/lamivudine	antiretroviral	INSTI/NRTI combo	Samples and vouchers, but practitioner can access only one or the other, not both

NOTE: Clinical trial data indicate that Dovato (dolutegravir/lamivudine) is an option for Test and Treat use for newly diagnosed persons with HIV. Department of Health and Human Services guidelines only recommend Dovato if HIV RNA is <500,000 copies/mL, patient does not have coinfection with hepatitis B virus, and resistance testing results show no resistance to lamivudine. Dovato is available through samples or via the manufacturer's patient assistance program.

The Bottom Line…

"Drugs don't work
if people don't take them."

- C. Everett Koop, Former US Surgeon General

Baseline labs

- HIV antibody testing (if prior documentation is not available or if HIV RNA is below the assay's limit of detection) **(AI)**;
- CD4 T-cell count (CD4 count) **(AI)**;
- Plasma HIV RNA (viral load) **(AI)**;
- Complete blood count, chemistry profile, transaminase levels, blood urea nitrogen (BUN), and creatinine, urinalysis, and serology for hepatitis A, B, and C viruses **(AIII)**;
- Fasting blood glucose and serum lipids **(AIII)**; and
- Genotypic resistance testing at entry into care, regardless of whether ART will be initiated immediately **(AII)**. For patients who have HIV RNA levels <500 to 1,000 copies/mL, viral amplification for resistance testing may not always be successful **(BII)**.
- Tropism and HLA- B5701

Baseline

- Pap smear
- Pregnancy test lactating female
- RPR and std testing
- QuanitiFeron gold

TX plan

- *Immunizations* in HIV/AIDS avoid live vaccines
- Pneumococcal, Tdap, Hep A& B if nonimmune, meningococcal, HPV, covid, & influenza
- Recommended the recombinant herpes zoster vaccine (RZV) for all individuals with HIV who are 18 years and older rather than 50 years and older.

CD4 count guides your *prophylaxis for OI:*

CD4 < 200 PCP Bactrim DS, dapsone, mepron

CD4 <100 TOXO “

CD4 < 50 MAC azithromycin 1200mg once weekly

Discussion on safe sex, nutrition, transmission, adherence, review herbals /otc meds looking for DDI

General Immunization Principles for People with HIV

Vaccine efficacy is generally better when a person has a CD4 count > 200 cells/mm^3

May experience a blip in HIV viral load but vaccinations should not be withheld

Live vaccines should not be used in people with **low CD4 counts** due to risk for disseminated infection

Vaccines contraindicated in people with HIV

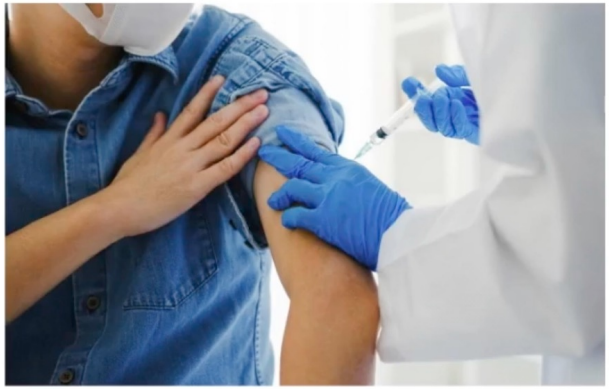
- **Live, attenuated influenza** (all persons with HIV)
- **Measles, mumps, rubella** (when CD4 count <200 mm^3 or <15%)
- **Varicella** (when CD4 count <200 mm^3 or <15%)

Centers for Disease Control and Prevention. Adult Immunization Schedule by Medical Condition and Other Indication. Available at https://www.cdc.gov/vaccines/schedules/hcp/imz/adult-conditions.html#table-conditions. Accessed on 10/25/2022. National Institutes of Health. Vaccines and People with HIV. Available at https://www.hiv.gov/hiv-basics/staying-in-hiv-care/other-related-health-issues/immunizations-recommended-for-people-living-with-hiv. Accessed on 10/25/2022.

Updates to CDC Pneumococcal Vaccine Recommendations for People with HIV

No history of pneumococcal vaccine or unknown history

- PCV 15 → 8 weeks → PPSV 23
- -OR-
- PCV 20 → Vaccination complete after PCV20



Received only PPSV23 previously

1 year → PCV 15 -OR- PCV 20

Received PCV13 previously

8 weeks → PPSV 23 (at < 65 years) → 5 years → PPSV 23 (at < 65 years) → 5 years → PPSV 23 (at ≥ 65 years)

PCV13 = 13-Valent Pneumococcal Conjugate Vaccine; PCV15 = 15-Valent Pneumococcal Conjugate Vaccine; PCV20 = 20-Valent Pneumococcal Conjugate Vaccine; PPSV23 = 23-Valent Pneumococcal Polysaccharide Vaccine

