Managing HIV/AIDS in Correctional and Community Settings: Pre-Exposure and Post-exposure Prophylaxis

Ronald H. Goldschmidt, MD
University of California San Francisco
Department of Family and Community Medicine
Disclosures
No conflicts to declare

Clinician Consultation Center
Supported by
Health Resources and Services Administration (HRSA)
HIV/AIDS Bureau - AETCs
Centers for Disease Control and Prevention (CDC)
The Clinician Consultation Center (CCC) …provides clinicians of all experience levels with confidential, timely, cost-free, expert advice on:

HIV/AIDS management (testing, ARVs, co-infection, care)
   **Warmline** 800.933.3413  M-F  9 am – 9 pm

Management of HIV in pregnancy, L&D and infants
   **Perinatal HIV Hotline** 888.448.8765  24/7

Occupational and non-occupational exposures
   **PEPline** 888.448.4911  All days  9 am – 9 pm

Pre-exposure prophylaxis (PrEP)
   **PrEPline** 855.448.7737  M-F  9 am – 9 pm

Substance Use Warmline
   **SUW** 855.300.3595  M-F  9 am – 9 pm

Online Consultation: nccc.ucsf.edu
Preventing HIV Infection in Correctional and Community Settings: Objectives

Participants will be able to:

- Appreciate the indications for HIV post-exposure prophylaxis (PEP) for occupational, sexual and injection drug use exposures
- Understand the role of pre-exposure prophylaxis (PrEP) as a tool in HIV prevention
- Identify potential candidates for PrEP
- Identify laboratory studies required for starting and in monitoring PrEP
TJ is a 27 y.o. HIV-negative man who has been incarcerated for 6 months. He comes to the clinic stating that he had non-consensual rectal intercourse with an unnamed inmate 18 hours ago. He understands that the inmate is HIV-positive.

What would be the optimal management for TJ?

After performing venipuncture for TJ’s baseline labs, the clinic nurse stuck herself with the needle.

What needs to be done next?
First Aid

Soap/water, rinse

Don’t “milk” percutaneous injuries
Sergeant RP is a 42 y.o. healthy guard who comes in after helping break up a fight among inmates. One of the inmates spit at him and he believes some of the saliva went into his eye. He is quite scared and wants to know if he could have gotten HIV? …and he wants to know before he goes home to his family.

What can you tell him?
Prevention in 2017

First-line:
Antiretroviral therapy of HIV-infected persons when possible ("Treatment is Prevention")

Second-line:
Safer sexual and drug use practices

Why are additional HIV prevention tools needed?
Despite testing, counseling, condoms, there continue to be more than 40,000 new infections annually in the U.S.
Treatment as Prevention

Serodiscordant couples: 50% of infected partners were men
CD4 = 350 - 550/uL

“Early therapy” = ARVs immediately
vs.
“Delayed therapy” = ARVs after CD4 decline or symptoms c/w HIV

28 linked transmissions: 1 in early therapy group
27 in delayed therapy group

Early initiation of ARV Rx reduced rates of sexual transmission
Both personal and public health benefits from ARV therapy

Prevention of HIV-1 infection with early antiretroviral therapy.
Prevention in 2017

Treatment as Prevention

Post-Exposure Prophylaxis (nPEP)
Pre-Exposure Prophylaxis (PrEP)
Prevention in 2017

Treatment as Prevention

Post-Exposure Prophylaxis (nPEP)

Pre-Exposure Prophylaxis (PrEP)
What’s an exposure?

“a percutaneous injury or contact of mucous membrane or non-intact skin with blood, tissue or other body fluids that are potentially infectious.”
<table>
<thead>
<tr>
<th>Potentially infectious for HIV</th>
<th>NOT potentially infectious (unless visibly bloody)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Blood</td>
<td>• Feces</td>
</tr>
<tr>
<td>• Semen</td>
<td>• Nasal secretions</td>
</tr>
<tr>
<td>• Vaginal secretions</td>
<td>• Saliva</td>
</tr>
<tr>
<td>• Visibly bloody body fluids</td>
<td>• Sputum</td>
</tr>
<tr>
<td>• CSF, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, amniotic fluid</td>
<td>• Sweat</td>
</tr>
<tr>
<td></td>
<td>• Tears</td>
</tr>
<tr>
<td></td>
<td>• Urine</td>
</tr>
<tr>
<td></td>
<td>• Vomitus</td>
</tr>
</tbody>
</table>
# HIV transmission risk per 1,000 exposures*

* Exposure to source known to be HIV-infected

<table>
<thead>
<tr>
<th>Category</th>
<th>Risk per 1,000 exposures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parenteral</strong></td>
<td></td>
</tr>
<tr>
<td>IDU (injection drug use)</td>
<td>6.3</td>
</tr>
<tr>
<td>Needlestick, etc. (occupational)</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>Sexual</strong></td>
<td></td>
</tr>
<tr>
<td>Receptive anal</td>
<td>13.8</td>
</tr>
<tr>
<td>Insertive anal</td>
<td>1.1</td>
</tr>
<tr>
<td>Receptive vaginal</td>
<td>0.8</td>
</tr>
<tr>
<td>Insertive vaginal</td>
<td>0.4</td>
</tr>
<tr>
<td>Receptive oral</td>
<td>Low</td>
</tr>
<tr>
<td>Insertive oral</td>
<td>Low</td>
</tr>
</tbody>
</table>

