

HIV and Oral Health 101

Part 2: HIV Drug Therapies

PEP/PrEP



Mark Schweizer, DDS MPH

Director of Development and Special Projects

Nova Southeastern University College of Dental Medicine

Dental Director South Florida Southeast AIDS Education and Training Center

Disclosures

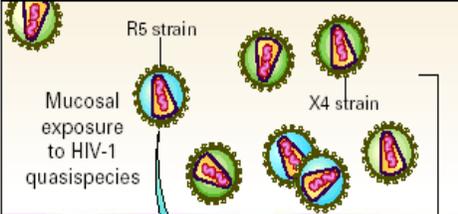
- The activity planners and speakers do not have any financial relationships with commercial entities to disclose.
- The speakers will not discuss any off-label use or investigational product during the program.
- This slide set has been peer-reviewed to ensure that there are no conflicts of interest represented in the presentation
- Special thanks to Dr. Elizabeth Sherman from the South Florida Southeast AETC for her contributions to this presentation

Objectives



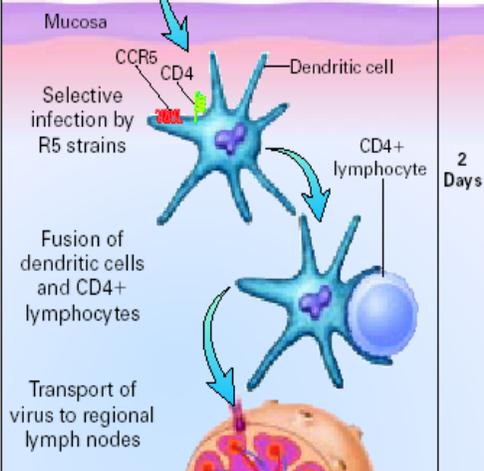
- Understand the importance of testing, diagnosis, treatment, and prevention
- Identify current drug therapies available for the treatment of HIV
- Understand PEP
- Understand PrEP

Day 0



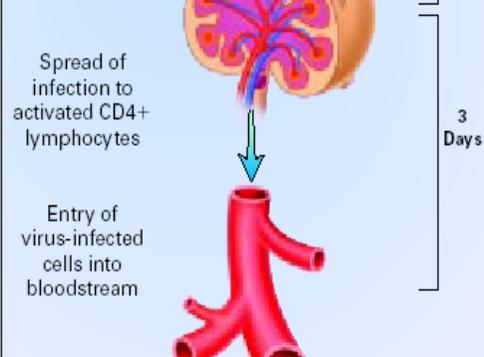
Exposure to HIV at mucosal surface (sex)

Day 0-2



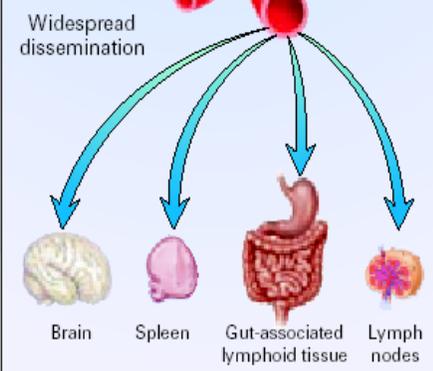
Virus collected by dendritic cells, carried to lymph node

