Disclosures

• Advisory Council member (unpaid) for North Florida AIDs Education & Training Centers (AETC) (current as of 5/2019)

• Advisory Board Member (unpaid) for Hope and Help Center of Central Florida, Inc. (current as of 8/2019)

• Advisory Board Committee for Gilead’s Descovy® (7/2019)
Objectives

• Acquaint ourselves w/a brief overview of HIV stats
• Review & understand guidelines to Screen for HIV
• Re-remember the life cycle & pathogenesis of HIV
• Learn & incorporate HIV Prevention strategies (PrEP, TasP, PEP)
• Recognize Acute HIV infection
• Learn the basics of chronic HIV management

-> with the “bigger picture” goal for...
Ending the Epidemic: To reduce new infections by 75% in the next 5 yrs and by 90% in the next 10 yrs (2030).


2019 State of the Union address

https://www.hhs.gov/blog/2019/02/05/ending-the-hiv-epidemic-a-plan-for-america.html
HIV stats – why it’s still important

**GLOBAL** (2018)

- Approximately 37.9 million people worldwide live with HIV/AIDS.
- Approximately 1.7 million new HIV infections.
- Approximately 770,000 deaths from AIDS-related illnesses.

**USA:** 1st known cases in 1981...

June 5, First official reporting of what will be known as AIDS.

A report described Pneumocystis pneumonia in previously healthy gay men in LA. This is the first official reporting of what will be known as the AIDS epidemic. [Link](https://www.cdc.gov/mmwr/preview/mmwrhtml/june_5.htm)


[Link](https://stacks.cdc.gov/view/cdc/1265)
HIV stats – why it’s still important

USA since 1981...

~1.1 million Americans ≥ 13yo living w/HIV (2018)

~14% unaware of HIV status (1 in 7)


1984 – avg age 26yo
2010 – avg age 54yo

Rates of Adults and Adolescents Living with Diagnosed HIV Infection
Year-end 2017—United States and 6 Dependent Areas

Note: Data are based on address of residence as of December 31, 2017 (i.e., most recent known address).


HIV stats – why it’s still important

~40,000 NEW HIV cases/year

38,739 (2017) → 37,832 (2018)

*annual # new cases dropped 9% from 2010-2016

New HIV Diagnoses Among Adults and Adolescents by Top 10 States, 2018

<table>
<thead>
<tr>
<th>State</th>
<th>Number of Diagnoses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida</td>
<td>4,683</td>
</tr>
<tr>
<td>Texas</td>
<td>4,483</td>
</tr>
<tr>
<td>California</td>
<td>4,398</td>
</tr>
<tr>
<td>Georgia</td>
<td>2,552</td>
</tr>
<tr>
<td>New York</td>
<td>2,470</td>
</tr>
<tr>
<td>Illinois</td>
<td>1,352</td>
</tr>
<tr>
<td>North Carolina</td>
<td>1,200</td>
</tr>
<tr>
<td>New Jersey</td>
<td>1,044</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>1,002</td>
</tr>
<tr>
<td>Louisiana</td>
<td>986</td>
</tr>
</tbody>
</table>

https://www.cdc.gov/hiv/statistics/overview/index.html
New HIV Diagnoses in the US and Dependent Areas by Transmission Category, 2018

- Male-to-Male Sexual Contact: 66%
- Heterosexual Contact: 24%
- Injection Drug Use: 7%
- Male-to-Male Sexual Contact + Injection Drug Use: 3%

https://www.cdc.gov/hiv/basics/statistics.html
New HIV Diagnoses in the US and Dependent Areas by Race/Ethnicity, 2018

Hispanics/Latinos can be of any race.
New HIV Diagnoses in the US and Dependent Areas for the Most-Affected Subpopulations, 2018

<table>
<thead>
<tr>
<th>Subpopulation</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black/African American, Male-to-Male Sexual Contact</td>
<td>9,499</td>
</tr>
<tr>
<td>Hispanic/Latino, Male-to-Male Sexual Contact</td>
<td>7,543</td>
</tr>
<tr>
<td>White, Male-to-Male Sexual Contact</td>
<td>6,423</td>
</tr>
<tr>
<td>Black/African American Women, Heterosexual Contact</td>
<td>3,768</td>
</tr>
<tr>
<td>Black/African American Men, Heterosexual Contact</td>
<td>1,678</td>
</tr>
<tr>
<td>Hispanic Women/Latinas, Heterosexual Contact</td>
<td>1,109</td>
</tr>
<tr>
<td>White Women, Heterosexual Contact</td>
<td>999</td>
</tr>
</tbody>
</table>

Subpopulations representing 2% or less of all people who received an HIV diagnosis in 2018 are not represented in this chart.
New HIV Diagnoses in the US and Dependent Areas by Age, 2018

<table>
<thead>
<tr>
<th>Age Range</th>
<th>New Diagnoses</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 - 24</td>
<td>7,807</td>
</tr>
<tr>
<td>25 - 34</td>
<td>13,458</td>
</tr>
<tr>
<td>35 - 44</td>
<td>7,237</td>
</tr>
<tr>
<td>45 - 54</td>
<td>5,377</td>
</tr>
<tr>
<td>55 and older</td>
<td>3,862</td>
</tr>
</tbody>
</table>

Objectives

• Acquaint ourselves w/a brief overview of HIV stats
• **Review & understand guidelines to Screen for HIV**
• Re-remember the life cycle & pathogenesis of HIV
• Learn & incorporate HIV Prevention strategies (PrEP, TasP, PEP)
• Recognize *Acute* HIV infection
• Learn the basics of *chronic HIV* management
### Human Immunodeficiency Virus (HIV) Infection: Screening

**Release Date:** June 2019

#### Recommendation Summary

<table>
<thead>
<tr>
<th>Population</th>
<th>Recommendation</th>
<th>Grade (What's This?)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adolescents and adults aged 15 to 65 years</td>
<td>The USPSTF recommends that clinicians screen for HIV infection in adolescents and adults aged 15 to 65 years. Younger adolescents and older adults who are at increased risk of infection should also be screened.</td>
<td>A</td>
</tr>
<tr>
<td>Pregnant persons</td>
<td>The USPSTF recommends that clinicians screen for HIV infection in all pregnant persons, including those who present in labor or at delivery whose HIV status is unknown.</td>
<td>A</td>
</tr>
</tbody>
</table>
CDC HIV screening guidelines...