* CLINICIAN CONSULTATION CENTER
National rapid response for HIV management and bloodborne pathogen exposures.
## Risk of Transmission

Overall risk, **percutaneous**: 0.23% (2.3 per 1000)

<table>
<thead>
<tr>
<th>Risk Factors</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visibly bloody device</td>
<td>6.2</td>
</tr>
<tr>
<td>Device used in artery or vein</td>
<td>4.3</td>
</tr>
<tr>
<td>Deep injury</td>
<td>15.0</td>
</tr>
<tr>
<td>End-stage AIDS</td>
<td>5.6</td>
</tr>
</tbody>
</table>

### Definitions and redefinitions:

- **Deep** $\rightarrow$ Intramuscular, sub-Q?
- **End-stage AIDS** $\rightarrow$ >1500 copies/mL
Baseline HIV Testing of Source Person (PEP)

Rapid Test (a game-changer for occupational PEP)

4\textsuperscript{th} Generation antigen-antibody test

If there may have been exposure in last 6 wks, obtain HIV RNA assay also.

Also, HBV and HCV testing
HIV Infection

(1) Eclipse
(2) Acute
(3) Seroconversion window period
(4) Long-standing

Period

Infection

Recent

Infection

Time (days)

0 10 20 30 40 50 60 180 240

HIV RNA
(mostly HIV-1)

HIV Ab (IgG)

HIV Ab (IgM)

HIV p24 Ag

p24 Antigen

4th Gen (p24 & 3rd Gen) = Architect and GS HIV Combo

Insti HIV-1
Multispot HIV-1-2 Rapid
Reveal
Clearview (2)
Oraquick Advance Rapid
Unigold Recombigen 1/2

2nd Gen
• 18 – 38 days after RNA

3rd Gen
IgM mostly
IgG Some

Architect
Advia Centaur
Vitros
GS HIV 1-2

Abbott PRISM
Unigold Recombigen
(Rapid)

Traditional rapid Ab assays pick up at days ~28-35

Adapted from “Laboratory Testing for the Diagnosis of HIV Infection: Updated Recommendations,” June 27, 2014, Centers for Disease Control and Prevention
Window period for HIV

Most seroconvert within 2-3 weeks
>90% within 1 mo; probably about 100% within 3 mos.

Most (60%) acute HIV identifiable by history of exposure and viral syndrome

No case of occupational transmission involving exposure during the window period has been reported in the US

Viral load (HIV RNA by PCR or bDNA) not routinely indicated
→ 2+% false positives
→ results not back in time to change the PEP decision.
## Acute HIV Syndrome at 1-8 weeks

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fever</td>
<td>75%</td>
</tr>
<tr>
<td>Rash</td>
<td>48%</td>
</tr>
<tr>
<td>Pharyngitis</td>
<td>40%</td>
</tr>
<tr>
<td>Adenopathy, cervical</td>
<td>39%</td>
</tr>
<tr>
<td>Myalgias</td>
<td>49%</td>
</tr>
<tr>
<td>Headache</td>
<td>45%</td>
</tr>
<tr>
<td>Fatigue</td>
<td>68%</td>
</tr>
<tr>
<td>Arthralgia</td>
<td>30%</td>
</tr>
<tr>
<td>Night sweats</td>
<td>28%</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>27%</td>
</tr>
</tbody>
</table>

**Oral/Genital Ulcers -- Specific**
The PEP Decision: Offer PEP or not?

Risks vs. benefits
Decisions often must be made with incomplete source patient information.
Should not delayed until SP lab results are available unless rapid test is pending
Default: can treat and stop
  Can be reassuring
  Allows time for test results
  Allows time for HCP reconsideration

Decision is the patient’s/HCW’s
Timing

PEP should be initiated as soon as possible, ideally within hours (rather than days) !!

Best: 1-2 hours
Excellent: 3-4 hours
Window of effectiveness: 36 - 72 hours?
>72 hours – no clear evidence of efficacy (based on animal studies)

Do not delay PEP Rx initiation pending SP results unless rapid test results will be available in 1-2 hours!
Standard 3-drug PEP Preferred Regimen

Tenofovir + emtricitabine (Truvada)

plus

Raltegravir 400mg bid or dalutegravir 50 mg qd

(Treat for 28 days)

Excellent tolerability, proven potency in HIV infection
Ease of administration
Few drug interactions
Screen for renal and hepatic disease
Follow-up of Exposed HCW

Follow-up in 3 days

Counseling and Support
Ensure adherence
Side effects (symptoms)
Counseling to reduce future risks
HIV antibody at 4-6 wks, 12 wks
Steps in Managing Exposures

Assess risk:

→ nature of injury
→ type of fluid – infectious?
→ source patient factors

Determine whether to offer PEP
Select PEP regimen
Obtain baseline laboratory tests
Counsel the Exposed: Emotional upset is the norm
Follow-up care
JT comes to clinic 6 months later. He has been given PEP on four other occasions since you first saw him. He will be released next week and now states that he has been having consensual sex with men for many years. After putting up with your tedious lecture on safe sex and your encouragement of his obtaining PEP when needed, he asks if there is anything else he needs to know to prevent HIV infection.

You proudly tell him that you learned about another prevention tool from Dr. Demetre Deskalakis recently.