Day 4-11



HIV replicates in CD4 cells, released into blood

Day 11 on



Virus spreads to other organs

We have no cure for HIV

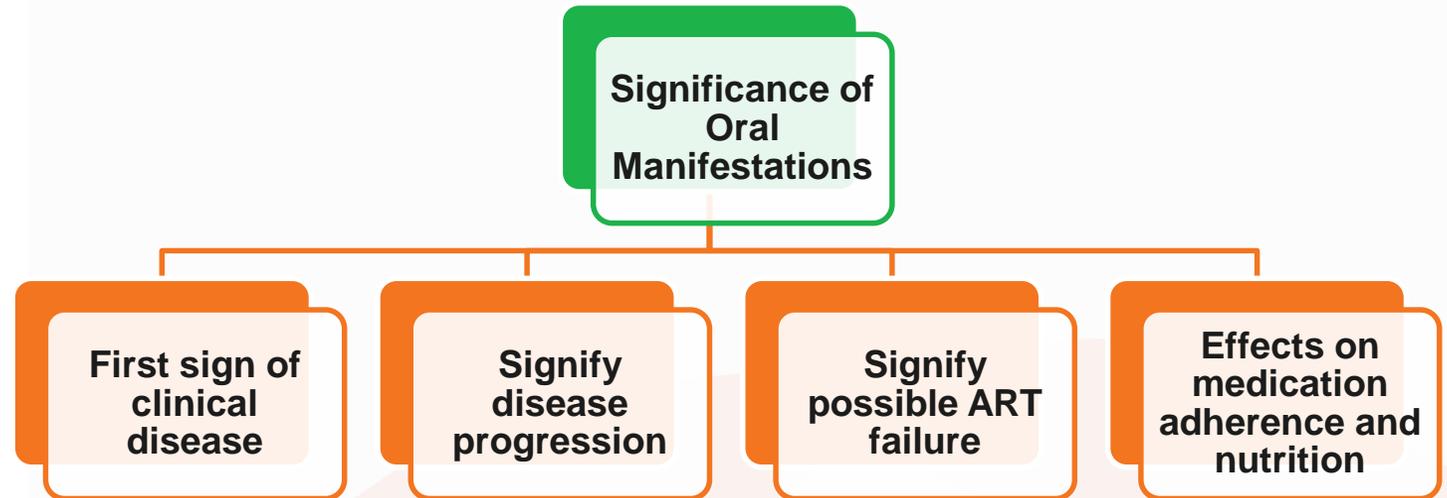
Education

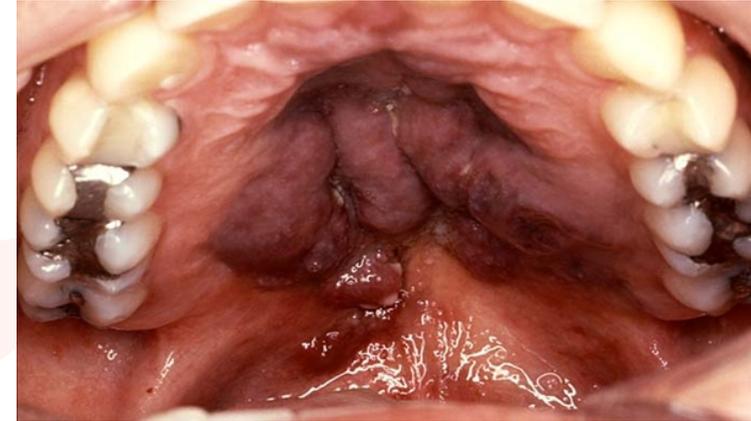
Testing

Prevention

Treatment

Oral Manifestations of HIV





Overview of current preferred ART for treatment of HIV



When to Start ART?

Panel's Recommendations for Initiating Antiretroviral Therapy in Treatment-Naive Patients

