PrEPping for Prevention.....Engaging Pharmacists in HIV Prevention Strategies

Melody L Berg, PharmD, MPH, BCPS-AQ ID, AAHIVP
Eric Farmer, PharmD, BCPS, AAHIVP
December 6, 2016
4:15-5:15pm
Disclosure

- The program chair and presenters for this continuing education activity have reported no relevant financial relationships.
Objectives

- Evaluate use of tenofovir/emtricitabine for Pre-exposure Prophylaxis (PrEP) for appropriate candidates and identify available resources to help patients with procurement of medication.

- Design an effective Post-Exposure Prophylaxis (PEP) regimen for your institution that includes an effective antiretroviral regimen that limits barriers to medication procurement and appropriate follow up care and testing.

- Justify guideline concordant intrapartum and postpartum antiretroviral regimens to prevent perinatal transmission of HIV from an HIV-infected mother to a fetus.
PrEPping us for the Future

Eric Farmer, PharmD, BCPS, AAHIVP
HIV Clinical Pharmacist
Indiana University Health, LifeCare Program
Objectives

- Identify eligible individuals for whom PrEP is indicated.
- Review current CDC recommendations for those eligible to receive PrEP.
- Discuss barriers and practical strategies to prescribing PrEP in your practice.
The Need for PrEP

- Approximately 1.2 million people are living with HIV/AIDS in the United States
  - Approx 1 in 6 (15.8%) are undiagnosed
  - Approx 50,000 new HIV infections annually in US

- Incidence of HIV is increasing or highest in:
  - Men who have sex with men (MSM)
  - Black/African Americans
  - Ages 13-14yo, 20-29yo
  - South, Midwest

- Approx 24.7% of MSM, 18.5% IV drug users, and 0.4% heterosexually active adults are estimated to have substantial risks for acquiring HIV consistent with a PrEP indication.

- Medical cost savings of averting 1 HIV infection: $229,800

CDC. HIV Surveillance Report, 2011; vol. 23  
Estimated Lifetime Risk of HIV Diagnosis

**Methods:**
- HIV diagnoses and non-HIV deaths used to calculate the probability of HIV diagnosis at a given age
- Lifetime risk = cumulative probability of HIV diagnosis from birth (results presented as 1 in N)

**Results: Lifetime Risk of Acquiring HIV**
- Overall in USA: 1 in 99
- Black MSM: 1 in 2
- Hispanic MSM: 1 in 4
- White MSM: 1 in 11

**HIV Risk Group**

<table>
<thead>
<tr>
<th>HIV Risk Group</th>
<th>Relative Risk</th>
<th>Lifetime Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male vs female</td>
<td>4X for male</td>
<td>1 in 62 (2%) vs 1 in 221 (0.5%)</td>
</tr>
<tr>
<td>Male: black vs white</td>
<td>7X for black male</td>
<td>1 in 20 (5%) vs 1 in 132 (1%)</td>
</tr>
<tr>
<td>Female: black vs white</td>
<td>19X for black female</td>
<td>1 in 48 (2%) vs 1 in 880 (0.1%)</td>
</tr>
<tr>
<td>Male: IDU vs heterosexual</td>
<td>13X for PWID</td>
<td>1 in 36 (3%) vs 1 in 473 (0.2%)</td>
</tr>
<tr>
<td>MSM vs heterosexual male</td>
<td>79X for MSM</td>
<td>1 in 6 (17%) vs 1 in 473 (0.2%)</td>
</tr>
</tbody>
</table>

*Mortality Data from National Center for Health Statistics (2009-2013, US census data)*

Lifetime risk may be a useful tool to more effectively communicate the risk of HIV to the general public and can help to highlight severe disparities.

Pre- vs. Post- Exposure Prophylaxis

- After exposure to HIV, infection may become established.
- Postexposure prophylaxis (initiated soon after exposure) reduces the chance of infection.
- Pre-exposure prophylaxis begins treatment earlier (before exposure), which might increase the prophylactic effect.