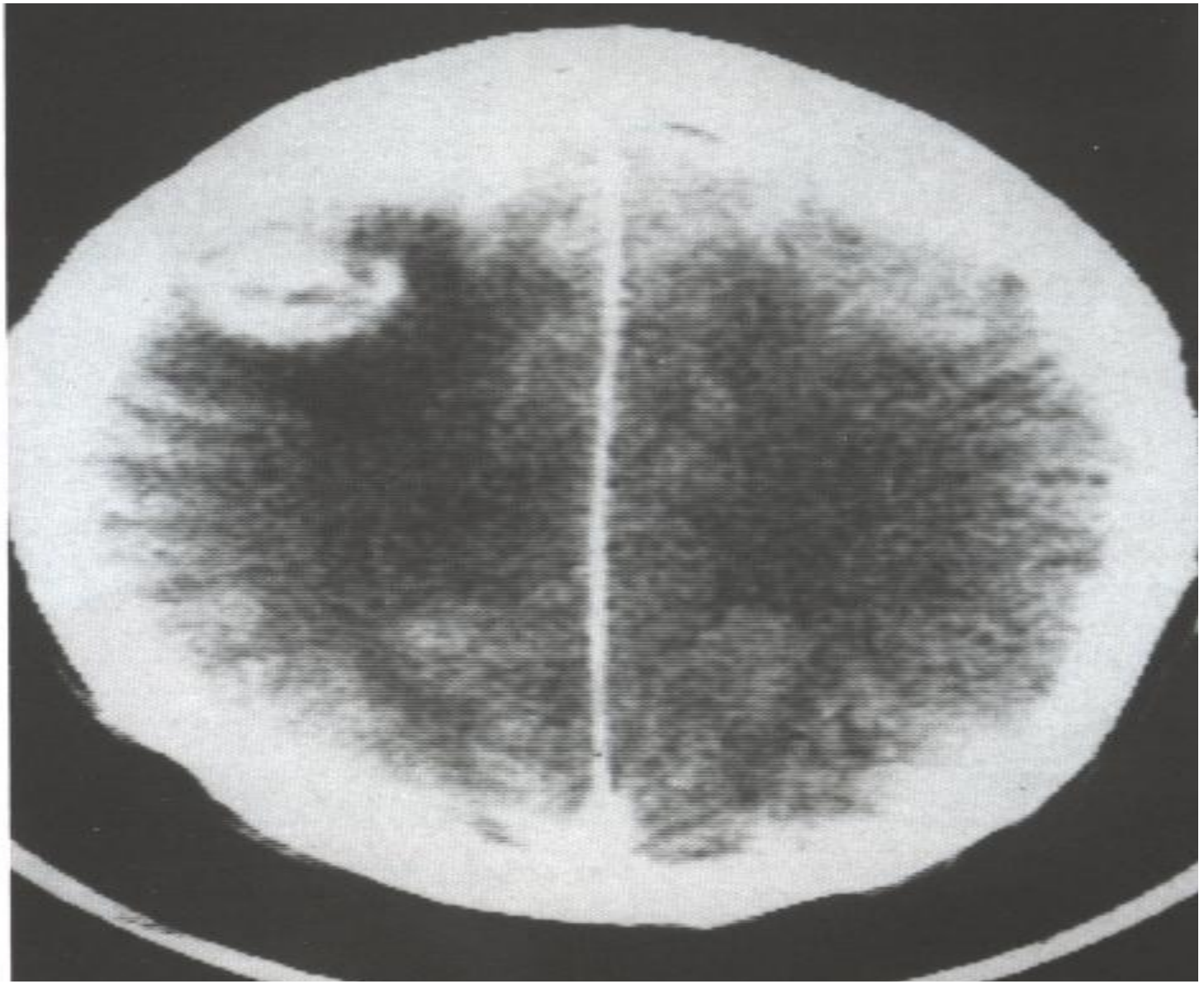
Centers for Disease Control and Prevention. Pneumococcal Vaccine Timing for Adults. Available at https://www.cdc.gov/vaccines/vpd/pneumo/downloads/pneumo-vaccine-timing.pdf. Accessed 10/21/2022.