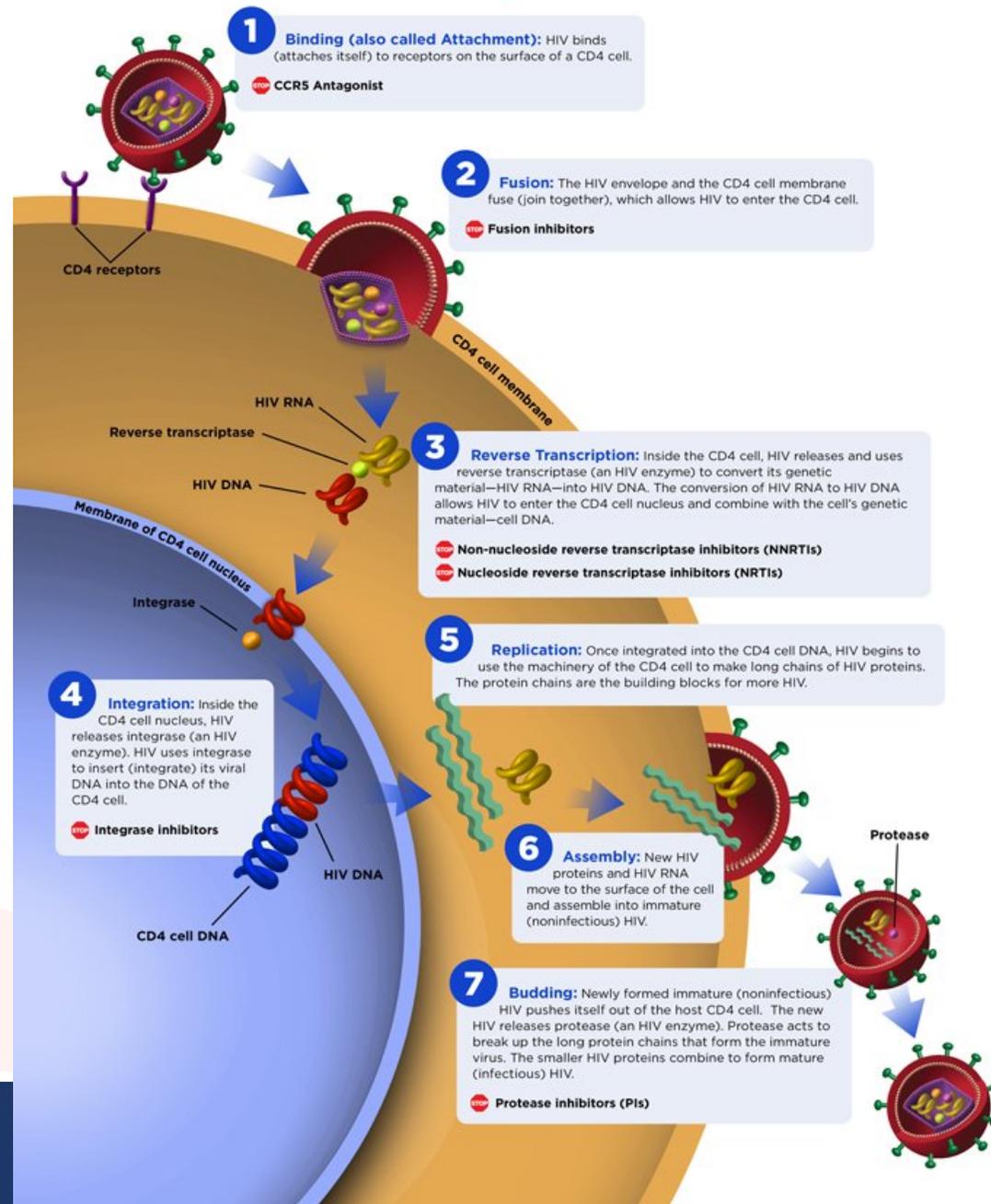
Panel's Recommendations

- Antiretroviral therapy (ART) is recommended for all HIV-infected individuals, regardless of CD4 T lymphocyte cell count, to reduce the morbidity and mortality associated with HIV infection **(AI)**.
- ART is also recommended for HIV-infected individuals to prevent HIV transmission **(AI)**.
- When initiating ART, it is important to educate patients regarding the benefits and considerations regarding ART, and to address strategies to optimize adherence. On a case-by-case basis, ART may be deferred because of clinical and/or psychosocial factors, but therapy should be initiated as soon as possible.

<http://aidsinfo.nih.gov/contentfiles/lvguidelines/AdultandAdolescentGL.pdf>

The HIV Life Cycle

HIV medicines in six drug classes stop HIV at different stages in the HIV life cycle.



[Nat Rev Microbiol.](#) 2013 Dec;11(12):877-83

Goals for Treatment of HIV

Suppress viral replication

Elimination is not possible with current therapies

Maximal suppression of viral replication (**reduce transmission**)

Goal of undetectable HIV RNA concentrations < 20-75 copies or
“undetectable”

Even if viral load is undetectable, the patient is contagious (less risk of
transmission with undetectable viral load)

Restore & preserve immune function

Prevent opportunistic infections

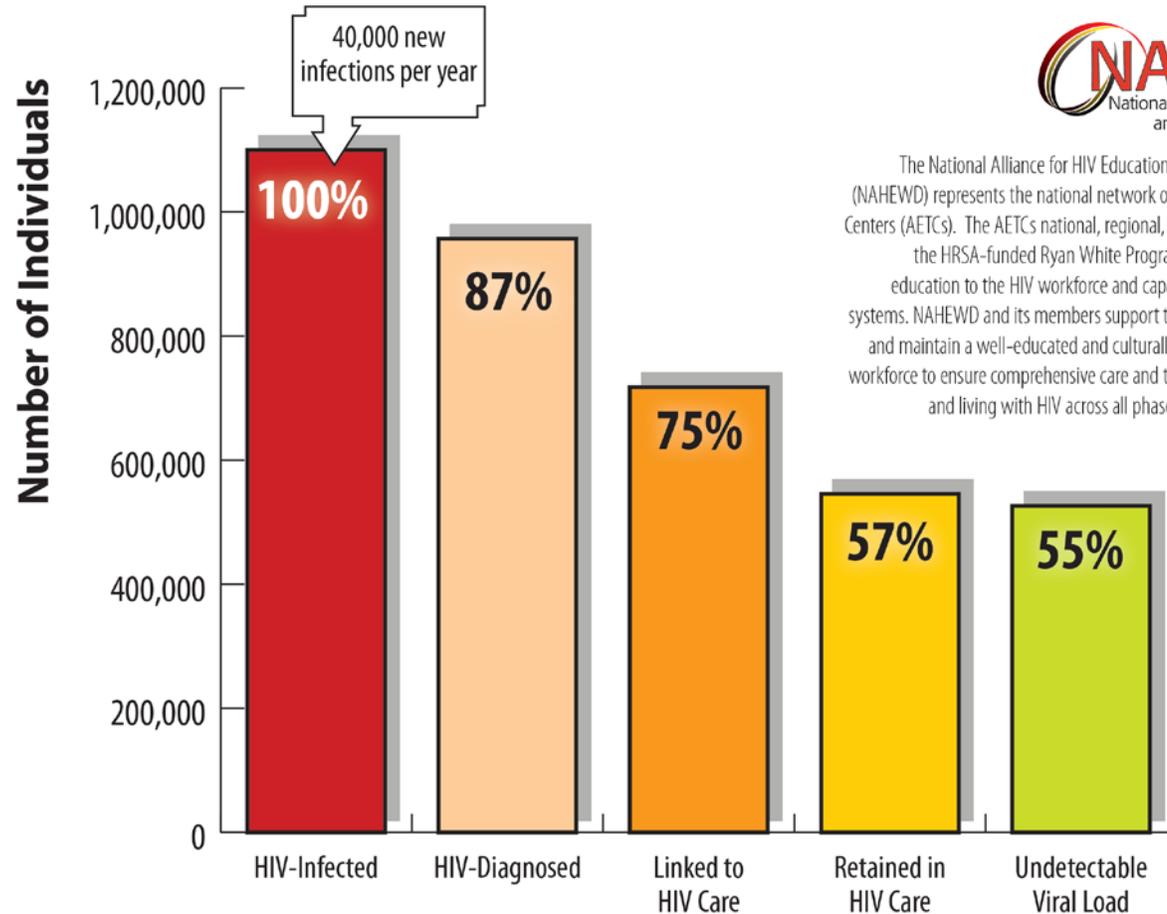
↑ immune function (CD4 count) correlates with ↓ viral replication