HIV exposure

Postexposure prophylaxis

Pre-exposure prophylaxis

0 hr 36 hrs 72 hrs 1 mos 3 mos 5 mos

www.clinicalcareoptions.com/HIV
HIV Testing Recommendations

Routine for ALL patients aged 13-64 years of age in ALL healthcare settings.

Repeat testing at least annually for high risk patients.

<table>
<thead>
<tr>
<th>Potential indicators of substantial risk of acquiring HIV infection</th>
<th>MSM</th>
<th>Heterosexual Women and Men</th>
<th>Injection Drug Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV-positive sexual partner</td>
<td>HIV-positive sexual partner</td>
<td>HIV-positive injecting partner</td>
<td></td>
</tr>
<tr>
<td>Recent bacterial STI</td>
<td>Recent bacterial STI</td>
<td>Sharing injection equipment</td>
<td></td>
</tr>
<tr>
<td>High number of sex partners</td>
<td>High number of sex partners</td>
<td>Recent drug treatment (but currently injecting)</td>
<td></td>
</tr>
<tr>
<td>History of inconsistent or no condom use</td>
<td>History of inconsistent or no condom use</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial sex work</td>
<td>Commercial sex work</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>In high-prevalence area or network</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How PrEP Works
Eligible PrEP Patients

Antiretroviral prophylaxis for HIV infection in injecting drug users in Bangkok, Thailand (the Bangkok Tenofovir Study): a randomised, double-blind, placebo-controlled phase 3 trial

Kachit Choopanya, Michael Martin, Pravan Suntharasamai, Udomsak Sangkum, Philip A Mock, Manoj Leethochawalit, Sithisat Chiamwongpaet, Praphan Kitisin, Pitinan Natrujirote, Somyot Kittimunkong, Rutt Chuachooowong, Roman J Gvetadze, Janet M McNicholl, Lynn A Paxton, Marcel E Curlin, Craig W Hendrix, Suphak Vanichseni, for the Bangkok Tenofovir Study Group

# PrEP Efficacy

<table>
<thead>
<tr>
<th>Trial</th>
<th>Population/Setting</th>
<th>Intervention</th>
<th>Reduction in HIV Infection Rate, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAPRISA[^1]</td>
<td>High-risk women in South Africa</td>
<td>Coitally applied vaginal TFV gel</td>
<td>39</td>
</tr>
<tr>
<td>(N = 899)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N = 2499)</td>
<td>Thailand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N = 4747)</td>
<td></td>
<td>Daily oral TDF/FTC</td>
<td>Women: 66; men: 84</td>
</tr>
<tr>
<td>(N = 1219)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(N = 2120)</td>
<td></td>
<td></td>
<td>active and control arms</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Study stopped for lack of efficacy</td>
</tr>
<tr>
<td>Thai IDU[^6]</td>
<td>Volunteers from 17 Thai treatment centers</td>
<td>Daily oral TDF</td>
<td>49</td>
</tr>
<tr>
<td>(N= 2413)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


[www.clinicalcareoptions.com/HIV](http://www.clinicalcareoptions.com/HIV)
## Clinical Eligibility for PrEP

<table>
<thead>
<tr>
<th>Prior to Prescribing PrEP</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Document negative HIV test results within 1 week of Rx</td>
<td>Do not accept patient-reported results</td>
</tr>
<tr>
<td>Check for normal renal function, UA</td>
<td>Not recommended for Crcl &lt;60mL/min</td>
</tr>
<tr>
<td>Check for HBV infection</td>
<td>Consider vaccinating if not immune</td>
</tr>
<tr>
<td>Document pregnancy test if appropriate</td>
<td>Additional counseling on risks</td>
</tr>
<tr>
<td>Screen for STIs</td>
<td>Every visit</td>
</tr>
<tr>
<td>Screen for acute HIV infection symptoms</td>
<td>Every visit</td>
</tr>
</tbody>
</table>

## Signs & Symptoms of Acute HIV Infection

<table>
<thead>
<tr>
<th>Fever</th>
<th>Myalgia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rash</td>
<td>Headache</td>
</tr>
<tr>
<td>Pharyngitis</td>
<td>Diarrhea</td>
</tr>
<tr>
<td>Lymphadenopathy</td>
<td>Arthralgia</td>
</tr>
</tbody>
</table>

Celebration of Learning Question #1

Which of the following patient populations has the least evidence to support an indication for PrEP?