13-64 y.o. in ALL health care setting:

• notify, but “OPT-OUT”/decline/defer

• incorp HIV Screening in *general consent* for medical care
  (separate consent NOT recommended)

In the UK...

*The Lancet*, 9/2012 - Correspondence article suggesting *preoperative HIV testing* prior to elective surgery, in reference to British HIV Association (BHIVA) 2008 guidelines “that all patients admitted to hospital on a non-emergency basis should be offered an HIV screening test.”

CDC. Revised recommendations for HIV testing of adults, adolescents, and pregnant women in health-care settings. MMWR Recomm Rep 2006;55(No. RR-14).
HIV-1/2 antigen/antibody combination immunoassay

(+)  
\[\text{Negative for HIV-1 and HIV-2 antibodies and p24 Ag}\]

HIV-1/HIV-2 antibody differentiation immunoassay

<table>
<thead>
<tr>
<th>HIV-1 (+)</th>
<th>HIV-1 (-)</th>
<th>HIV-1 (+)</th>
<th>HIV-1 (-) or indeterminate</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV-2 (-)</td>
<td>HIV-2 (+)</td>
<td>HIV-2 (+)</td>
<td>HIV-2 (-)</td>
</tr>
<tr>
<td>HIV-1 antibodies detected</td>
<td>HIV-2 antibodies detected</td>
<td>HIV antibodies detected</td>
<td>NAT</td>
</tr>
</tbody>
</table>

NAT (+)  
Acute HIV-1 infection

NAT (-)  
Negative for HIV-1

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

• Acquaint ourselves w/a brief overview of HIV stats
• Review & understand guidelines to Screen for HIV
• **Re-remember the life cycle & pathogenesis of HIV**
• Learn & incorporate HIV Prevention strategies (PrEP, TasP, PEP)
• Recognize Acute HIV infection
• Learn the basics of chronic HIV management
The HIV Life Cycle

1. **Binding (also called Attachment):** HIV binds (attaches itself) to receptors on the surface of a CD4 cell.
   - CCRS Antagonist
   - Post-attachment inhibitors

2. **Fusion:** The HIV envelope and the CD4 cell membrane fuse (join together), which allows HIV to enter the CD4 cell.
   - Fusion inhibitors

3. **Reverse Transcription:** Inside the CD4 cell, HIV releases and uses reverse transcriptase (an HIV enzyme) to convert its genetic material—HIV RNA—into HIV DNA. The conversion of HIV RNA to HIV DNA allows HIV to enter the CD4 cell nucleus and combine with the cell's genetic material—cell DNA.
   - Non-nucleoside reverse transcriptase inhibitors (NNRTIs)
   - Nucleoside reverse transcriptase inhibitors (NRTIs)

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

https://aidsinfo.nih.gov/understanding-hiv-aids/fact-sheets/19/73/the-hiv-life-cycle
4 Integration: Inside the CD4 cell nucleus, HIV releases integrase (an HIV enzyme). HIV uses integrase to insert (integrate) its viral DNA into the DNA of the CD4 cell.

5 Replication: Once integrated into the CD4 cell DNA, HIV begins to use the machinery of the CD4 cell to make long chains of HIV proteins. The protein chains are the building blocks for more HIV.

6 Assembly: New HIV proteins and HIV RNA move to the surface of the cell and assemble into immature (noninfectious) HIV.

7 Budding: Newly formed immature (noninfectious) HIV pushes itself out of the host CD4 cell. The new HIV releases protease (an HIV enzyme). Protease breaks up the long protein chains in the immature virus, creating the mature (infectious) virus.

Integrase inhibitors

Protease inhibitors (PIs)
Opportunistic infections associated with advanced human immunodeficiency virus disease [adapted from http://www.microbiologybook.org/lecture/images/natural-history.gif]

Objectives

• Acquaint ourselves w/a brief overview of HIV stats
• Review & understand guidelines to *Screen for HIV*
• Re-remember the *life cycle & pathogenesis of HIV*

• **Learn & incorporate HIV *Prevention* strategies (PrEP, TasP, PEP)**
• Recognize *Acute HIV* infection
• Learn the basics of *chronic HIV* management
HIV prevention strategies

• Structural/Behavior Interventions
  • Circumcision, Condoms, IVDU safety, STI dx & tx

• HIV Treatment as Prevention (TasP)

• PrEP - Pre-Exposure Prophylaxis

• PEP/nPEP – Post-Exposure Prophylaxis/
  non-occupational Post-Exposure Prophylaxis
## HIV Risk

<table>
<thead>
<tr>
<th>Source</th>
<th>Percentage</th>
<th>Odds</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nonsexual Modes</strong>&lt;sup&gt;^&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>90%</td>
<td>9 in 10</td>
</tr>
<tr>
<td>Needle sharing (injection drug use)</td>
<td>0.67%</td>
<td>1 in 149</td>
</tr>
<tr>
<td>Needlestick (percutaneous: through the skin)</td>
<td>0.30%</td>
<td>1 in 333</td>
</tr>
<tr>
<td>Biting, spitting, throwing body fluids (including semen or saliva), sharing sex toys</td>
<td>negligible</td>
<td>negligible</td>
</tr>
<tr>
<td><strong>Oral Sex</strong>&lt;sup&gt;*&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Receptive partner (example, giving a blow job)</td>
<td>0%–0.04%</td>
<td>0–1 in 2,500</td>
</tr>
<tr>
<td>Insertive partner (example, getting a blow job)</td>
<td>~0%</td>
<td>about zero</td>
</tr>
<tr>
<td><strong>Vaginal Sex</strong>&lt;sup&gt;**&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk to female with HIV-positive male partner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-income countries</td>
<td>0.08%</td>
<td>1 in 1,250</td>
</tr>
<tr>
<td>Low-income countries</td>
<td>0.30%</td>
<td>1 in 333</td>
</tr>
<tr>
<td>Risk to male with HIV-positive female partner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-income countries</td>
<td>0.04%</td>
<td>1 in 2,500</td>
</tr>
<tr>
<td>Low-income countries</td>
<td>0.38%</td>
<td>1 in 263</td>
</tr>
<tr>
<td><strong>Anal Sex</strong>&lt;sup&gt;***&lt;/sup&gt;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insertive partner’s risk (circumcised)</td>
<td>0.11%</td>
<td>1 in 909</td>
</tr>
<tr>
<td>Insertive partner’s risk (uncircumcised)</td>
<td>0.62%</td>
<td>1 in 161</td>
</tr>
<tr>
<td>Receptive partner’s risk (without ejaculation)</td>
<td>0.65%</td>
<td>1 in 154</td>
</tr>
<tr>
<td>Receptive partner’s risk (with ejaculation)</td>
<td>1.43%</td>
<td>1 in 70</td>
</tr>
</tbody>
</table>