Minimize adverse effects and avoid development of drug resistance

Improve quality of life

↓ morbidity & mortality

The U.S. HIV Care Continuum¹



The National Alliance for HIV Education and Workforce Development (NAHEWD) represents the national network of AIDS Education and Training Centers (AETCs). The AETCs national, regional, and local centers are a part of the HRSA-funded Ryan White Program. The AETCs provide clinical education to the HIV workforce and capacity-building support to care systems. NAHEWD and its members support the work of the AETCs to build and maintain a well-educated and culturally-sensitive health professions workforce to ensure comprehensive care and treatment to people at-risk for and living with HIV across all phases of the HIV Care Continuum.

1. White House Office of National AIDS Policy. National HIV/AIDS Strategy for the United States: Updated to 2020. Indicator Supplement. Dec 2016. Accessed 1/5/2017: <https://www.aids.gov/federal-resources/national-hiv-aids-strategy/nhas-indicators-supplement-dec-2016.pdf>

Classes of ART

- **Nucleoside or Nucleotide Reverse Transcriptase Inhibitors (NRTIs)**
- **Integrase Strand Transfer Inhibitor (INSTIs)**
- *Protease Inhibitors (PIs)**
- Non-nucleoside Reverse Transcriptase Inhibitors (NNRTIs)
- Entry inhibitors: Fusion Inhibitors and CCR5 antagonist

*PIs may be a good choice for certain patient populations
Bold indicates part of a preferred therapy regimen

Brand Names for Preferred Regimens

Integrase Strand Transfer Inhibitor Based Regimen	
ISENTRESS[®]	TRUVADA[®] OR DESCOVY[®]
STRIBILD[®]	
GENVOYA[®]	
TIVCAY[®]	TRUVADA[®] OR DESCOVY[®]
TRIUMEQ[®] +	

+ Requires HLA-B* 5701 Screening

Preferred/Recommended ART (Antiretroviral therapy) Specific populations

Protease-Inhibitor Based Regimen			
Prevista	Norvir cobicistat (as booster)	Tenofovir	Emtricitabine

The rate of transmitted PI resistance is low due to a high genetic barrier and low rates of treatment emergent resistance

Clinicians may initiate a PI based regimen in individuals with uncertain adherence

Using a protease-inhibitor may be preferred in the following cases where treatment needs to begin before resistance testing results are available

- During acute HIV infection

- Pregnancy

- Certain Opportunistic infections

New medications and what does the future hold?

- **Biktarvy** is a single-tablet regimen for HIV. It contains an integrase inhibitor (bictegravir), a nucleotide reverse transcriptase inhibitor (tenofovir alafenamide), and a nucleoside reverse transcriptase inhibitor (emtricitabine). Biktarvy was approved by the U.S. Food and Drug Administration in February 2018. Biktarvy should only be used by those with no history of HIV treatment failure and no known HIV mutations known to cause resistance to the individual components of the drug.
 - **Juluca** has not yet been reviewed for inclusion in the DHHS list of recommended HIV treatments. It contains two different HIV drugs: an approved integrase inhibitor and an approved non-nucleoside reverse transcriptase inhibitor. Juluca was developed as two-drug “maintenance therapy” for people living with HIV. It can be used in place of a regimen involving three or more drugs, but only for those who have undetectable viral loads while on a stable HIV drug regimen for at least six months. Additionally, Juluca should only be used by those with no history of HIV treatment failure.
- Once a week pills
 - Injectable



https://www.poz.com/drug_charts/hiv-medications

Considerations in Delaying ART

- “ART may be deferred because of clinical and/or psychosocial factors, but therapy should be initiated as soon as possible” – DHHS Guidelines
- Consideration of comorbid conditions and their willingness/readiness to initiate therapy
 - Some conditions increase the urgency of initiation of ART (i.e. Pregnancy, AIDS)
- Psychosocial factors can include:
 - Patient’s unwilling/unable to commit to treatment
 - Unable/unwilling to follow-up or commit to adherence with treatment

<http://aidsinfo.nih.gov/contentfiles/lvguidelines/AdultandAdolescentGL.pdf> .