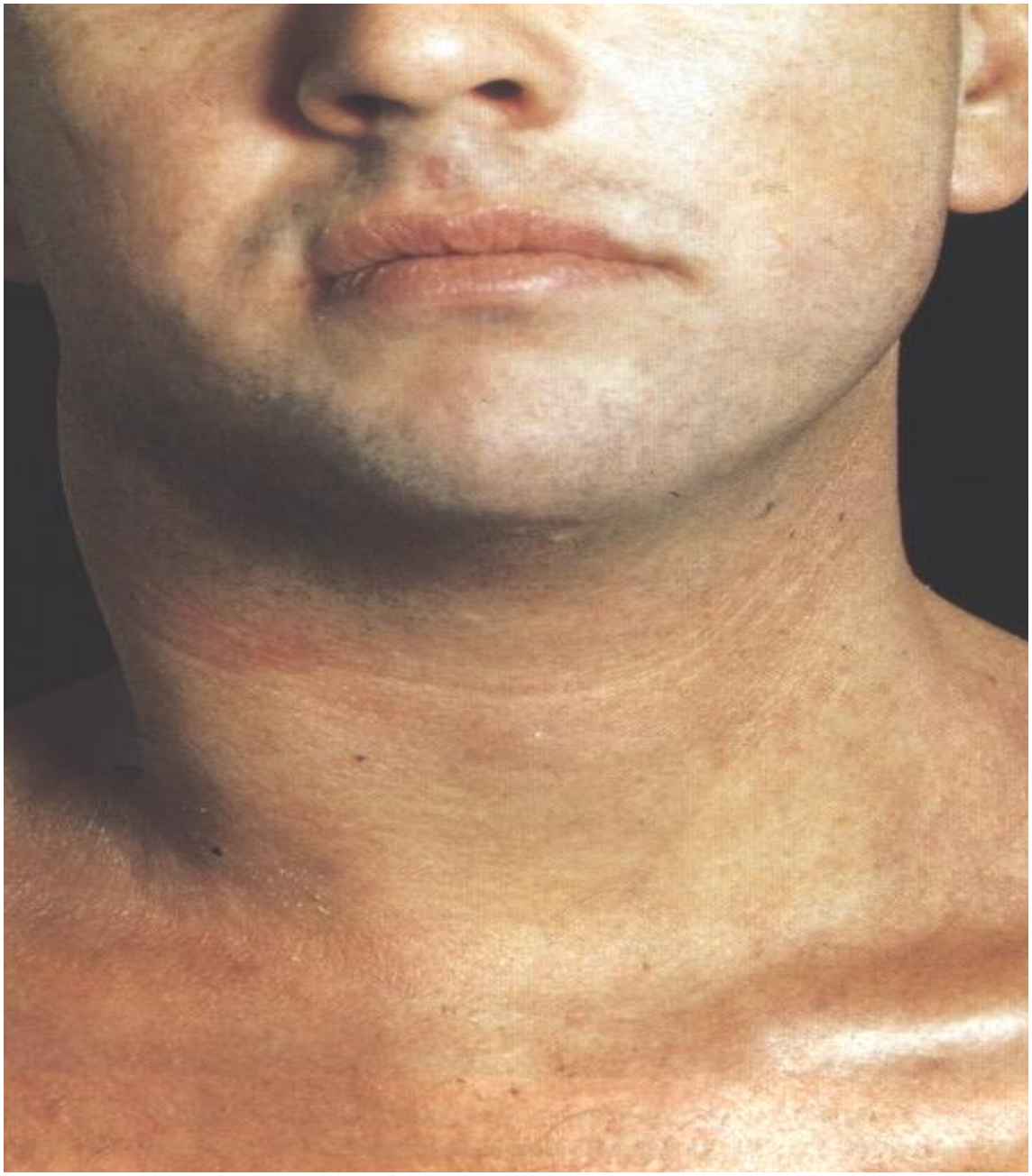
HIV stages

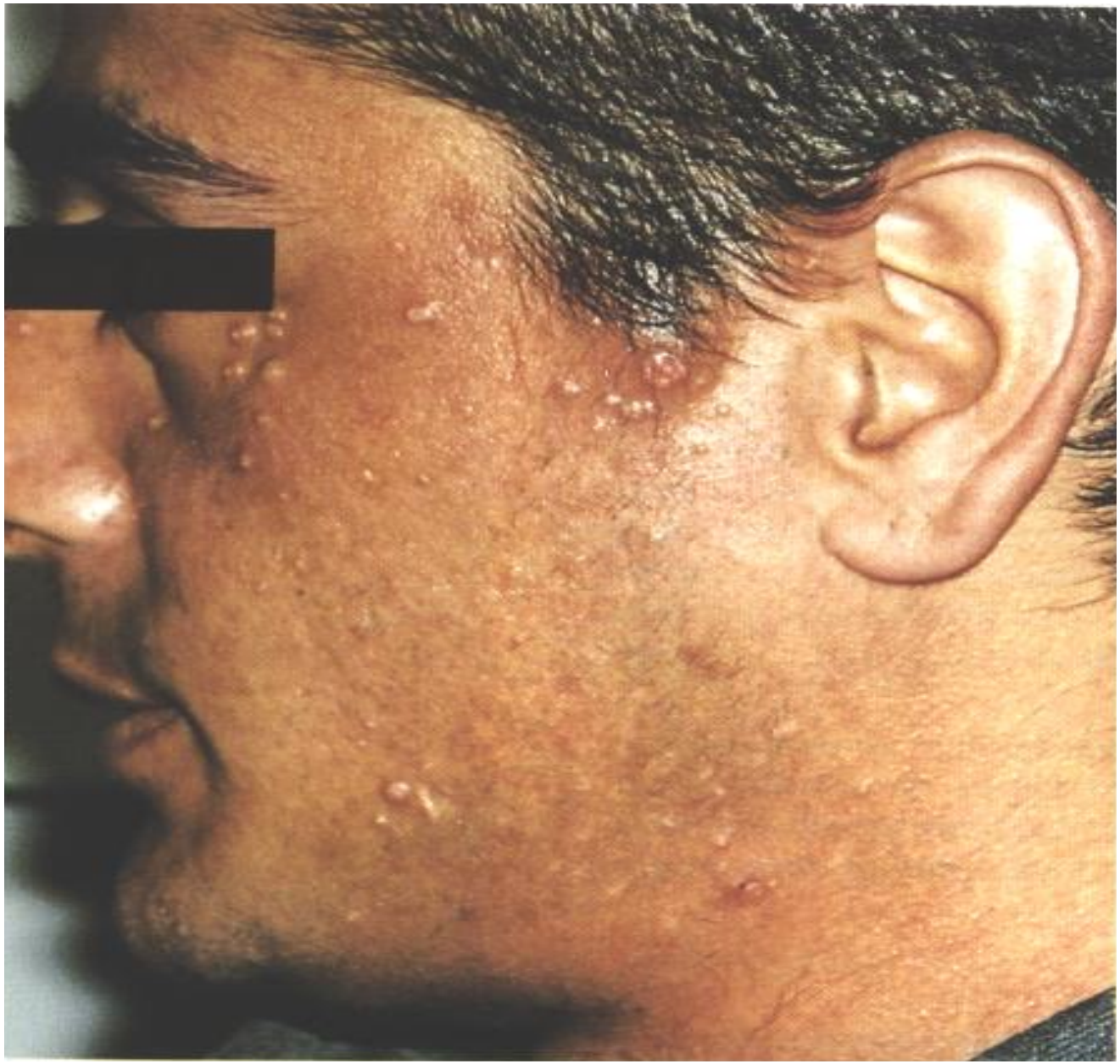
- Stage 1 Acute HIV untreated
- Stage 2 Chronic Hiv virologically suppressed
- Stage 3 Aids , CD4< 200 or hx of aids defining illness