A. MSM
B. IVDU
C. HIV neg male in monogamous relationship with HIV pos female
D. Adolescents
E. HIV neg female with 3 regular sexual partners and 100% condom use for all sexual activity
PrEP Rx

- Emtricitabine/tenofovir DF 200/300mg 1 tablet daily
- Provide 3 month Rx
- Taken **every day** without regard to food

<table>
<thead>
<tr>
<th>Common Side Effects</th>
<th>Serious Side Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nausea</td>
<td>Rash</td>
</tr>
<tr>
<td>Abdominal Discomfort</td>
<td>Renal Complications</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>Decreased BMD</td>
</tr>
<tr>
<td>Headache</td>
<td>Risk of Resistance</td>
</tr>
</tbody>
</table>

**Time to Achieve “Therapeutic Protection”**

<table>
<thead>
<tr>
<th>Site of Exposure</th>
<th>Time to Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood</td>
<td>20 days</td>
</tr>
<tr>
<td>Rectal Tissue</td>
<td>7 days</td>
</tr>
<tr>
<td>Vaginal Tissue</td>
<td>20 days</td>
</tr>
</tbody>
</table>
# Follow up & Monitoring

<table>
<thead>
<tr>
<th>Follow-up</th>
<th>At Least Every 3 Mos</th>
<th>After 3 Mos and at Least Every 6 Mos Thereafter</th>
<th>At Least Every 6 Mos</th>
<th>At Least Every 12 Mos</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All patients</strong></td>
<td>HIV test</td>
<td>Assess renal function</td>
<td>Test for bacterial STIs</td>
<td>Evaluate need to continue PrEP</td>
</tr>
<tr>
<td></td>
<td>Medication adherence counseling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Behavioral risk reduction support</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adverse event assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>STI symptom assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Women</strong></td>
<td>Pregnancy test (where appropriate)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HBsAg+</strong></td>
<td></td>
<td>HBV DNA by quantitative assay*</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Dos of PrEP

- Document in medical record
- Communicate with other providers
- Risk reduction counseling
- Adherence counseling
- Involve partners
- Only use PrEP if HIV negative
Don’ts of PrEP

- Don’t use any other Rx except FTC/TDF
- Don’t use PrEP for Expedited Partner Therapy
- Don’t use for Post-Exposure Prophylaxis (PEP)
- Don’t give more than 3 month Rx
- Don’t use PrEP as intermittent therapy
Pearls of PrEP

- PrEP is NOT a cure or vaccine for HIV
- PrEP is NOT a “morning-after pill”
- Extra PrEP pills ≠ extra protection
- PrEP does NOT prevent pregnancy
- PrEP does NOT protect against other STIs
- PrEP is only for HIV-negative individuals
- PrEP works best when taken every day with other risk reduction strategies
- Every dose matters
Paying for PrEP

- Private insurance
  - Annual deductible
  - Copays & Coinsurance
- Gilead Copay Assistance Card
- Truvada for PrEP Medication Assistance Program:
  1.855.330.5479  [http://start.truvada.com](http://start.truvada.com)
Celebration of Learning Question #2

Which of the following is NOT important to check at each PrEP follow up visit?