HIV Risk: Pregnancy & Breast-Feeding

- risk of transmission HIV(+) mother before or during birth (w/out interventions) is 15–25%
- risk of transmission by HIV(+) mother Breastfeeding increases risk by 5–20%
- Total Risk = 20–45%
- <2% risk w/ARV ppx during pregnancy (TasP)

US/Western Europe: mothers should NOT breast-feed
Resource-limited countries: contaminated water for formula more dangerous (i.e. cholera, dysentery, etc)

https://www.who.int/nutrition/publications/HIV_IF_Transmission.pdf
Male Circumcision (Heterosexual)

HIV enters thru **urethra, mucosa of foreskin and/or non-intact skin**

- **ANRS 1265 RCT South Africa** → **58% risk reduction (RR) of HIV acquisition**
- Similarly in Kenya, **RR 59%** (Bailey, Plummer & Moses, 2001) & Uganda, **RR 50%** (Gray et al., 2007)
- Meta-analysis 3 studies, **overall RR 56%**
- *Inconclusive w/MSM*

- ? secondary benefit women, ↓ **transmission rates**
  - prospective cohort study serodiscordant couples w/HIV(+) circumcised males
    - **40% LESS LIKELY** to infect HIV(-) female partner
Condoms, Counseling, IVDU

• **Condoms:** ↓ **HIV transmission by 80%** (Weller & Davis, 2002)

  Note: **DON’T** use nonoxynol-9 spermicide, may **INCREASE** risk of HIV transmission

  (www.cdc.gov/condomeffectiveness/)

• **HIV counseling:** ↑ **condom use** among HIV(+) individuals/heterosexual serodiscordant couples,

  **NOT** HIV(-) individuals/seroconcordant couples

  - ↓ unprotected anal sex by 17%-27% (Johnson et al., 2008)

  - ↓ incident STD infections (Busch, Kleinman & Nemo, 2009)

SSP – Syringe Service Programs (aka SEPs, NEP & NSPs)

? prevent Indiana’s Hep C/HIV outbreak 2011-2015
STI dx & tx

**STIs are a “biomarker for ongoing sexual risk behaviors”**

- STIs ↑ *genital HIV shedding*
  - est. 3-20% new transmissions
- ↑ risk of HIV acquisition & transmission thru:
  - Increase # of target cells (immune/inflammatory response);
    - est. 2-15% new HIV acquisition
  - Increase susceptibility (skin integrity)

~10% new HIV infection among MSM

Screen for STI q3-6 mo or as clinically indicated
HIV prevention strategies

- Structural/Behavior Interventions
  - Circumcision, Condoms, STI dx & tx, IVDU safety

- **HIV Treatment as Prevention (TasP)**

- PrEP - Pre-Exposure Prophylaxis

- PEP/nPEP – Post-Exposure Prophylaxis/
  
  *non-occupational Post-Exposure Prophylaxis*
HIV Treatment as Prevention (TasP)

**START Trial (2009)**
- RCT
- 4,685 pts
- f/u 3 yrs
- 2 groups: initiate vs defer <350 cells/mm³

**TEMPRANO ANRS 12136 Trial (2008)**
- RCT
- >2,000 pts
- f/u 30 mo
- 2 groups <800 cells/mm³: initiate vs defer

**decrease AIDS-related AND non-AIDS related events: CV, non-AIDS-defining CA & TB**

→ 2012 – USA, ART for ALL HIV infected individuals
→ 2013 – WHO update guidelines to reflect USA
HIV Treatment as Prevention (TasP)

HPTN 052 (2011) -> *NEJM* (9/2016), serodiscordant heterosexual couples

Results

In 2011, an interim review of the study data showed a 96% reduction of HIV transmission within the couples assigned to early ART, which was considered a major breakthrough finding. After the release of the results, all participants in the delayed ART arm were offered the opportunity to begin ART, and the study continued for four more years. By the end of the study, 1,171 couples remained in follow-up.

As reported at IAS 2015, the final results showed a 93% reduction of HIV transmission within couples when comparing the group in which the HIV-infected partner was assigned to early ART with the group in which the HIV-infected partners was assigned to the delayed ART group. Notably, there were only eight cases of HIV transmission within couples after the HIV-infected partner was given ART. Four of these eight cases were diagnosed soon after ART initiation.

Rodgers et al, *JAMA* (7/2016), serodiscordant MSM couples

**CONCLUSIONS AND RELEVANCE** Among serodifferent heterosexual and MSM couples in which the HIV-positive partner was using suppressive ART and who reported condomless sex, during median follow-up of 1.3 years per couple, there were no documented cases of within-couple HIV transmission (upper 95% confidence limit, 0.30/100 couple-years of follow-up). Additional longer-term follow-up is necessary to provide more precise estimates of risk.
• Undetectable = Untransmittable
• HPTN 052 trial, open label w/ no HIV transmission from HIV (+) to HIV (-) partner

→ October 2017: CDC recognizes U=U

Pregnant women on ARVs and undetectable???
------> Vaginal Deliveries!
(if C-section, schedule 2 wks before due date)
HIV prevention strategies

• Structural/Behavior Interventions
  • Circumcision, Condoms, STI dx & tx, IVDU safety

• HIV Treatment as Prevention (TasP)

• PrEP - Pre-Exposure Prophylaxis

• PEP/nPEP – Post-Exposure Prophylaxis/
  non-occupational Post-Exposure Prophylaxis
What is PrEP?