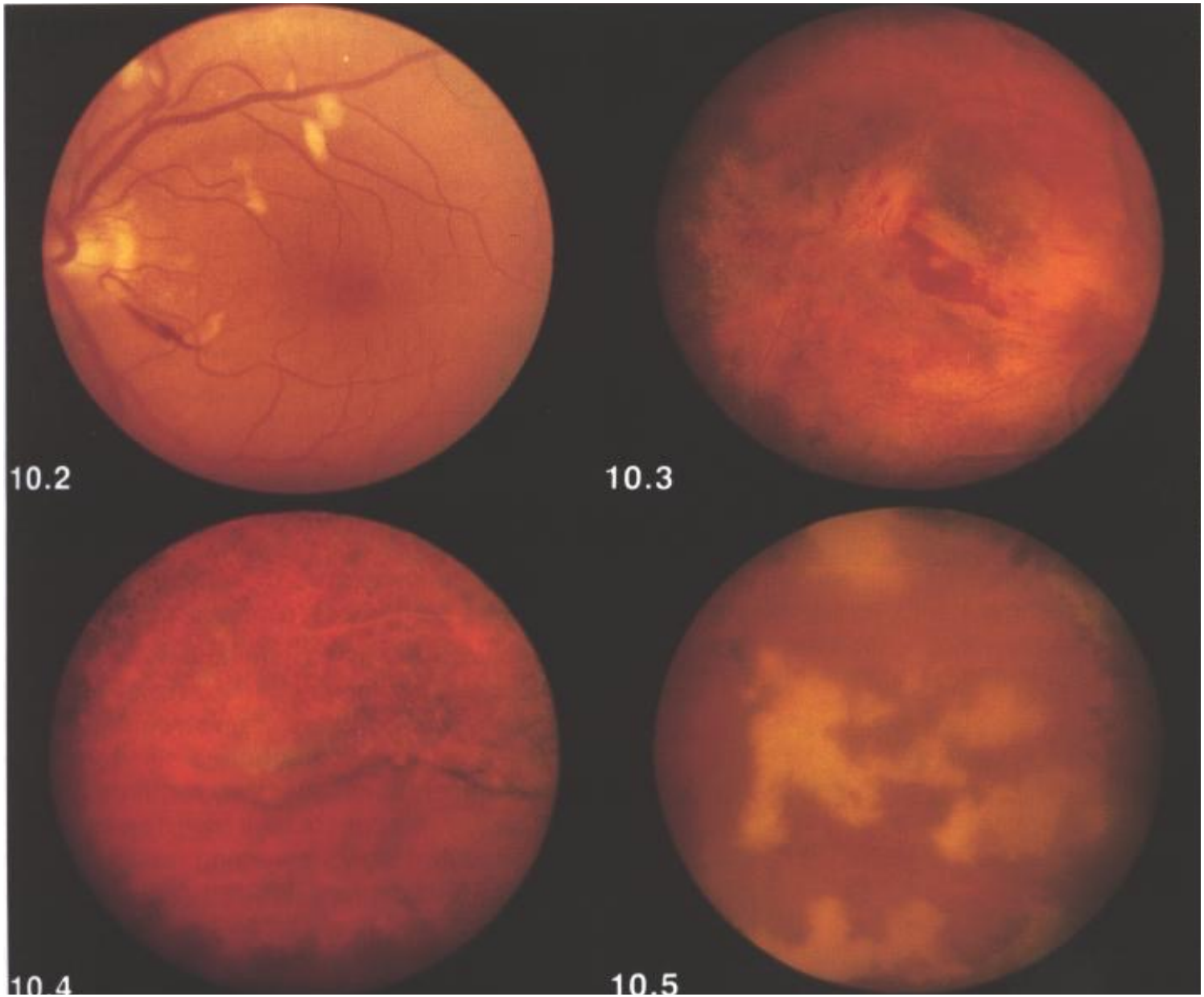
AIDS DEFINING

- CD4 <200
- *Candidiasis* of bronchi, trachea, esophagus, or lungs
- *Invasive cervical cancer*
- *Coccidioidomycosis*
- *Cryptococcosis*
- *Cryptosporidiosis*, chronic intestinal (greater than 1 month's duration)
- *Cytomegalovirus* disease (particularly CMV retinitis)
- *Encephalopathy*, HIV-related
- *Herpes simplex*: chronic ulcer(s) (greater than 1 month's duration); or bronchitis,
- pneumonitis, or esophagitis