A. Urine drug screen
B. Adherence to medication
C. Screen for STIs
D. HIV test
E. Pregnancy test (if female)
PrEP Resources

- http://www.cdc.gov/hiv/basics/prep.html
- http://nccc.ucsf.edu/clinical-resources/pep-resources/prep/
  PrEPline, 855-448-7737  11am-6pm EST
- http://whatisprep.org
- http://www.truvadapreprems.com/
- http://www.hivinsite.com/
- http://www.hivguidelines.org/clinical-guidelines/pre-exposure-prophylaxis/
- https://aidsetc.org/
- http://www.thebody.com
The Future of PrEP

- Cabotegravir: novel INSTI packaged in nanoparticles permitting monthly or quarterly IM dosing\(^1\)
- Carbotegravir/rilpivirine long acting IM formulation allowing for Q4- or Q8-week dosing\(^2\)
- Availability of new tenofovir formulation: tenofovir alafenamide (TAF) \(\rightarrow\) less renal and bone adverse effects\(^3\)
- Microbicides – vaginal gels, rings, etc.\(^4\)
- PrEP “On-Demand”\(^5\)

---

Celebration of Learning Question #3

For which of the following individuals is PrEP NOT indicated?

A. 18yo hispanic bisexual male, 4 male and female sexual partners over past year
B. 24yo white female, IV drug abuser, last use 3 years ago, has HCV infection
C. 40yo black male, MSM, monogamous relationship with HIV positive partner
D. 65yo white male, heterosexual, history of syphilis x3 in past year
E. 26yo white female, commercial sex worker, reports 100% condom use and no history of STIs
F. 30yo white homosexual male, denies sexual activity in past 18 months, denies IVDA, wishes to start PrEP
PrEP Key Takeaways

- PrEP is one prevention strategy, that may reduce the risk of HIV acquisition when used in combination with other risk reduction strategies.

- Evidence supports use of PrEP in MSM, heterosexual individuals, and IVDU engaged in high-risk behavior.

- Adherence to PrEP is crucial for success. Every dose matters.
Keeping up with PEP

Eric Farmer, PharmD, BCPS, AAHIVP
HIV Clinical Pharmacist
Indiana University Health, LifeCare Program
Objectives

- Identify eligible individuals for whom PEP is indicated.
- List treatment recommendations for patients eligible to receive PEP.
- Review risk reduction counseling for patients receiving PEP.
Pre- vs. Post- Exposure Prophylaxis

- After exposure to HIV, infection may become established.
- Postexposure prophylaxis (initiated soon after exposure) reduces the chance of infection.
- Pre-exposure prophylaxis begins treatment earlier (before exposure), which might increase the prophylactic effect.

HIV exposure

HIV infection

Pre-exposure prophylaxis

Postexposure prophylaxis

0 hr  36 hrs  72 hrs  1 mos  3 mos  5 mos
Types of PEP

- Occupational PEP
- Non-occupational PEP (nPEP)
  - Sexual assault
  - Consensual sex
  - Needle stick
  - IVDA
  - Perinatal exposure
HIV Transmission

- Transmission modalities
  - Bodily fluids: blood, semen, vaginal fluid, breast milk
  - Mother to child (MTCT) “Vertical Transmission”
  - Intravenous drug use
  - Transfusions

- Transmission risk:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Risk (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood transfusion</td>
<td>90%</td>
</tr>
<tr>
<td>Perinatal – no ART</td>
<td>25%</td>
</tr>
<tr>
<td>IVDA Needle sharing</td>
<td>0.67%</td>
</tr>
<tr>
<td>Receptive anal intercourse</td>
<td>0.5%</td>
</tr>
<tr>
<td>Percutaneous needle stick</td>
<td>0.3%</td>
</tr>
<tr>
<td>Receptive vaginal intercourse</td>
<td>0.1%</td>
</tr>
<tr>
<td>Receptive oral intercourse</td>
<td>0.01%</td>
</tr>
</tbody>
</table>

MMWR 54, Jan 2005
RELATIVE RISK FOR TRANSMISSION FROM A PERSON LIVING WITH HIV

TYPES OF SEXUAL ACTIVITY

with condom
without condom
Types of PEP

- Occupational PEP
  - Sexual assault
  - Consensual sex
  - Needle stick
  - IVDA
  - Perinatal exposure

- Non-occupational PEP (nPEP)
STEP 1: Evaluation of exposure: Is nPEP indicated?

