Topics
Substance Use and HIV

- HIV epidemiology
- HIV risk behaviors
- HIV testing
- Engagement and retention in care
- Access to clean needles
- HIV disease progression
- ART adherence
- Addiction treatment
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Drug Use as a Risk Factor for HIV

- **IDU**: Typically heroin
  - Other drugs (e.g. cocaine, amphetamines)
    - Estimated 3 million HIV infected via IDU worldwide*
- HIV prevalence elevated among non-injecting drug users
    - IDU (past 6-month) vs. never injecting, heroin/cocaine users†
      - 13% (CI 12-15%) vs. 12% (CI 9-16%)
        - Addiction treatment center (n=2121)
      - 15% (CI 11-19%) vs. 17% (CI 12-21%)
        - Respondent-driven store-front sampling (n=448)

IDU and HIV in USA

- In USA, IDU accounted for:
  - 8% of new HIV infections (2010)
  - 17% of people living with HIV (2010)

- In Massachusetts, IDU accounted for:
  - 24% of adult HIV/AIDS cases in Massachusetts (2009)


Global HIV Prevalence Among IDUs

Global HIV Prevalence Among IDUs

Alcohol Problems among HIV-Infected Persons

- HIV Cost and Services Utilization Study (n=2864)*
  - 8% current hazardous drinkers
- HIV Research Network (14 sites, n=951)†
  - 11% current hazardous drinkers
- Women’s Interagency HIV Study (WIHS, 6 sites, n=2770)‡
  - 14-24% past-year hazardous drinkers (11-year period)
- Veterans Aging Cohort Study (VACS, n=881)**
  - 36% past-year hazardous drinkers (AUDIT ≥ 8)

** Conigliaro, Gordon, McGinnis, Rabeneck, Justice. JAIDS. 2003;33:521-525.
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Drug Use and Sex Risk

- Crystal meth among HIV-infected MSM (n=398)*:
  - Greater sex risk - unprotected anal sex with possible serodiscordant partner - past 6 months (OR 2.6, CI 1.4-4.8)

- HIV-infected crack cocaine users, binge vs non-binge users (n=303)†
  - Greater mean # of sex partners - past 6 months (12 vs. 4)
  - More likely never use a condom - past 30 days (OR 2.5, CI 1.1-5.5)

- Sexually active, HIV-infected IDU men (n=469)‡:
  - 32% reported unprotected sex with HIV negative or status unknown main partner – past 3 months

‡ Purcell, Mizuno, Metsch, et al. J of Urban Health. 2006;83:656-668.
HIV Risk Behaviors in Binge Drinkers

- 2008 Behavioral Risk Factor Surveillance System Binge Drinkers
  (41,083 binge drinkers; 240,230 non-binge drinkers)

- HIV Risk Behaviors (past year)
  - IDU
  - Exchange of sex for money/drugs
  - Unprotected anal sex

- HIV risk behaviors higher among binge drinkers: 7.0% vs. 2.9% (OR 1.8, CI 1.58-2.00)


FIT-8012
Alcohol Use and Risky Sex

Meta-analysis (n=27 studies) found unprotected sex among HIV-infected individuals significantly associated with:

- Alcohol consumption (OR 1.6, CI 1.4-1.9)
- Problematic drinking (OR 1.7, CI 1.5-2.0)
- Alcohol use in sexual contexts (OR 2.0, CI 1.6-2.4)

Alcohol Use and Vaginal HIV Detection

- HIV infected women (n=160)

<table>
<thead>
<tr>
<th>Recent Drinking (past 24 hrs.)</th>
<th>≤ 1 drink</th>
<th>≥ 2 drinks</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vaginal Detectable Virus</td>
<td>27%</td>
<td>40%</td>
<td>&lt;.05</td>
</tr>
</tbody>
</table>

- When stratified by ART status, recent drinking effect only observed in those on ART (n=87)

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  - Addiction treatment
HIV Testing and Drug Users

1998-2002, 5 city study of IDUs (n=1543)

- Only 7% of IDUs reported no past HIV test

- Syringe-exchange users more likely to have had an HIV test (OR 2.2, CI 1.3-3.9)

Behavior Change After Testing HIV Positive

- HIV Cost and Services Utilization Study (HCSUS) sample of HIV-infected persons in medical care in 1996 (n=2864)*
  - 80% of substance users quit or cut down drug use since diagnosis
  - Persons with CD4 counts <50 at some point were also more likely to quit or reduce substance use

- IDUs in the Ukraine (n=1798), after testing positive for HIV:†
  - Less unprotected sex (OR 0.6, CI 0.4-0.7)

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Presenting to Medical Care

- Entry into care in two New England clinics, 1994-1996 (n=189)†
  - 39% delayed medical care for >1 year, 32% >2 years, and 18% >5 years after diagnosis
  - IDU (p<0.001) and history of alcohol problems in men (p=0.03) associated with delay
- Entry into care in 18 states, 2000-2004 (n=3942)‡
  - 28% delayed medical care for > 3 months
  - IDU associated with delay (OR 1.4, CI 1.08-1.82)