Pre-Exposure Prophylaxis

• a therapy to \textit{prevent} HIV acquisition
• part of \textit{comprehensive} HIV prevention plan
• for HIV(-) individuals @ \textit{HIGH} risk
• \textit{Combinations of:}

\textbf{Emtricitabine (FTC) 200mg + Tenofovir \textit{disoproxil fumarate (TDF) 300mg}* (fixed dose Truvada®)}

\textbf{Emtricitabine (FTC) 200mg + Tenofovir \textit{alafenamide (TAF) 25mg} (fixed dose Descovy®)}

\textit{* Note: “In certain countries, TDF is labelled as 245 mg rather than 300 mg to reflect the amount of the prodrug (tenofovir disoproxil) rather than the fumarate salt (tenofovir disoproxil fumarate)” } \texttt{https://www.eacsociety.org/files/2019_guidelines-10.0_final.pdf}
What is Today’s PrEP?

once daily PO regimen*

• class of NRTI/NtRTI (Nucleoside/nucleotide Reverse Transcriptase Inhibitor)
• acts on Reverse Transcriptase to prevent HIV-RNA from becoming DNA → stops HIV from being infectious.

• FDA approved:
  • Truvada® 2012: MSM, heterosexual adults, IDUs; 2018: adolescents age 15+ & ≥ 35kg
  • Descovy® 2019: cis-MSM, TGW

NOT FDA approved pediatrics; Pregnancy? Unclear (Truvada® cat B; Descovy® unassigned)
*Weekend PrEP???

aka “On-Demand/Event-Driven/Intermittent/2-1-1/T’s & S’s”

**IPERGAY** (Feb 2012-Oct 2014)

- “on-demand” Truvada® for MSM ONLY
  - 2 pills *before* encounter (2-24hrs)
  - then 1 pill at 24 hrs
  - then 1 pill at 48 hrs *after* encounter
- avg ~4 pills/wk
- 1 seroconversion* (*no detectable drug levels)

*NOT* endorsed by CDC, but accepted dosing in Europe

[https://www.eacsociety.org/guidelines/eacs-guidelines/eacs-guidelines.html](https://www.eacsociety.org/guidelines/eacs-guidelines/eacs-guidelines.html)
Tomorrow’s PrEP options...

**Oral**
- *Maraviroc* (Selzentry®, MVC)
- CCR5 inhibitor, prevents “cells entry”
- HPTN 069/ACTG A5305

**Injectable**
- *Rilpivirine* (Edurant®, RPV) - NNRTI
  - q8wks
  - LATTE-2 study
- *Cabotegravir* (CAB) - INSTI
  - q12wks
  - HPTN 083/LATTE-2

**Insertive**
- *Dapivirine* Ring - NNRTI, qMonthly
  - MTN-020 “Ring” study/ASPIRE study
  - No protection <21 y.o., adherence?
- *Tenofovir* (TDF) 1% gel - NRTI
  - coitally dependent
  - CAPRISA 004

**Implantable**
- *Tenofovir alafenimide* (TAF) - NRTI
- *EFdA* (MK-8591) – NRTTI (Nucleoside Reverse Transcriptase Translocation Inhibitor)
Does **Truvada®** work?

<table>
<thead>
<tr>
<th>Study</th>
<th>Population (High Risk)</th>
<th>Location</th>
<th>n</th>
<th>Efficacy (Compared With Placebo)</th>
<th>Resistance in Treatment Arms</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIKEX (2010)</td>
<td>MSM and transgender women</td>
<td>South America, South Africa, Thailand, and the United States</td>
<td>2,499</td>
<td>44%</td>
<td>None</td>
</tr>
<tr>
<td>Partners-PrEP (2012)</td>
<td>Serodiscordant heterosexual couples</td>
<td>Kenya and Uganda</td>
<td>4,747 couples</td>
<td>Overall: 67% (TDF), 75% (TDF-FTC) Women; 71% (TDF, 96% (TDF-FTC) Men: 63% (TDF), 84% (TDF-FTC)</td>
<td>None</td>
</tr>
<tr>
<td>Botswana-TDF2 (2012)</td>
<td>Heterosexual men and women</td>
<td>Botswana</td>
<td>1,219</td>
<td>62%</td>
<td>1 with K65R, 1 with M184V, unrecognized infection at enrollment</td>
</tr>
<tr>
<td>FEM-PrEP (2012)</td>
<td>Heterosexual women</td>
<td>South Africa, Kenya, and Tanzania</td>
<td>2,120</td>
<td>No efficacy</td>
<td>3 with M184V, 2 with unrecognized infection at enrollment</td>
</tr>
<tr>
<td>Bangkok-TDF (2013)</td>
<td>Injection drug users</td>
<td>Bangkok, Thailand</td>
<td>2,413</td>
<td>49%</td>
<td>None</td>
</tr>
<tr>
<td>VOICE (2015)</td>
<td>Heterosexual women</td>
<td>South Africa, Uganda, and Zimbabwe</td>
<td>5,029</td>
<td>No efficacy</td>
<td>1 with M184V</td>
</tr>
</tbody>
</table>

MSM, men who have sex with men; PrEP, preexposure prophylaxis; TDF-FTC, tenofovir-emtricitabine

**Resistance??**
Does **Truvada®** work?

### Table 1: Efficacy Trials of PrEP

<table>
<thead>
<tr>
<th>Study</th>
<th>Population (High Risk)</th>
<th>Location</th>
<th>n</th>
<th>Efficacy (Compared With Placebo)</th>
<th>Resistance in Treatment Arms</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPREX (2013)</td>
<td>MSM and transgender women</td>
<td>South America, South Africa, Thailand, and the United States</td>
<td>2,600</td>
<td>31% (chose PrEP vs those who did not)</td>
<td>54% (chose PrEP vs placebo)</td>
</tr>
<tr>
<td>Botswana-TDF2 (2012)</td>
<td>Heterosexual men and women</td>
<td>Botswana</td>
<td>12</td>
<td>Not applicable</td>
<td>None</td>
</tr>
<tr>
<td>Bangkok-TDF (2013)</td>
<td>Injection drug users</td>
<td>Bangkok, Thailand</td>
<td>2,468</td>
<td>86% (immediate PrEP vs deferred PrEP)</td>
<td>2 with M184V unrecognized infection at enrollment</td>
</tr>
</tbody>
</table>

**MSM**, men who have sex with men; **PrEP**, preexposure prophylaxis; **TDF-FTC**, tenofovir-emtricitabine.

### Table 2: PrEP Open-Label and Demonstration Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Population (High Risk)</th>
<th>Location</th>
<th>n</th>
<th>Efficacy</th>
<th>Resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>ipREX-OLE (2014)</td>
<td>MSM and transgender women</td>
<td>South America, South Africa, Thailand, and the United States</td>
<td>1,603; 76% (PrEP on)</td>
<td>54% (chose PrEP vs placebo)</td>
<td></td>
</tr>
<tr>
<td>IPERGAY (2014)</td>
<td>MSM</td>
<td>France and Canada</td>
<td>400</td>
<td>86% (PrEP vs placebo)</td>
<td>None</td>
</tr>
<tr>
<td>Kaiser Permanente San Francisco (2015)</td>
<td>MSM</td>
<td>San Francisco, California</td>
<td>657</td>
<td>No new infections in PrEP group</td>
<td>Not applicable</td>
</tr>
<tr>
<td>PROUD (2016)</td>
<td>MSM</td>
<td>The United Kingdom</td>
<td>544</td>
<td>86% (immediate PrEP vs deferred PrEP)</td>
<td>2 with M184V unrecognized infection at enrollment</td>
</tr>
</tbody>
</table>
# Does Truvada® Work?