- *Histoplasmosis*
- *Isosporiasis*, chronic intestinal (greater than 1 month's duration)
- *Kaposi's sarcoma*
- *Lymphoma*, multiple forms
- *Mycobacterium avium complex*
- *Tuberculosis*
- *Pneumocystis carinii pneumonia*
- *Pneumonia*, recurrent
- *Progressive multifocal leukoencephalopathy*
- *Salmonella septicemia*, recurrent
- *Toxoplasmosis* of brain
- *Wasting syndrome* due to HIV





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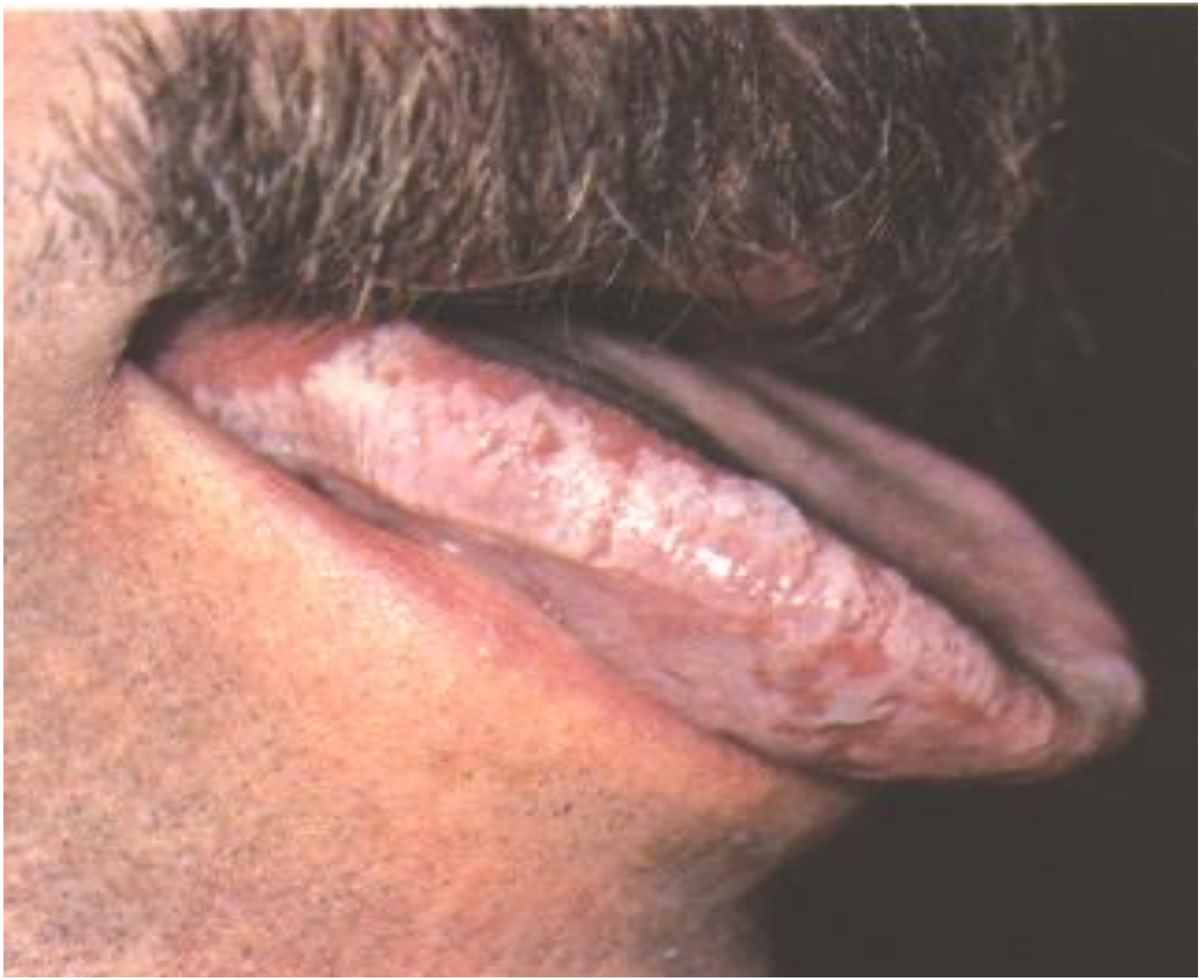