LOWER-RISK EXPOSURES:
- Oral-vaginal contact (receptive and insertive)
- Oral-anal contact (receptive and insertive)
- Receptive penile-vaginal contact with or without ejaculation
- Insertive penile-oral contact with or without ejaculation

See Table 1 for factors that may increase risk. If PEP is indicated, go to Step 2.

STOP: nPEP not indicated

LOWER-RISK EXPOSURES:
- Oral-anal contact (receptive and insertive)
- Receptive and insertive vaginal or anal intercourse with HIV- or unknown source
- Needle sharing with HIV- or unknown source
- Injuries with exposure to blood or other potentially infected fluids from HIV- or unknown source (including needlesticks with a hollow-bone needle, human bites, accidents)

EXPOSURES THAT DO NOT WARRANT nPEP:
- Oral-to-oral contact without mucosal damage (kissing or mouth-to-mouth resuscitation)
- Human bites not involving blood
- Exposure to solid-bone needles or sharps not in recent contact with blood
- Mutual masturbation without skin breakdown or blood exposure
- Provide risk-reduction counseling and offer HIV test.

STOP: nPEP not indicated

STEP 2: nPEP regimen

28-DAY REGIMEN — Recommended PEP Regimen:

Tenofovir 300 mg PO qd + Emtricitabine 200 mg PO qd
PLUS
Raltegravir 400 mg PO bid or Dolutegravir 50 mg PO qd

See Tables 4 and 5 for alternative regimens

STEP 3: Baseline testing of exposed person:

- HIV test
- Pregnancy test for women
- GC/CT NAAT (based on site of exposure)
- RPR for syphilis

nPEP should not be continued in those who decline baseline HIV testing.
See Section IX for hepatitis B and C post-exposure management.

STEP 4: Source testing, if available:

- Obtain consent for HIV testing
- Obtain HIV test with turnaround time <1 hour
- If the test results are not immediately available, continue exposed person's nPEP while awaiting results.

If the source person's HIV screening test result is negative but there may have been exposure to HIV in the previous 6 weeks, obtain plasma HIV RNA assay.
- Continue exposed person's nPEP until results of the plasma HIV RNA assay are available.

STEP 5: Provide risk-reduction counseling

- Provide risk-reduction and primary prevention counseling
- Refer for mental health and/or substance use programs when indicated; consider need for intensive risk-reduction counseling services
- Discuss future use of PEP with persons with ongoing risk behavior (see Appendix C for Al-funded referral sources)

# PEP Monitoring

<table>
<thead>
<tr>
<th>Monitoring Recommendations</th>
<th>Baseline</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic Visit</td>
<td>X</td>
<td>X or phone</td>
<td>X or phone</td>
<td>X or phone</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Pregnancy Test</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BMP, LFTs, CBC</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV Test</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Celebration of Learning Question #4

Which of the following ART regimens is most appropriate to recommend for occupational PEP after a needle stick injury?

A. Lopinavir/ritonavir + lamivudine/zidovudine x28 days
B. Isentress + emtricitabine/tenofovir x14 days
C. Emtricitabine/tenofovir/efavirenz x28 days
D. Emtricitabine/tenofovir/elvitegravir/cobicistat x14 days
E. Dolutegravir + emtricitabine/tenofovir x28 days
Risk Reduction Counseling

- Avoid blood, plasma, organ, tissue, semen, or egg donations
- Avoid breastfeeding or pregnancy for 6-12 weeks
- Use contraceptive barrier (condom) for sexual intercourse
- No special precautions at work or change in patient care responsibilities
- Adherence to antiretroviral regimen for full course
- HIV transmission and disease education
Case 1: The Unlucky Shopper

24yowm presents to ED requesting PEP

Shopping at TJ Maxx for jeans. While trying on a pair, he put his hands into the pockets and claims he was stuck on palm of R hand by hypodermic needle.