<table>
<thead>
<tr>
<th>Study</th>
<th>Population (High Risk)</th>
<th>Location</th>
<th>n</th>
<th>Efficacy (Compared With Placebo)</th>
<th>Resistance in Treatment Arms</th>
</tr>
</thead>
<tbody>
<tr>
<td>iPrEx</td>
<td>MSM and transgender men</td>
<td>South America, South Africa, Thailand, and the United States</td>
<td>2,498</td>
<td>44%</td>
<td>None</td>
</tr>
<tr>
<td>Partners PrEP</td>
<td>All</td>
<td>All</td>
<td>1711</td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>TDF: 67%</td>
<td>672</td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>TDF: 63%</td>
<td>672</td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td>TDF2 (TDF/FTC)</td>
<td>All</td>
<td>All</td>
<td>63%</td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Men</td>
<td>TDF: 71%</td>
<td>672</td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>TDF: 66%</td>
<td>672</td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td>FEM-PrEP (TDF/FTC)</td>
<td>All</td>
<td>All</td>
<td>63%</td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td>VOICE (TDF/FTC)</td>
<td>All</td>
<td>All</td>
<td>63%</td>
<td>44%</td>
<td></td>
</tr>
<tr>
<td>BTS (TDF)</td>
<td>All</td>
<td>All</td>
<td>49%</td>
<td>44%</td>
<td></td>
</tr>
</tbody>
</table>

**Efficacy by Self-report Adherence Measures**

- >50% 50%
- >90% 73%

**Efficacy by Pill-count Adherence Measures**

- (18–70%)
- (41–88%)

**Efficacy by Blood Detection of Drug Measures**

- 92%
- (40–99%)

- 86%
- (67–94%)
- 90%
- (58–98%)
- 85%

Infectious Disease SPECIAL EDITION, Vol 21, Fall 2016, pg. 59-65
Does Descovy® work?

DISCOVER: A Randomized, Noninferiority Trial of F/TAF for PrEP

- MSM or TGW participants
  - Randomized: 1:1
  - Double-blinded
  - Active controlled

- F/TAF QD n=2694
  - 96 weeks
  - At entry and Q12W:
    - Adherence counseling
    - Prevention services
      - Risk reduction counseling
      - Condoms/lubricant

- Primary analysis:
  - HIV incidence/100 PY
  - when 100% complete W48 & 50% complete W96

Eligibility required high sexual risk of HIV
- 2+ episodes condomless anal sex in past 12W or rectal gonorrhea/chlamydia, syphilis in past 24W
- HIV & HBV negative, eGFR ≥60 mL/min
- Prior use of PrEP allowed

Study conducted in NA, EU in cities/sites with high HIV incidence
- 94 sites in 11 countries
- Participants: US, 60%; EU, 34%; Canada, 7%

Primary efficacy endpoint: HIV incidence
- Evaluated by rate ratio with noninferiority (NI) margin < 1.62
- Expected incidence of 1.44/100 PY based on pooled studies:
  - iPrEx, PROUD, IPERGAY

F/TAF dose: 200/25 mg; F/TDF dose: 200/300 mg; eGFR, estimated glomerular filtration rate.

Does Descovy® work?

THE PHASE 3 DISCOVER STUDY: DAILY F/TAF OR F/TDF FOR HIV PREEXPOSURE PROPHYLAXIS

Reported by Jules Levin
CROI 2019 Seattle, WA March 4-7

Brad Hare
Kaiser Permanente San Francisco Medical Center
San Francisco, CA, USA

Conclusions

- F/TAF was noninferior to F/TDF in preventing HIV infection in high-risk cis-MSM and TGW
  - F/TAF HIV incidence was 0.16/100 PY, and F/TDF HIV incidence was 0.34/100 PY
  - The majority of HIV infections occurred prior to study entry or in participants with low or undetectable drug levels
- Both drugs were well tolerated, with low rates of adverse events related discontinuations
- F/TAF had significantly better bone and renal safety outcomes as compared to F/TDF
- Study participants had consistent high rates of sexual risk behavior, with a lack of risk compensation
- F/TAF is an effective and safer option for PrEP in cis-MSM and TGW at risk for HIV infection

newer data suggests >99% effective

**USPSTF July 2019:** “clinicians offer pre-exposure prophylaxis (PrEP) with effective antiretroviral therapy to persons who are at high risk of HIV acquisition”

[https://www.uspreventiveservicestaskforce.org/](https://www.uspreventiveservicestaskforce.org/)
What are the **Risks** of PrEP?

- **Precautions** *(Truvada®)*
  - **Minor SE** - “start-up syndrome:” nausea, HA, GI upset
    - (5-20% sx resolved w/in 1st month)
  - **Bone Mineral Density loss** – stabilizes @ 24 months, no incr fx risk
  - **Renal Toxicity** do not use if CrCl ≤60 (CrCl ≤30 w/Descovy®)
    - creatinine incr 1%-2% (vs 0.2%-1% placebo)
    - median CrCl decr 5% by wk 12, stabilized thru wk 48
  - RARE reports of Fanconi Syndrome, lactic acidosis, severe hepatomegaly/steatosis
  - “Descovy® for PrEP” clinical trial most common AE (≥2%): diarrhea, nausea, HA, fatigue, abd pain
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Infectious Disease SPECIAL EDITION, Vol 21, Fall 2016, pg. 59-65
**Mechanism of Action: TAF vs TDF**

- **GI TRACT**
  - TDF (tenofovir disoproxil fumarate) 300 mg
  - TAF (tenofovir alafenamide) 25 mg

- **PLASMA**
  - TFV

- **RENA L TUBULAR CELL**
  - 91% lower plasma TFV

- **LYM PHOCYTE**
  - HIV

---

*G1, gastrointestinal; TFV, tenofovir.*

---


Any **Adverse Events** of Truvada®?