Adverse Effects of Commonly Prescribed ART



- **Xerostomia**
- **Bone mineral density reduction**
- **Insomnia**
- **Rash**
- **Nausea**
- **Diarrhea**

Resources for checking interactions

<http://www.hiv-druginteractions.org/>

HIV iChart app available

DHHS Adult HIV Guidelines, Tables 17-20 [www.aidsinfo.nih.gov]

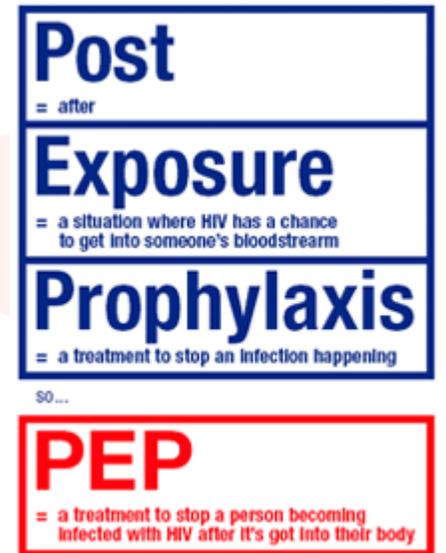
<https://aidsinfo.nih.gov/guidelines/html/1/adult-and-adolescent-arv-guidelines/367/overview>

Tybost is available as a single drug or in the fixed-dose combination drugs Evotaz, Prezcoibix and Stribild



Post Exposure Prophylaxis (PEP)

Post-exposure prophylaxis is a course of antiretroviral drugs which reduces the risk of seroconversion after events with high risk of exposure to HIV (e.g., unprotected anal or vaginal sex, needle stick injuries, or sharing needles).



Post Exposure Prophylaxis (PEP)

PEP must be started within 72 hours after a recent possible exposure to HIV, but the sooner you start PEP, the better. Every hour counts. If you're prescribed PEP, you'll need to take it once or twice daily for 28 days. PEP is effective in preventing HIV when administered correctly, but not 100%.

If you're HIV-negative or don't know your HIV status, and in the last 72 hours you

- 1.think you may have been exposed to HIV during sex (for example, if the condom broke),
- 2.shared needles and works to prepare drugs (for example, cotton, cookers, water), or
- 3.were sexually assaulted, talk to your health care provider or an emergency room doctor about PEP right away.

Post Exposure Prophylaxis (PEP)

- Occupational transmission of HIV to health care workers is extremely rare, and the proper use of safety devices and barriers can help minimize the risk of exposure while caring for patients with HIV.
- A health care worker who has a possible exposure should see a doctor or visit an emergency room immediately. PEP must be started within 72 hours after a recent possible exposure to HIV. The sooner, the better; every hour counts.
- Clinicians caring for health care workers who've had a possible exposure can call the PEPLine (1-888-448-4911), which offers around-the-clock advice on managing occupational exposures to HIV, as well as hepatitis B and C. Exposed health care workers may also call the PEPLine, but they should seek local medical attention first.

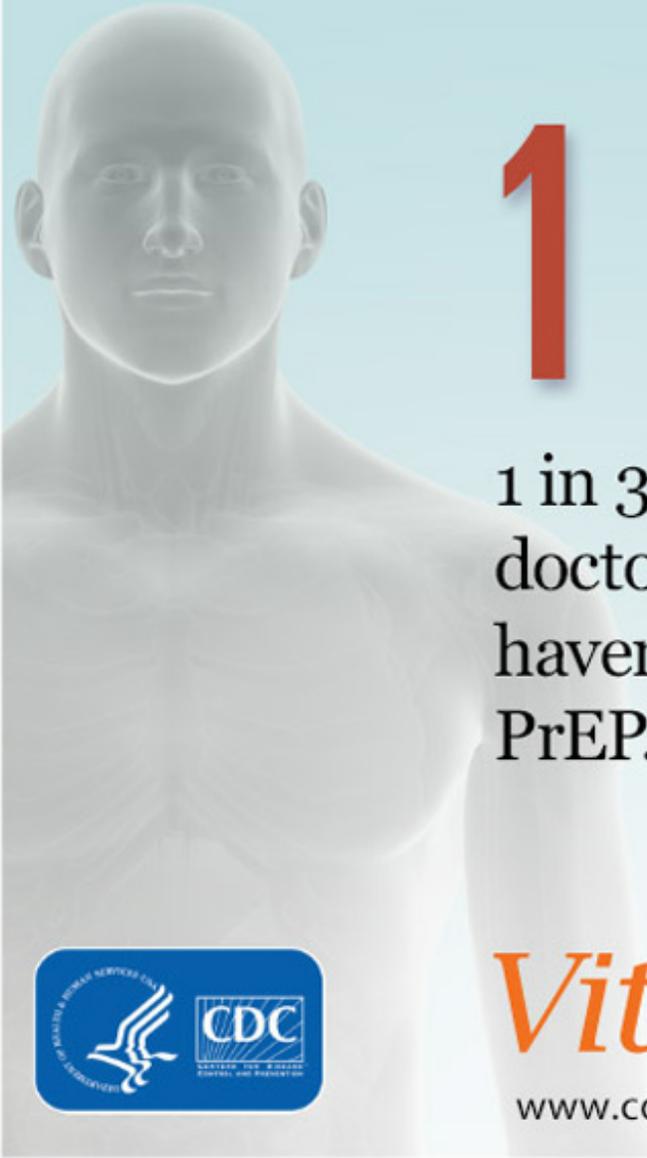
Post Exposure Prophylaxis (PEP)