Immediately left store; did not bring needle with him

Did not report to store

To PEP or Not to PEP?
The Unlucky Shopper

- PMH: Depression, Recent cocaine abuse
- Rx: No meds
- NKDA
- SH: Sexually active with multiple female partners; inconsistent condom use

- PLAN: PEP x28 days would be recommended despite improbability of his story
Case 2: The Frequent Flyer

- 49yobm presents to ED requesting PEP
- Engaged in unprotected vaginal sex with HIV-positive girlfriend yesterday
- Has received PEP due to similar incidents twice in past year
- To PEP or Not to PEP?
The Frequent Flyer

- PMH: Hypertension, Gout
- Rx: Lisinopril
- NKDA
- SH: 1/2ppd tobacco x30 years, reports “100%” condom use for all sexual activity; has private insurance
- GF has history of several resistance mutations

- PLAN: PEP x28 days given. Prescribed same Rxs as wife due to concerns for possible transmitted resistance. Discussed risk reduction strategies and referred to local clinic for PrEP
Case 3: The Worried Well

- 24yowf researcher in lab processing blood samples for cancer treatment study
- Accidentally touched a piece of paper with a smear of dried blood specimen on it with pad of R index finger
- No open wounds and no blood transferred to patient’s finger
- Source patient HIV status unknown
- Has almost healed paper cut on L index finger and worried about exposure after vigorously washing injury
- To PEP or Not to PEP?
The Worried Well

- PMH: Migraines
- Rx: oral contraceptive
- Allergy: Sulfa
- SH: In a monogamous relationship with HIV neg male; private insurance

- PLAN: PEP not recommended. Provide supportive listening and review HIV transmission risks
PEP Key Takeaways

- Be familiar with your institution’s PEP protocols and verify the protocols are reviewed and updated regularly.

- PEP is recommended if the patient presents within 72h of the exposure and treatment should last 28 days.

- Assess each PEP situation and provide appropriate referrals (i.e. PrEP) and risk reduction counseling.
Towards an HIV-Free Generation: Understanding Methods to Prevent Perinatal HIV Transmission

Melody L. Berg, PharmD, MPH, BCPS-AQ ID, AAHIVP
Senior Clinical Content Specialist
Wolters Kluwer Health
Objectives

- Identify areas for intervention to prevent perinatal HIV transmission

- Discuss pros and cons of PrEP use in a pregnant woman

- Formulate an effective intrapartum protocol to prevent perinatal HIV transmission for your institution

- Select an appropriate infant antiretroviral prophylaxis regimen
Case

JK is a 28-year-old woman with no significant past medical history who presents to her obstetrician reporting recent positive home pregnancy test. Her last menstrual period was 6 weeks prior. She takes no medicines and denies any history of allergies to medicines. She denies tobacco and illicit substance use but admits to 6-7 alcoholic beverages per week. She is currently in a monogamous relationship and is employed as a preschool teacher. She reports 3 lifetime sexual partners including her current partner.
Women and HIV

30% undetectable
39% maintained on ART
55% retained in care
84% linked to medical care*

284,500 women living with HIV

*within first 3 months
HIV and Children

- 174 children diagnosed with HIV in 2014, 73% via perinatal transmission

- 1,999 children living with perinatally-acquired HIV in 2013; 9,131 adolescents living with perinatally-acquired HIV in 2013

- 4,998 children diagnosed with AIDS have died since beginning of epidemic through 2013, 91% were perinatally-acquired

Rates (per 100,000 live births) of perinatally-acquired HIV infections by year of birth and mother’s race/ethnicity, 2008–2012

Case Question #1

- Would you recommend HIV testing for JK?
- What if this was her first partner?
Modes of Transmission

- Antepartum
- Intrapartum
- Postpartum
Antepartum Prophylaxis

Known HIV Infection
- Preconception counseling
- Appropriate ART treatment and follow-up
- Birth Plan

Unknown HIV Infection
- Test, Test, Test
- PrEP candidate?
- Appropriate ART treatment, if necessary
Case Question #2