<table>
<thead>
<tr>
<th>Study</th>
<th>Outcome Analyses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Agent</td>
</tr>
<tr>
<td>Grade 3/4 Adverse Clinical Events(^a)</td>
<td></td>
</tr>
<tr>
<td>iPrEx</td>
<td>52 events</td>
</tr>
<tr>
<td>TDF2</td>
<td>9 events</td>
</tr>
<tr>
<td>West African Trial</td>
<td>NR</td>
</tr>
<tr>
<td>Grade 3/4 Adverse Laboratory Events (^a)</td>
<td></td>
</tr>
<tr>
<td>iPrEx</td>
<td>59 events</td>
</tr>
<tr>
<td>TDF2</td>
<td>32 events</td>
</tr>
<tr>
<td>West African Trial</td>
<td>1 event</td>
</tr>
<tr>
<td>Grade 3/4 Adverse Events (Clinical and Laboratory)(^a)</td>
<td></td>
</tr>
<tr>
<td>Partners PrEP</td>
<td>TDF 323 events</td>
</tr>
<tr>
<td></td>
<td>TDF/FTC 337 events</td>
</tr>
<tr>
<td>FEM-PrEP</td>
<td>NR</td>
</tr>
<tr>
<td>US MSM Safety Trial</td>
<td>36 events</td>
</tr>
<tr>
<td>VOICE</td>
<td>NR</td>
</tr>
<tr>
<td>BTS</td>
<td>175 events</td>
</tr>
</tbody>
</table>

NR, not reported.

Any **Adverse Events** of Descovy®?

### Common Adverse Events (≥10%)

<table>
<thead>
<tr>
<th>Event</th>
<th>F/TAF n=2694</th>
<th>F/TDF n=2693</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectal chlamydia</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Oropharyngeal gonorrhea</td>
<td>28</td>
<td>27</td>
</tr>
<tr>
<td>Rectal gonorrhea</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td>Exposure to communicable disease</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Nasopharyngitis</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Upper respiratory tract infection</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Syphilis</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Urethral chlamydia</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

### Overall Safety Summary

<table>
<thead>
<tr>
<th>Event</th>
<th>F/TAF n=2694</th>
<th>F/TDF n=2693</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any AEs</td>
<td>93</td>
<td>93</td>
</tr>
<tr>
<td>Study drug-related AEs</td>
<td>20</td>
<td>23</td>
</tr>
<tr>
<td>Grade ≥2 AEs</td>
<td>47</td>
<td>45</td>
</tr>
<tr>
<td>Grade ≥3 AEs</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>SAEs</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Study drug-related SAEs</td>
<td>0.1</td>
<td>0.2</td>
</tr>
<tr>
<td>AEs leading to discontinuation</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Deaths, n*</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

*Reasons: traffic accident, metastatic squamous cell carcinoma, unknown, SAE, serious AE.*
Prescribing PrEP in Practice

- Risk assessment – HIGH risk?
  - prev STD, asks for it, multiple sex partners, IVDU, hx of PEP, etc.
- Education/Counseling – CDC Handouts
- Eligibility
  - HIV(-), screen STIs, labs
Eligibility & Initial work-up

• Labs
  • r/o STIs
    • HIV Ag/Ab testing (4th gen)
    • Urinary, Pharyngeal, Rectal Gonorrhea & Chlamydia swabs (“cavity swabs” or “3-pt testing”)
    • Syphilis serology
    • Hepatitis panel – B & C (consider Hep A titers or vaccination acc to risk profile)
      -> **NOTE**: Truvada® (NOT Descovy®) indicated for tx Hep B; rebound hepatitis w/discontinuation!
  • BMP, UA (ensure normal renal fxn; CrCl $\geq$60mL/min Truvada®, CrCl $\geq$30mL/min Descovy®
  • UPT; Trichomonas (SureSwab) cis-female

• r/o acute HIV infection $\rightarrow$ no fevers/chills, flu-like sx’s

• r/o drug interaction $\rightarrow$ check Univ of Liverpool, HIV iChart app
Self collection (rectal/oral/cervical)

Order “Test Yourself” posters/cards: uwptc@uw.edu; available English & Spanish
Follow up care

- Adherence; **90 day supply, no refills**
- **STI q3 months** (STARK Project, PrEP Demo Project)
- **No HIV(-) test, no refill** (may consider #30 day buffer)
- Re-eval need/use (relationship status? Sobriety?)
- Counseling/education (risk reduction/safe sex)
- **monitor CrCl/eGFR**, if ≤60...
  - off-label “on-demand” Truvada® (MSM)
  - Descovy® (cis-MSM, TGW)
- Preventative vaccines: Hep A/B, HPV; Tdap, PCV13, PPSV23, Shingrix
- **ALT?** recent incr Hep C, ALT more sensitive than HCV Ab during acute infxn
  - Not yet endorsed by CDC, but may be considered in PWID/IDU/High Risk
<table>
<thead>
<tr>
<th>ICD – 10</th>
<th>Description</th>
<th>ICD – 10</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Z20</td>
<td>Contact with and (suspected) exposure to communicable disease</td>
<td>Z20.2</td>
<td>Contact with and (suspected) exposure to infections with predominantly sexual mode of transmission</td>
</tr>
<tr>
<td>Z20.6</td>
<td>Contact with and (suspected) exposure to human immunodeficiency virus (HIV)</td>
<td>Z79</td>
<td>Long term (current) drug therapy. Includes long term (current) drug use for prophylactic purposes</td>
</tr>
<tr>
<td>Z51.89</td>
<td>Encounter for other specified aftercare</td>
<td>Z51.81</td>
<td>Therapeutic drug level monitoring</td>
</tr>
<tr>
<td>Z79.899</td>
<td>Other long term (current) drug therapy</td>
<td>Z11.3</td>
<td>Encounter for screening for infections with a predominantly sexual mode of transmission</td>
</tr>
<tr>
<td>Z11.4</td>
<td>Encounter for screening for human immunodeficiency virus (HIV)</td>
<td>Z72.51</td>
<td>High-risk heterosexual behavior</td>
</tr>
<tr>
<td>Z72.52</td>
<td>High-risk homosexual behavior</td>
<td>Z72.53</td>
<td>High-risk bisexual behavior</td>
</tr>
</tbody>
</table>
Common CPT codes

• Prevention/Counseling

<table>
<thead>
<tr>
<th>CPT</th>
<th>Time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>99401</td>
<td>15</td>
</tr>
<tr>
<td>99402</td>
<td>30</td>
</tr>
<tr>
<td>99403</td>
<td>45</td>
</tr>
<tr>
<td>99404</td>
<td>60</td>
</tr>
</tbody>
</table>

• Labs

- **87389** – HIV 4th gen
- **86592** – RPR w/reflex titer & confirmation
- **87591/87491** – gonorrhea/chlamydia
  - **QUEST**: 11363 - U, 70051 - P, 16506 - R
- **80048** - BMP
- **81000** - UA (or use POC Urine dip)
- **80074** - Hepatitis panel gen. (vs acute)
Too much???

