Can we end the epidemic?
An update on HIV screening, prevention, and treatment

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Continuing Medical Education Disclosure

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- **Disclosure:** No relevant financial relationships. Presentation does not include discussion of off-label products.

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Objectives

1. Understand the status of the HIV epidemic in the United States.

2. Summarize new research findings and practice guidelines that inform HIV treatment and prevention.

3. Identify barriers to effective HIV screening, prevention, and treatment, and describe ways to overcome these barriers.
The current state of the HIV epidemic
In the US, HIV incidence is stable, and prevalence is rising.

HIV prevalence and incidence, 1980-2010

MSM, especially those of color, are disproportionately burdened.

Estimated new HIV infections in the United States, 2010, for the most-affected sub-populations

- White MSM: 11,200
- Black MSM: 10,600
- Hispanic MSM: 6,700
- Black Heterosexual Men: 5,300
- White Heterosexual Men: 2,700
- Hispanic Heterosexual Women: 1,300
- Black Male IDUs: 1,200
- Black Female IDUs: 1,100
- Other Heterosexual Women: 850

HIV incidence is declining globally but remains unacceptably high.

What can be done in clinical settings to prevent HIV?

1. Universal HIV Screening
   - HIV Positive
     - Antiretroviral therapy
     - Safer sex
     - Address STIs
   - Reduce HIV Incidence
   - HIV Negative
     - Safer sex
     - Address STIs
     - PEP or PrEP
2. Safer sex
   - Address STIs
3. Reduce HIV Incidence
What’s new in HIV screening?
Which is true about HIV screening?

A. The proportion of people who have HIV but are unaware of their diagnosis is declining.

B. The HIV antibody/antigen test has shortened the window period to 5 days.

C. The preferred HIV testing algorithm includes an HIV antibody test, followed by a confirmatory Western blot if the antibody test is positive.

D. Hispanic/Latino MSM are more likely than either black MSM or white MSM to have undiagnosed HIV.
Too many people with HIV are unaware of their diagnosis.

- 12.8% with HIV do not know they have it.
- Undiagnosed HIV is more common in certain groups.

Younger MSM are less likely to be aware of an HIV diagnosis than older MSM.

Non-white MSM are less likely to be aware of an HIV diagnosis.

Proportion aware of HIV infection

Race/ethnicity

- Black
- Hispanic/Latino
- White

Recommended HIV testing algorithm

HIV-1/2 antigen/antibody combination immunoassay

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

HIV-1/HIV-2 antibody differentiation immunoassay

(-) HIV-1 (-) or indeterminate

HIV-2 (-)

HIV-1 NAT

(+): indicates reactive test result
(-): indicates nonreactive test result
NAT: nucleic acid test

HIV-1 NAT (+): Acute HIV-1 infection
HIV-1 NAT (-): Negative for HIV-1

HIV-2 (+) HIV-2 (-)

HIV-2 antibodies detected HIV-1 antibodies detected

HIV-1 (+) HIV-1 (-)

Overcoming barriers to screening

- Patient and provider discomfort, fear
- Time, more pressing concerns
- Lack of follow-up, longitudinal care
- In general, patients accept opt-out screening.
- “They drew blood, so I assumed they sent an HIV test.”

Impact of ACA on screening:

- HIV testing must be a covered preventive service without cost-sharing
- Insurance cannot be denied because of a pre-existing condition (e.g., HIV diagnosis)

What’s new in HIV prevention?
Open-label studies of PrEP have shown that

A. Increases in sexual risk behavior negate the benefits of PrEP.
B. HIV resistance tends to develop in PrEP users.
C. MSM at highest risk of HIV infection preferentially use PrEP.
D. PrEP is less effective than it was in randomized, placebo-controlled trials.
What’s new with PreP?

Review:

- 3 risk groups: MSM, high-risk heterosexuals, injection drug users
- Oral tenofovir-emtricitabine is the only FDA-approved drug
- Common side effect = nausea, serious side effects are rare
- Efficacy is proportional to adherence
In the real world, PrEP can work at least as well as in RCTs.