- JK tests positive for HIV. Her CD4 is currently 574 cells/mcl. Her HIV RNA is 22,000 copies/ml. All other labs are within normal limits. Her HIV genotype test did not reveal any antiretroviral resistance. What regimen would you recommend for JK?
  - Zidovudine/lamivudine + lopinavir/ritonavir
  - Tenofovir DF/emtricitabine/efavirenz
  - Abacavir/lamivudine + atazanavir + ritonavir
  - Zidovudine/lamivudine + raltegravir
## Antepartum Antiretroviral Therapy for ART-Naive

<table>
<thead>
<tr>
<th>2-NRTI Backbone</th>
<th>Preferred PI regimen</th>
<th>Preferred NNRTI regimen</th>
<th>Preferred INSTI Regimen</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abacavir/Lamivudine</td>
<td>Atazanavir/ritonavir</td>
<td><strong>OR</strong> Efavirenz</td>
<td><strong>OR</strong> Raltegravir</td>
</tr>
<tr>
<td>Tenofovir DF/Emtricitabine</td>
<td><strong>PLUS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zidovudine/Lamivudine</td>
<td>Darunavir/ritonavir</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Revisiting Case Question #2

• Zidovudine/lamivudine + lopinavir/ritonavir

• Tenofovir DF/emtricitabine/efavirenz

• Abacavir/lamivudine + atazanavir + ritonavir

• Zidovudine/lamivudine + raltegravir
## Lopinavir/ritonavir versus Efavirenz for Antepartum Prophylaxis

<table>
<thead>
<tr>
<th>Methods</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Open-label, randomized study</td>
<td>• 391 enrolled</td>
</tr>
<tr>
<td>• December 2009-March 2013 in Uganda</td>
<td>• 173 women received efavirenz</td>
</tr>
<tr>
<td>• 12-28 weeks gestation, no ART in preceding 24 months, all with zidovudine/lamivudine backbone</td>
<td>• 175 women received lopinavir/ritonavir</td>
</tr>
<tr>
<td></td>
<td>• 97.6% with UD VL at delivery in efavirenz arm vs. 86% in lopinavir/ritonavir arm</td>
</tr>
<tr>
<td></td>
<td>• 2 infants infected with HIV (both in lopinavir/ritonavir arm)</td>
</tr>
<tr>
<td></td>
<td>• No differences between groups in adverse events</td>
</tr>
</tbody>
</table>

Panel's Recommendations for Intrapartum Antiretroviral Therapy/Prophylaxis

<table>
<thead>
<tr>
<th>Panel's Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women should continue their antepartum combination antiretroviral therapy (cART) drug regimen on schedule as much as possible during labor and before scheduled cesarean delivery (AII).</td>
</tr>
<tr>
<td>Intravenous (IV) zidovudine should be administered to HIV–infected women with HIV RNA &gt;1,000 copies/mL (or unknown HIV RNA) near delivery (A1), but is not required for HIV–infected women receiving cART regimens who have HIV RNA ≤1,000 copies/mL during late pregnancy and near delivery and no concerns regarding adherence to the cART regimen (BII). Scheduled cesarean delivery at 38 weeks’ gestation (compared to 39 weeks for most indications) is recommended for women who have HIV RNA &gt;1,000 copies/mL near delivery (see Transmission and Mode of Delivery) (A1).</td>
</tr>
<tr>
<td>Women who present in labor with unknown HIV status should undergo expedited HIV testing (AII). If the results are positive, a confirmatory HIV test should be done as soon as possible and maternal (IV zidovudine)/infant (combination antiretroviral [ARV] prophylaxis) ARV drugs should be initiated pending results of the confirmatory test (AII). If the maternal confirmatory HIV test is positive, infant ARV drugs should be managed as discussed in the Infant Antiretroviral Prophylaxis section (A1); if the maternal confirmatory HIV test is negative, the maternal and infant ARV drugs should be stopped.</td>
</tr>
</tbody>
</table>

To AZT or not to AZT: That Is the Question?