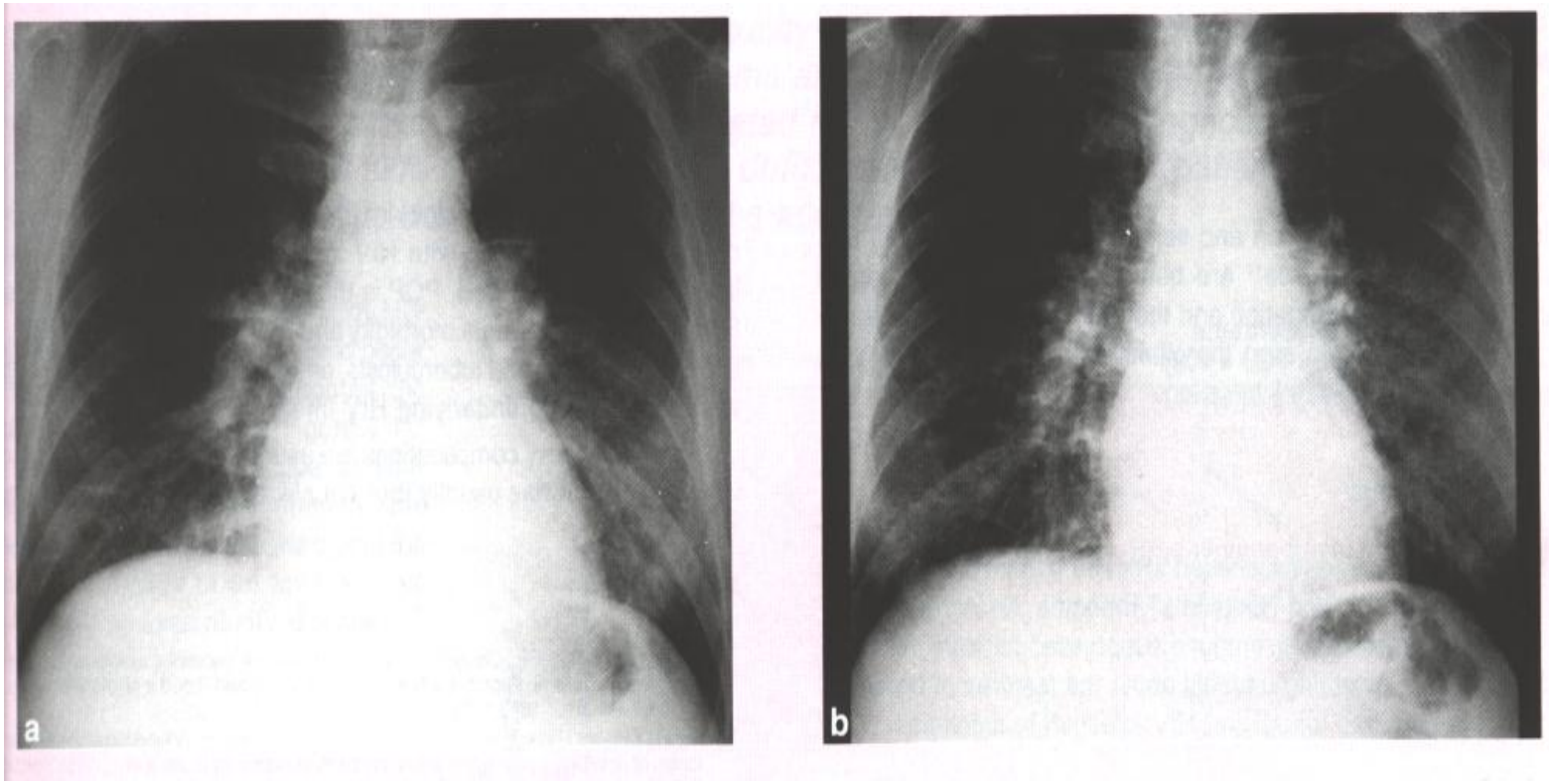
a
b

456.061 practitioner disclosure of confidential information: immunity from civil or criminal liability

1. Shall not be civilly or criminally liable for disclosure of confidential information to a sexual partner or a needle sharing partner under the following circumstances

A. if your pt test (+) & pt discloses their needle sharing partner or sexual partner

B. The doctor recommends the pt notify the sexual partner or needle sharing partner of their positive status & the pt refuses & the doctor informs the pt of his or her intent to inform the partner