- (1) PEP is recommended when occupational exposures to HIV occur
- (2) The HIV status of the exposure source patient should be determined, if possible, to guide need for HIV PEP
- (3) PEP medication regimens should be started as soon as possible after occupational exposure to HIV, and they should be continued for a 4-week duration
- (4) Recommendation—PEP medication regimens should contain 3 (or more) antiretroviral drugs
- (5) Expert consultation is recommended for any occupational exposures to HIV and at a minimum
- (6) close follow-up for exposed personnel and monitoring for drug toxicity; follow-up appointments should begin within 72 hours of an HIV exposure
- (7) New recommendation—if a newer fourth-generation combination HIV p24 antigen-HIV antibody test is utilized for follow-up HIV testing of exposed HCP, HIV testing may be concluded 4 months after exposure
- (8) If a newer testing platform is not available, follow-up HIV testing is typically concluded 6 months after an HIV exposure.

Post Exposure Prophylaxis (PEP)

PEP normally consists of three anti-HIV **drugs**, from two of the different classes. The most recent UK guidelines recommend **using** Truvada (a fixed-dose combination tablet combining emtricitabine and tenofovir) from the NRTI class, and raltegravir (Isentress) from the integrase inhibitor class.

Pre-Exposure Prophylaxis (PrEP) for HIV Prevention



1 in 3

1 in 3 primary care doctors and nurses haven't heard about PrEP.



VitalSigns™
www.cdc.gov/vitalsigns/HIVPrEP

Pre-Exposure Prophylaxis (PrEP) for HIV Prevention

- Use of antiretroviral meds by *uninfected* patients to **prevent HIV infection**
- Used before and during periods of risk
- Tenofovir disoproxil fumarate (DF)/emtricitabine is the only ARV FDA approved for PrEP
 - Both are NRTIs

CDC, USPHS. Preexposure prophylaxis for the prevention of HIV infection in the United States – 2014: A clinical practice guideline. Available at: <http://www.cdc.gov/hiv/pdf/PrEPguidelines2014.pdf>



How do patients take PrEP?

- **Must be taken DAILY**
- PrEP reaches maximum protection from HIV for **receptive anal sex** at about **7 days** of daily use.
- For **all other activities**, including insertive anal sex, vaginal sex, and injection drug use, PrEP reaches maximum protection at about **20 days** of daily use.

<http://www.cdc.gov/hiv/basics/prep.html>

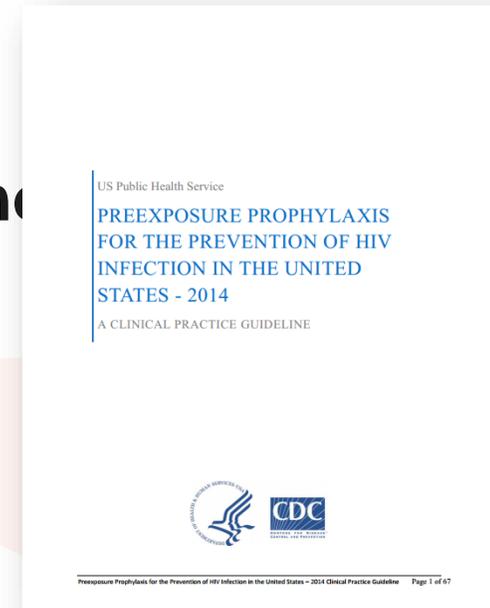
PrEP Works, but Adherence Is Critical

Study	Efficacy Overall, %	Blood Samples With TFV Detected, %	Efficacy By Blood Detection of TFV, %
iPrEx ^[1]	44	51	92
iPrEx OLE ^[2]	49	71	NR
Partners PrEP ^[3]	67 (TDF) 75 (TDF/FTC)	81	86 (TDF) 90 (TDF/FTC)
TDF2 ^[4]	62	80	85
Thai IDU ^[5]	49	67	74
Fem-PrEP ^[6]	No efficacy	< 30	NR
VOICE ^[7]	No efficacy	< 30	NR

Grant RM, et al. N Engl J Med. 2010;363:2587-2599. 2. Grant RM, et al. Lancet Infect Dis. 2014; 14:820-829. 3. Baeten JM, et al. N Engl J Med. 2012;367:399-410. 4. Thigpen MC, et al. N Engl J Med. 2012;367:423-434. 5. Choopanya K, et al. Lancet. 2013;381:2083-2090. 6. Van Damme L, et al. N Engl J Med. 2012;367:411-422. 7. Marrazzo J, et al. CROI 2013. Abstract 26LB.