**PROUD (CROI 2015)**
- **Population:** 545 high-risk MSM in the United Kingdom
- **Intervention:** Immediate or deferred oral tenofovir-emtricitabine
- **Results:** Reduced HIV acquisition by 86%

**U.S. Demo Project (IAS 2015)**
- **Population:** 557 MSM and transgender women
- **Intervention:** Oral tenofovir-emtricitabine
- **Results:** HIV incidence 0.43 per 100 person-years

**Kaiser (Clin Infect Dis 2015)**
- **Population:** 657 people in San Francisco, predominantly MSM
- **Intervention:** Oral tenofovir-emtricitabine
- **Results:** 0 HIV infections; ~9 expected
More lessons from open-label studies.

- Concerns about risk compensation have not been borne out.
- MSM at highest risk preferentially access and adhere to PrEP.
  - **PrEP Brasil (IAS 2015):** RR 1.65 for PrEP uptake with a history of multiple condomless anal sex partners
  - **ATN 110 (IAS 2015):** Participants reporting condomless sex had higher TDF blood levels
Worrisome projections from a PrEP continuum of care in Atlanta

Overcoming barriers to PrEP

Injections of long-acting PrEP (e.g., rilpivirine, cabotegravir)

PrEP-impregnated vaginal rings (e.g., dapivirine)

Rectal microbicides

Episodic PrEP
What’s new in HIV treatment?
Which statement regarding HIV treatment is false?

A. HIV treatment reduces the risk of sexual transmission of HIV.

B. Tenofovir-emtricitabine-efavirenz (Atripla) is not a preferred first-line regimen for HIV in the United States.

C. In the United States, the number of people who have been diagnosed with HIV but not engaged in care exceeds the number who have undiagnosed HIV.

D. Antiretroviral therapy at CD4 counts > 500 has only been shown to be beneficial in resource-limited settings.
A(nother) randomized controlled trial supports early ART.

- Reduce HIV transmission
- Reduced risk of AIDS, poor health

START

- Drug toxicities
- Risk of resistance

WAIT

Reduce HIV transmission
Reduced risk of AIDS, poor health
START study

- **Population:** 4,658 people with HIV and CD4 > 500 in 35 countries
- **Intervention:** Immediate ART versus ART only when CD4 < 350 or AIDS
- **Outcome:** Serious AIDS-related event, serious non-AIDS event, or death from any cause
- **Results:**
  - Stopped early by the DSMB
  - Immediate ART reduced the risk of the primary outcome: HR 0.43 (95% CI 0.30-0.62).

How will this impact HIV treatment in the United States?

- Guidelines have recommended ART for all since 2012.
- Most HIV patients engaged in care are on ART.
- START highlights the importance of:
  - Diagnosing undiagnosed infections
  - Linking and retaining diagnosed individuals in HIV care
Recommend ART regimens for treatment-naïve patients

1. Dolutegravir/abacavir/lamivudine
2. Dolutegravir + tenofovir/emtricitabine
3. Elvitegravir/cobicistat/tenofovir/emtricitabine
4. Raltegravir + tenofovir/emtricitabine
5. Darunavir + ritonavir + tenofovir/emtricitabine

★ = Single tablet regimen

Efavirenz/tenofovir/emtricitabine is now an alternate regimen, due to toxicity.
My perspective: What you can do to facilitate HIV treatment

- As much as possible, provide one-stop shopping: HIV testing, HIV care, primary care, case management under one roof.
- Involve social work early on.
- Start ART soon after diagnosis; there are *very* few medical reasons to delay.
- Address mental health and substance abuse.
- Don’t be afraid to switch therapy to improve tolerability or adherence.
- Educate patients about the excellent prognosis of treated HIV.
Can we end the epidemic?

We can.

It is as simple, and as complex, as:
Screening
Prevention
Treatment

One success: Mother-to-child transmission of HIV is now very rare in the US.
Take-home points

- Universal HIV screening is a crucial first step in prevention.
- Real-world studies of PrEP have shown that it can be highly effective at preventing HIV among MSM.
- Patient and provider awareness are important barriers to PrEP implementation.
- HIV treatment is indicated for all patients regardless of CD4 count.
- There have never been so many good options for HIV treatment.
Thank you

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Questions?

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- Send the questions to “All Panelists” and don’t forget to click submit!
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