C. in good faith advises the partner shall be done in accordance with protocols developed by the DOH

456.061

- (2) The practitioner shall not be civilly or criminally liable for failure to disclose information relating to a positive HIV test result to a sexual partner or needle sharing partner

Federal & State Laws

- As of 2009 all states now have confidential name-based HIV infection reporting
- Florida partner notification service is available where name of HIV (+) is not disclosed

Florida state statue 381.004 HIV test

- A general release without such prior written authorization is not sufficient to release HIV test results.
- “This information has been disclosed to you from records whose confidentiality is protected by state law. State law prohibits you from making any further disclosure of such information without the specific written consent of the person to whom such information pertains, or as otherwise permitted by state law.
- A general authorization for the release of medical or other information is NOT sufficient for this purpose.”

FLORIDA STATUE SECTION 381.004 2016 UPDATE

- Informed consent is no longer required in health care settings in Florida prior to testing for HIV.
- Patients must be notified either orally or in writing that they will be tested for HIV unless they decline (opt-out of) testing.
- Notification must include information that a positive HIV test result, along with identifying information will be reported to the county health department and of the availability and location of sites at which anonymous testing is performed.
- If the patient opts out, it must be noted in their medical record.
- A patient need not be notified that their blood is being tested for HIV in the event of a significant exposure for health care personnel.
- A patient need not be notified that their blood is being tested for HIV in the event of a significant exposure for non-health care personnel during a medical emergency.

Florida statute 384.25

- Diagnosis and/or treatment of STDs (including HIV and AIDS) – State law (Section 384.25, F.S.) requires that practitioners report evidence of sexually transmitted diseases, including HIV and AIDS, to the county health department.
- Not to exceed 2 weeks

Updates to DHHS guidelines 9/21/2022

- Selecting an antiretroviral (ARV) regimen for individuals who acquire HIV after having received long-acting cabotegravir (CAB-LA) for HIV pre-exposure prophylaxis (PrEP)
- Because of the long half-life of CAB-LA, the Panel on Antiretroviral Guidelines for Adults and Adolescents (the Panel) recommends performing genotypic resistance testing, including testing for integrase resistance, before starting antiretroviral therapy (ART).
- If resistance testing results are not available before ART initiation, the Panel recommends initiating a boosted darunavir regimen while awaiting results confirming no resistance to the integrase strand transfer inhibitor (INSTI) drug class.

New DHHS

- Panel **recommends against** the use of the long-acting ART regimen of intramuscular CAB and RPV in people who have detectable viral load due to suboptimal adherence to ART and who have ongoing challenges with retention in HIV care, except in a clinical trial **(AIII).**

Update DHHS 12/6/2023

- HIV-2 infection section guidelines updated
- HIV-2 intrinsically resistant to Nonnucleoside Reverse transcriptase inhibitors, the long- acting injectable regime of cabotegravir rilpivirine is not recommended for people with HIV 2
- Limited data showed that HIV2 is resistant to fostemsavir
- For patients with MDR ibalizumab and lenacapavir demonstrate in vitro potency vs HIV2
- New clinical trial on the use of dolutegravir has been added to support the use of INSTI

456.033 HIV

- Modes of transmission
- Screening procedures to diagnosis hiv
- Infection control

  behavioral-reducing condom less sex, dec # of partners, dec sex trade, dec IVDU frequency-treating OUD,

  biomedical- TasP, PrEP, PEP, Tx STD & T&T

  structural- universal precautions to safe blood supply, clean syringe programs, funding HIV test
- Clinical management – identify a regime for a patient newly dx
- Prevention
- Florida Law

DHHS update 2/27/2024 Reprieve trial

For people with HIV who have low-to-intermediate (<20%) 10-year ASCVD risk estimates :

- Age 40–75 years
  - When 10-year ASCVD risk estimates are 5 to <20%, the Panel recommends initiating at least moderate intensity statin therapy **(AI)**.
    - Recommended options for moderate intensity statin therapy[1] include:
      - Pitavastatin 4mg once daily **(AI)**
      - Atorvastatin 20mg once daily **(AII)**
      - Rosuvastatin 10mg once daily **(AII)**
  - When 10-year ASCVD risk estimates are <5%, the Panel favors initiating at least moderate intensity statin therapy **(CI)**. The absolute benefit from statin therapy is modest in this population, therefore the decision to initiate a statin should take into account the presence or absence of HIV-related factors that can increase ASCVD risk.
    - Same options for moderate intensity statin therapy as recommended for 10-year ASCVD risk estimates of 5 to <20% (see above)
- Age <40 years
  - Data are insufficient to recommend for or against statin therapy as primary prevention of ASCVD in people with HIV. In the general population, lifestyle modifications are recommended for people age <40 years, with statin therapy considered only in select populations (see AHA/ACC/Multisociety Guidelines).