REFER!

Telehealth/Telemedicine options for patients wanting/needing PrEP:

Nurx app

Plushcare app
Cost of **Truvada®**/*Descovy®* ~$13,000 retail value

### without Insurance

- **PrEP Drug Assistance Program (DAP)**
  - [http://www.doh.wa.gov/YouandYourFamily/ IllnessandDisease/HIVAIDS/HIVCareClientServices/PrEPDAP](http://www.doh.wa.gov/YouandYourFamily/IllnessandDisease/HIVAIDS/HIVCareClientServices/PrEPDAP)
  - Early Intervention Program **877-376-9316**

- Gilead’s medication assistance program
  - **855-330-5479**

### with Insurance

- **Gilead co-pay coupon card**
  - [https://www.gileadadvancingaccess.com/copay-coupon-card](https://www.gileadadvancingaccess.com/copay-coupon-card)
  - **877-505-6986**

- **Patient Access Network Foundation**
  - **866-316-7263**
HIV prevention strategies

- Structural/Behavior Interventions
  - Circumcision, Condoms, STI dx & tx, IVDU safety

- HIV Treatment as Prevention (TasP)

- PrEP - Pre-Exposure Prophylaxis

- PEP/nPEP – Post-Exposure Prophylaxis/
  non-occupational Post-Exposure Prophylaxis
PEP/nPEP

• **prevent** HIV acquisition *following exposure*
• begin w/in **72 hrs**
• **Rx x28 days:** Truvada® + Isentress® (raltegravir 400mg BID)
• **Baseline labs:** HIV Ag/Ab test (4th gen), Hep B serology, Hep C Ab, gc/chlam., syphilis serology
• **f/u labs:** 4-6 wks, 3 mo., 6 mo. *(candidate for & transition to PrEP!)*
• If known HIV(+) exposure? – obtain Hx: ARV use, resistance, recent VL

TOO MUCH? → **PEPline**  888.448.4911  9am – 2am EST,  7 days/wk

<<National Clinicians’ Post-Exposure Prophylaxis Hotline>>
Objectives

• Acquaint ourselves w/a brief overview of HIV stats
• Review & understand guidelines to Screen for HIV
• Re-remember the life cycle & pathogenesis of HIV
• Learn & incorporate HIV Prevention strategies (PrEP, TasP, PEP)

• Recognize Acute HIV infection
• Learn the basics of chronic HIV management
2 cases

**T.L. 30 y.o. male**
- presented to ED w/fevers, chills, muscles aches, fatigue, swollen lymph nodes, sore throat, etc.
- dx’d flu, given Tamiflu, f/u PCP
- 2-3 days later, in office, cont intermittent fevers/URI sx and diffuse rash
- ???Flu, Mono, Viral Syndrome, measles, secondary syphilis

**J.R. 28 y.o. male**
- Sore throat & fevers

Modified Centor Criteria

- Age 3-14 yrs: +1
- 5-44: 0
- >=44: -1
- Exudate, swelling on tonsils: +1
- Tender, swollen ant. Cerv. LN: +1
- Temp >38 degrees C: +1
- Cough; yes/no: 0/1

TOTAL = **+4**

*Consider rapid strep/Cx.; **Empiric** Abx may be appropriate

???, was it really strep? Mono?
What does Acute HIV look like?

- Generalized Viral/Influenza Illness
- Fever-Myalgia-Rash syndrome
- Mononucleosis-like syndrome

- onset in 2-4 wks (50-90% of persons)
- lasts a few days – weeks

**NOTE**: Acute HIV carries HIGHEST rate transmission d/t high viremia in both plasma AND genital secretions


Pilcher CD, Eron JJ, Jr., Vemazza PL, et al. Sexual transmission during the incubation period of primary HIV infection. JAMA 2001;286:1713-4
Same day ART Initiation

- **decrease** infectiousness \((U = U)\)
- **improve** lab markers of disease
- **decrease** severity of acute disease
- **decrease** viral set-point
- **decrease** viral reservoir
- **decrease** rate of viral mutation by suppressing replication
- **preserves** immune function
Same day ART Initiation

- **increase** engagement in care
- **increase** those who achieve & maintain viral suppression
- **decrease** AIDS-related AND non-AIDS related events (**TasP**)
- **Peace of mind**


Objectives

• Acquaint ourselves w/a brief overview of HIV stats
• Review & understand guidelines to Screen for HIV
• Re-remember the life cycle & pathogenesis of HIV
• Learn & incorporate HIV Prevention strategies (PrEP, TasP, PEP)
• Recognize Acute HIV infection

• Learn the basics of chronic HIV management
What to use???
Seven (7)* drug classes:

1. Non-nucleoside reverse transcriptase inhibitors (NNRTIs)
2. Nucleoside reverse transcriptase inhibitors (NRTIs)
3. Protease inhibitors (PIs)
4. Fusion inhibitors
5. CCR5 antagonists
6. Integrase strand transfer inhibitors (INSTIs)
7. Post-attachment inhibitors
8. *Nucleoside Reverse Transcriptase Translocation Inhibitor (NRTTI)
9. *Monoclonal Antibodies (highly resistant HIV)
What to use – outline

“An antiretroviral (ARV) regimen for a treatment-naive patient generally consists of **TWO** nucleoside reverse transcriptase inhibitors (NRTIs) administered in combination with a **THIRD** active ARV drug from one of three drug classes*:

- an **integrase strand transfer inhibitor (INSTI)**,
- a **non-nucleoside reverse transcriptase inhibitor (NNRTI)**, or
- a **protease inhibitor (PI)**
  with a **pharmacokinetic (PK) enhancer** (aka booster; the two drugs used for this purpose are cobicistat and ritonavir).”