<table>
<thead>
<tr>
<th>Methods</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>• French Perinatal Cohort</td>
<td>• 11,538 women included</td>
</tr>
<tr>
<td>• January 1997-December 2010</td>
<td>• 10,984 received AZT</td>
</tr>
<tr>
<td>• Women who received ART during pregnancy and didn’t breastfeed were included</td>
<td>• 554 did not receive AZT</td>
</tr>
<tr>
<td>• Compared those who received IV AZT to those who didn’t</td>
<td>• VL ≥ 1000 copies/ml at delivery</td>
</tr>
<tr>
<td></td>
<td>• MTCT: 7.5% without IV AZT</td>
</tr>
<tr>
<td></td>
<td>• MTCT: 2.9% with IV AZT</td>
</tr>
<tr>
<td></td>
<td>• VL ≤ 400 copies/ml at delivery</td>
</tr>
<tr>
<td></td>
<td>• MTCT 0% with IV AZT</td>
</tr>
<tr>
<td></td>
<td>• MTCT 0.6% without IV AZT</td>
</tr>
<tr>
<td></td>
<td>• No significant differences in hematological malignancies</td>
</tr>
</tbody>
</table>

Case Question #3

JK presents to the hospital at 37 weeks in labor. She was most recently seen by her HIV provider at 34 weeks where her viral load was 545 copies/ml. Would you recommend she receive IV zidovudine?

- Should she have a c-section?
Postpartum Prophylaxis

- Infant antiretroviral prophylaxis
  - Oral zidovudine x 6 weeks (4 weeks can be considered)
  - High risk: Oral zidovudine x 6 weeks + oral nevirapine (birth, 48h, 96h)
  - Dosing based on neonatal age

- Infant testing (birth?, 14-21 days, 1-2 months, 4-6 months)

- Treatment for mom

- Breast is best?

Do we have to do Zidovudine for 6 weeks?

Methods

- Retrospective, cohort
- HIV-exposed children between January 2000-December 2010
- Zidovudine duration (2-6 weeks), and nevirapine addition, stratified based on transmission risk

Results

- 114 infants (79 low-risk, 28 high-risk, 11 very high-risk)
- Transmission risk = 1.8% (0.9% when protocol followed)
- 2-week zidovudine group = 1.4%
- No significant differences in hematologic parameters based on zidovudine duration

1, 2 or 3? Evaluating Postpartum Prophylaxis Regimens

<table>
<thead>
<tr>
<th>Methods</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Prospective, randomized, cohort study</td>
<td>• 1684 infants (566 single-drug, 562 two-drug, 556 in three-drug)</td>
</tr>
<tr>
<td>• 3 study groups:</td>
<td>• Transmission rate 5.7% at 3 months:</td>
</tr>
<tr>
<td>• zidovudine alone x 6 weeks</td>
<td>• 4.8% in single-drug</td>
</tr>
<tr>
<td>• zidovudine x 6 weeks + nevirapine x 3 doses</td>
<td>• 2.2% in two-drug regimen</td>
</tr>
<tr>
<td>• zidovudine x 6 weeks + nelfinavir x 2 weeks + lamivudine x 2 weeks</td>
<td>• 2.4% in three-drug</td>
</tr>
<tr>
<td></td>
<td>• Neutropenia occurred most frequently in 3-drug regimen group</td>
</tr>
</tbody>
</table>

Case Question #4

JK delivered a healthy baby boy via c-section and received IV zidovudine. Which of the following would you recommend for Baby Boy?

- Zidovudine orally x 6 weeks
- Zidovudine orally x 4 weeks
- Zidovudine orally x 6 weeks + nevirapine orally x 3 doses
- Initiate a 3-drug antiretroviral regimen immediately as baby is likely infected
But What About the Mississippi Baby?

HIV Detected in “Cured” Mississippi Baby, Creating Huge AIDS Therapy Setback

The infant was placed back on medication but the clinical trial to replicate virus suppression is still expected to proceed.

False hope from ‘cure’ of Mississippi baby with HIV leads to resurgence of virus in second child.
Key Takeaways

- Testing and identification of infection early is key to prevention

- HIV-negative pregnant women at high risk for HIV acquisition should be considered PrEP candidates

- Intrapartum intravenous zidovudine and neonatal antiretroviral prophylaxis can be tailored based on risk stratification