Success=Adherence

- Adherence is a key determinant of clinical outcome in patients receiving ART
- Adherence is a complex process influenced by patient-related variables, provider-related variables, and regimen-related variables
- The number of prescribed daily doses is inversely related to adherence
- Patients tend to prefer regimens with fewer daily doses, low pill burden, no food restrictions
- The expansion in HIV treatment options means that some patients can now start therapy using a once-a-day regimen with a low pill burden

Summary

Screen	Screen for HIV and STI
Offer	Offer PrEP, PEP, tx STD
Treat or Refer	Treat or Refer OUD

Team-Based Model: Optimizing HIV & Primary Care Needs

DDIs = Drug-Drug Interactions

HRSA Ryan White HIV/AIDS Program. Optimizing HIV care for people aging with HIV: Putting together the best health care team. https://ryanwhite.hrsa.gov/sites/default/files/ryanwhite/grants/aging-guide-best-team.pdf. Accessed on 10/20/22.
HIV.gov. Types of Providers. https://www.hiv.gov/hiv-basics/starting-hiv-care/find-a-provider/types-of-providers. Accessed on 10/21/22.

Who should be routinely screened for HIV according to CDC guidelines?

- 1. All individuals regardless of risk
- 2. All individual if written consent & post test counseling is done
- 3. Only those who request
- 4. High risk individuals (mandatory) & voluntary screening for everyone else
- 5. MSM: AA males > 15yo

Which test is recommended for initial HIV testing?

- 1. Western Blot
- 2. 2nd Generation HIV antibody test
- 3. 4th Generation HIV antibody/antigen test
- 4. HIV 1 nucleic acid test

Which of the following individual is an appropriate candidate for PrEP?

- 1. HIV (-) Male who has unprotected sex with multiple male sex partners in past yr.
- 2. HIV (-) female in a monogamous relationship who has recently treated for HSV2 and uses cocaine
- 3. HIV (+) male who admits to sex with multiple partners
- 4. HIV (-) female who admits to unprotected sex with one male of uncertain HIV status.

The use of emtricitabine/tenofovir FTC/TAF (descovy) for HIV pre-exposure prophylaxis is not FDA approved for?

- 1, at risk MSM
- 2. person at risk for acquiring hiv infection from receptive vaginal sex
- 3. at risk heterosexual men

What information is needed prior to treating + Hiv rapid test (Test & Treat) ?

- 1. CD4 count
- 2. HIV1 RNA
- 3. HIV genotype
- 4. HLAB 5701 status
- 5. all the above
- 6. none of the above

What 3 drug regimen is recommended for initial tx of adults who are ART naïve?

1. Chemokine receptor 5 antagonist, integrase strand transfer inhibitor & protease inhibitor
2. Integrase strand transfer inhibitor, nucleoside & nucleotide reverse transcriptase inhibitor, & fusion inhibitor
3. Integrase strand transfer inhibitor & two nucleotide reverse transcriptase inhibitors
4. Fusion inhibitor & nonnucleoside reverse transcriptase inhibitor

What is the most accurate regarding the timing of ART initiations in person newly dx with acute hiv

1. ART should be initiated 4 weeks after dx
2. ART should begin on the same day of tx initiation for most opportunistic infections
3. ART initiation should be delayed in the setting of new dx of cancer
4. ART should be initiated at the time of diagnosis

Thank you all for your attendance

Websites to Access the Guidelines

- http://www.aidsetc.org
- https://clinicalinfo.hiv.gov/en/guidelines/hiv-clinical-guidelines-adult-and-adolescent-arv/whats-new-guidelines accessed 12/31/2022
- http://aidsinfo.nih.gov
- http://aidsinfo.nih.gov/guidelines/html/1/adult-and-adolescent-arv-guidelines/37/whats-new-in-the-guidelines-
- http://ahca.myflorida.com/medicaid/Prescribed_Drug/pharm_thera/paforms/Diagnosis_Verification.pdf
- WWW.CDC.GOV/HIV/RISK/PREP/INDEX.HTML
- http://www.truvada.com/truvada-patient-assistance
- https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6195215/

Harm reduction training & resources

- http://www.ihra.net/north-america-harm-reduction-programmes
- http://www.samhsa.gov/medication-assisted-treatment
- http://pcssmat.org/
- http://www.floridahealth.gov/diseases-and-conditions/aids/prevention/testing-counseling.html
- https://www.floridahealth.gov/diseases-and-conditions/aids/surveillance/index.htmlhttps://www.cdc.gov/hiv/statistics/overview/ataglance.html accessed 12.31.2022
- https://clinicalinfo.hiv.gov/en/guidelines/hiv-clinical-guidelines-adult-and-adolescent-arv/drug-resistance-testingaccessed 6/24/2023
- OpMan of Hiv Disease & Hepatitis Clinical Conference XXXII
- Florida Department of Health clinical slide deck Sharmarial Roberson DrPH, MPH Deputy Secretary for Health
- DHHS HIV
- “HIV Update: What the Primary Care Provider Needs to Know” by Paul E Sax MD accessed Pri-Med institute 6/24/2024