Indications for PrEP – CDC Guidelines

- **Adults at substantial risk of HIV acquisition:**
- **Sexually-active MSM**
- **Heterosexually active men & women**
 - **HIV-discordant couples**
 - **Multiple partners OR partners whose HIV status is unknown**
 - **AND Do not always use a condom for sex with**
 - **people who inject drugs**
 - **bisexual men**
- **Injection drug users**



CDC, USPHS. Preexposure prophylaxis for the prevention of HIV infection in the United States – 2014: A clinical practice guideline. Available at: <http://www.cdc.gov/hiv/pdf/PrEPguidelines2014.pdf>

PrEP Side Effects of Tenofovir DF/ Emtricitabine



Headache, nausea, flatulence

Use OTC meds

Side effects uncommon in PrEP trials

Often resolved in first month

Counsel patients about symptoms indicating need for urgent evaluation

Acute renal injury, acute HIV infection

CDC, USPHS. Preexposure prophylaxis for the prevention of HIV infection in the United States – 2014: A clinical practice guideline. Available at: <http://www.cdc.gov/hiv/pdf/PrEPguidelines2014.pdf>.

PrEP Clinical Monitoring

- **Every 3 months**
 - **Repeat HIV test (RX refill for no more than 90 days (until next HIV test))**
 - **Pregnancy test for child-bearing women**
 - **Assess side effects, adherence, risk behaviors**
- **Every 6 months**
 - **Monitor CrCl (Patients with CrCl < 60 ml/min should not be prescribed PrEP)**
 - **STI tests (syphilis, gonorrhea, chlamydia)**
- **Every 12 months**
 - **Evaluate need to continue PrEP**

CDC, USPHS. Preexposure prophylaxis for the prevention of HIV infection in the United States – 2014: A clinical practice guideline. Available at:

<http://www.cdc.gov/hiv/pdf/PrEPguidelines2014.pdf>.

Case Presentation

- 56 year old Haitian male
- Mode of Transmission/Heterosexual
- Education level <4th grade
- Date of Diagnosis 2012
- ART Therapy 2013
- CD4 185
- 3250 copies/ml
- Current Medication
 - Truvada
 - Prezcofix
 - Bactrim
 - Hydrochlorothiazide 12.5 mg
 - Patient was currently virally suppressed September 2016 with CD4 284

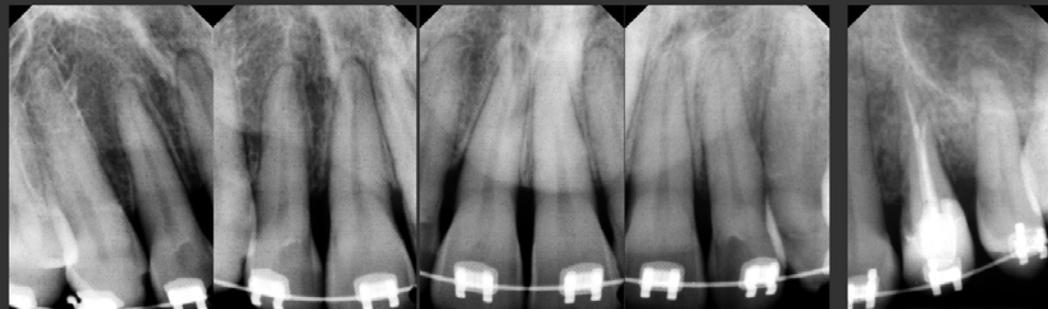


Case Presentation

- **51 year old male/Caucasian**
- **Mode of Transmission/MSM**
- **On ART Therapy since 2005**
- **CD4 905**
- **<20 copies/ml**
- **Current Medication**
 - **Genvoya 1x day since December 2017**
 - **Percocet as needed**
 - **Acyclovir 1x day**
 - **Atripla 1x day since 2005 Previous**



George Bouyet 2/16/2017 2:24:46 PM



George Bouyet 2/16/2017 2:24:46 PM George Bouyet 2/16/2017 2:24:46 PM



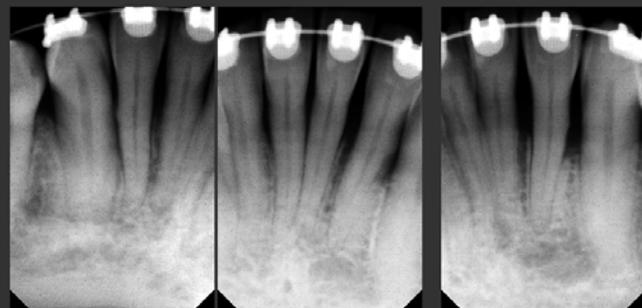
2/16/2017 2:27:20 PM



2/16/2017 2:27:21 PM



2/16/2017 2:27:25 PM



George Bouyet 2/16/2017 2:24:46 PM George Bouyet 2/16/2017 2:24:46 PM George Bouyet 2/16/2017 2:24:46 PM