*2 drug regimen recently added 12/18/2019 with caveats
What to use (Dec 2019. DHHS)

- Bictegravir/tenofovir alafenamide/emtricitabine (AI)
  - Biktarvy
- Dolutegravir/abacavir/lamivudine - only if HLA-B*5701 negative (AI)
  - Triumeq
- Dolutegravir plus tenofovir/emtricitabine (AI)
  - Tivicay + Descovy
- *Dolutegravir plus lamivudine* (except for individuals with HIV RNA >500,000 copies/mL, HBV coinfection, or in whom ART is to be started before the results of HIV genotypic resistance testing for reverse transcriptase or HBV testing are available; AI)
- Raltegravir plus tenofovir/emtricitabine (BI tenofovir disoproxil fumarate) (BII for tenofovir alafenamide)
  - Isentress + Truvada; Isentress + Descovy
Add’l labs (per IDSA/DHHS guidelines)

**SPECIFICS**
- HIV Genotype
- CD4 count
- HIV RNA (aka “viral load”);
  -> q4wks until undetectable
- G6PD
- HLA-B*5701
- TB (TST or IGRA)
- *T. gondii* (IgG)
- CMV (IgG)
- Anal PAP Smear (?)

**BASICS (q3-6mo)**
- CBC w/diff
- CMP
- Fasting Lipids
- A1c or fasting glucose
- UA
- Gonorrhea — pharyngeal/urinary/anorectal
- Chlamydia — pharyngeal/urinary/anorectal
- Syphilis (w/reflex confirm)
- Hepatitis A, B, C serologies (w/reflex)
- FEMALE
  - UPT
  - Trichomoniasis
  - PAP smear @ diagnosis
HIV Treatment Basics

- **Undetectable** HIV RNA (aka Viral Load) <200 copies/mL
- "blips" – isolated, transient incr in HIV RNA, usu <400 copies/mL
- **CD4 count** abs/%; Normal 400-1800/15-40%
  - <500, requires dental ppx
  - **<200/14%, dx AIDS** requires PCP/PJP ppx w/Bactrim DS once daily; (d/c when CD4 >200 x3 mo)
  - <100, requires T.gondii ppx (same for PCP)
  - <50, requires Ophthalmology q6mo r/o CMV retinitis
Common OTC/drugs interactions

Univ Liverpool HIV iChart app

• Multivitamins/Cations (Mg$^{2+}$/Ca$^{2+}$/etc, separate 2hrs before/6hrs after)
• Metformin (limit to 1000mg daily)
• Statins:
  • rosvastatin 10mg/Pravastatin/pitavastatin
  • Simvastatin/atorvastatin/lovastatin
• Antacids
  • PPIs & H2-blockers, TUMs/Rolaids
• Intranasal & Inhaled steroids* (*oral & injectable also concern)
  • Qnasl/Beclomethasone; Qvar/Beclometasone
  • Flonase/fluticasone, Nasacort/Triamcinolone, Nasonex/Mometasone
Preventative Health in HIV

• Smoking cessation - #1 intervention for improved outcomes
• **ASCVD** risk Calc (various; next slide)
• DEXA @ **age 50** (male & female)
• Cervical PAP - **lifetime**
• Colonoscopy age 50
• Anal exam (anal pap? -> anal lesions often resolve w/out tx in HIV+ gay men*)
• Mammogram age approp (age 50 per USPSTF)
• Bi-annual Dental exam
• Annual Eye exam

ASCVD risk Calc (usu. 1.5-2x higher risk)

+Atherosclerosis
1988-1991; 21% autopsied
2008-2011; 54% autopsied

App - Pooled Cohort Equation; “better estimate of racial differences in vascular function” (vs Framingham Risk Score)

https://www.chip.dk/Tools-Standards/Clinical-risk-scores

HIV+ individuals, age 18-75

PAP smear guidelines in HIV (general)

<30 yrs
• @ diagnosis
• start w/in 1 year of sexual activity, no later than 21 y.o.
• If normal, repeat q12mo x3
• 3 consec. wnl, repeat q3yrs
• NO HPV co-testing

/= 30 yrs
• @ diagnosis
• Continue thru LIFETIME
• Pap only
  • 3 consec. wnl, repeat q3yrs
• Pap w/HPV co-testing
  • Negative? repeat q3yrs
  • Positive, follow guidelines

Vaccines in HIV care

- **Hepatitis A** (acc to risk profile: MSM, co-infection HIV/Hep B,C, chronic liver disease, IVDU, drug use, travel)
- **Hepatitis B**
  - (Twinrix; ? weaker immune response) – *Note: CHECK titers 2mo after last dose*
- **HPV** (CDC/ACIP age 26; FDA age 45? Europe age 40; secondary prevention)
- **Influenza** annually
- **Meningococcal** (MenACWY): Menactra/Meveo, q5yrs
- **Pneumococcal**
  - PCV13, then PPSV23 in 2 mo (w/repeat PPSV23 @5yrs of dx)
- **Tdap** (Td q10 years)
- **RZV** (Recombinant Zoster Vaccine) *under review

**LIVE vaccines:** MMR, VAR, ONLY if CD4>200;

Resources:

Mutation/Resistance guidance

https://www.hivassist.com/

https://hivdb.stanford.edu/hivdb/by-mutations/
Resources

• AIDS/Education & Training Center (AETC); FL chapters

• AIDS Vaccine Advocacy Coalition (AVAC); http://www.avac.org/

• American Academy of HIV Medicine (AAHIVM); http://www.aahivm.org/


• HIV Prevention Trials Network (HPTN); https://www.hptn.org/

• Infectious Disease Special Edition (IDSE); http://www.idse.net/
Summary (what I want you to get out of this)

- HIV still around
- Screen everyone
- Prescribe PrEP: Truvada® - anyone at risk
  Descovy® - cis-MSM, TGW only
- Think about acute HIV
- Review med list/adherence/U=U
- Use resources/apps shared today:
  - PEP line 888.448.4911
  - or D:A:D Calc
  - HIVASSIST https://www.hivassist.com/
  - Stanford University HIV DRUG RESISTANCE DATABASE https://hivdb.stanford.edu/hivdb/by-mutations/
  - uwptc@uw.edu