2/16/2017 2:27:21 PM



2/16/2017 2:27:25 PM



2/16/2017 2:27:23 PM



2/16/2017 2:27:23 PM



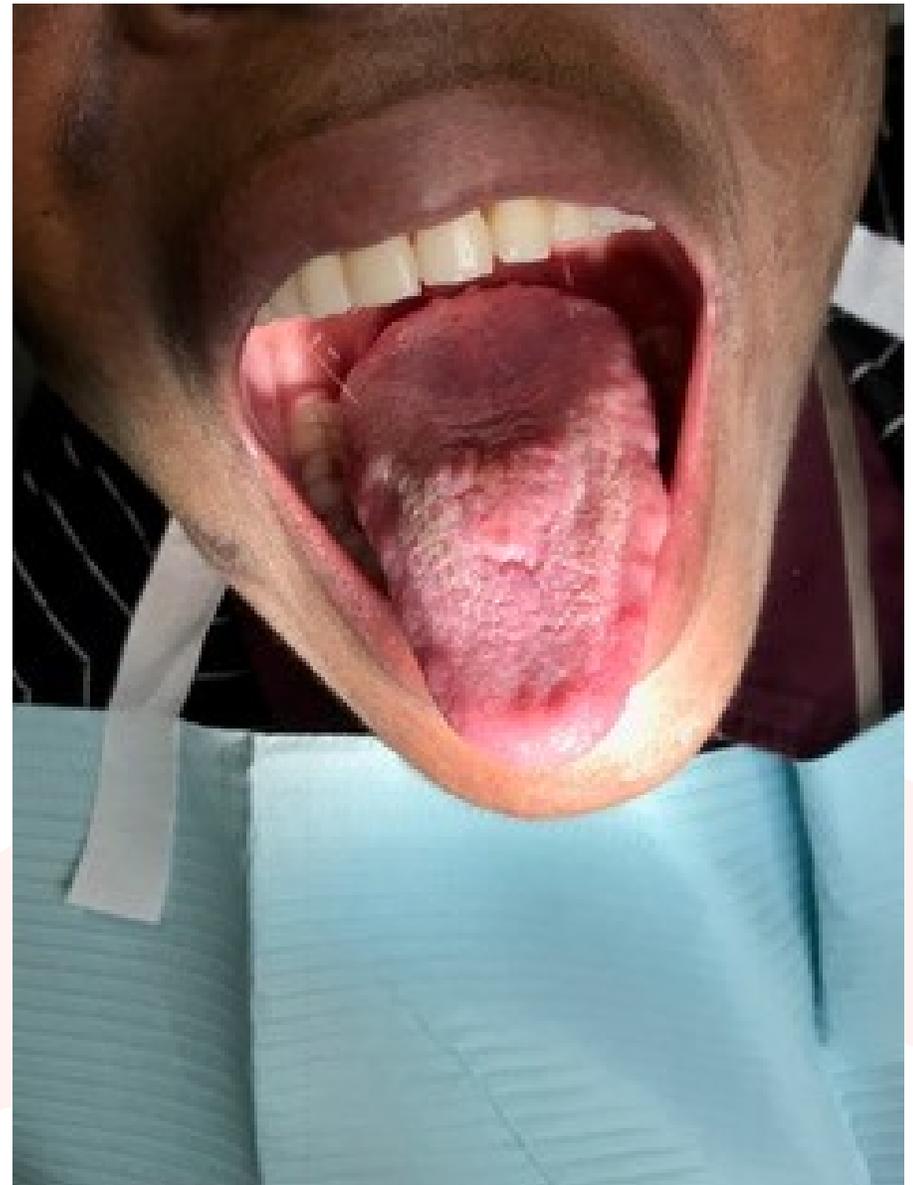
2/16/2017 2:27:22 PM



2/16/2017 2:27:21 PM

Case Presentation

- 44 year old Female/Haitian
- Mode of Transmission/Heterosexual
- Date of Diagnosis 1/1/2011
- On antiviral therapy in 2013 during pregnancy/child born HIV- then discontinued
- Date new antiretroviral therapy started 1/20/2018
- CD4 <20
- Viral load 79,500
- Current Medication
 - Singular, Proair, Genvoya, Bactrim DS 800, Azithromycin 600mg, Pantoprazole Sodium 40mg (GERD), Amoxicillin 875, Fluticasone propionate (allergies), hydroxyzine Hcl 25mg (anxiety), Permethrin 5% (scabies,lice)







Thank you

- ▶ We are available for clinical consultations and trainings