‡ Reed, Hanson, McNaghten, et al. AIDS Patient Care STDS. 2009;23:765-773.
Alcohol Use and HIV Treatment

- HIV-infected Ugandans (n=421)
  - Persons abstinent in last year were 2.3 times more likely to receive ART

IDUs and HIV Treatment Engagement

- Global review of ART coverage for IDUs
  - In the five countries* with the largest IDU HIV epidemics, IDUs make up 67% of HIV cases, but only 25% of those receiving ART

- Barriers to HIV Treatment Engagement of IDUs
  - Stigmatization of IDUs in health care settings
  - Separation of addiction and HIV care systems
  - Bans on ART in active IDUs
  - No HIV treatment of prisoners

* China, Vietnam, Russia, Ukraine, Malaysia

IDUs and HIV Treatment Engagement

“The doctor said that I had to deal with one thing first, and then the other. Because I had told her straight that I used drugs. So, she said that I had to quit first and then take care of the rest. But how? … I’m actually afraid to discuss this issue of how to combine therapy and drugs. I don’t even want to ask the doctor… The doctor gave me such a look that I understood I’m kind of not entitled to ever feel good if I use drugs. So I made my conclusions. She made it clear to me that I had to deal with one thing first, then with the other.”

- Elena

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- **Access to clean needles**
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- Addiction treatment
Needle Exchange Program (NEP)

- Review of 42 studies from 1989-1999 among IDUs*
  - Decrease in HIV risk behavior
  - Decrease in HIV seroconversion

- Review of 7 international studies from 1991-2001†
  - Cost-effective
  - Feasible to implement internationally
  - Applicable to special populations

Global HIV Prevalence Among IDUs

Availability of Syringe Distribution and Exchange

- Great Britain and Australia have some of the lowest HIV prevalence rates among IDUs (~2%* and ~1%†)
- Reflects early adoption of harm reduction measures (c. 1986)†
  - Needle exchange programs
  - Opioid agonist treatment

AIDS CAN BLOW YOUR HIGH.

IF YOU'RE NOT GOING TO STOP, AT LEAST USE CLEAN NEEDLES.

CALL HERO
Health Education Resource Organization
945-AIDS
251-1164
1-800-638-6252
ELSEWHERE IN MARYLAND

FIT 2012
WHO/UNAIDS

IDU Prevention Policy

- Needle and syringe programs
- Opioid agonist therapy
- HIV counseling and testing
- Antiretroviral therapy
- Prevention and treatment of STIs
- Condom programming
- Targeted information, education and communication
- Hepatitis diagnosis, treatment and vaccination
- TB prevention, diagnosis and treatment

Topics
Substance Use and HIV

- HIV epidemiology
- HIV risk behaviors
- HIV testing
- Engagement and retention in care
- Access to Clean Needles

**HIV disease progression**

- ART adherence
- Addiction treatment
Injection Drug Use and HIV Disease Progression

- Hopkins* (n=1,851): Heroin and cocaine use and risk of opportunistic infections (OIs)

<table>
<thead>
<tr>
<th>Category</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonuser</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Intermittent user, abstinent</td>
<td>1.4</td>
<td>1.0 - 1.9</td>
</tr>
<tr>
<td>Intermittent user, active</td>
<td>2.3</td>
<td>1.5 – 3.0</td>
</tr>
<tr>
<td>Persistent user</td>
<td>2.1</td>
<td>1.4 – 3.1</td>
</tr>
</tbody>
</table>

Active drug use associated with HIV disease progression

Alcohol and HIV Disease Progression

- Pre-HAART, no association found*

- Heavy alcohol use associated with lower CD4 cell count in patients NOT on ART†
  - Adjusted mean decrease of 49 cells/µl compared with abstinence (p=0.03)

- Suggestive evidence from literature review that heavy alcohol use impacts disease progression.‡
  - Possible mechanisms:
    - Immune activation, increase GI bacterial translocation, interaction with ART metabolism

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Cocaine and HIV Disease Progression

- HIV-infected drug users (n=222)
- Crack cocaine users (n=110) 2.1 times more likely to have a CD4 ≤200 cells/ml
  - Higher HVL
  - Of those on ART, less likely suppress HVL
  - Of those not on ART (n=53), increased RR of CD4 cell decline < 200 (HR 3.9, CI 1.1-14.9)

Tobacco and HIV Disease Progression

- HIV-LIVE cohort (n=462)
  - No significant association between CD4 or HVL and smoking status
  - True for the range of tobacco use compared to non-smokers
Mortality and Substance Use

- HIV-LIVE (n=595), mortality associated with*:
  - Heroin or cocaine use (HR 2.4, CI 1.1-5.3)
  - Homelessness (HR 2.9, CI 1.3-6.4)
  - No association with heavy alcohol use (HR 0.6, CI 0.2-1.4)

- Johns Hopkins HIV Clinical Cohort 1997-2006, (n=1030 women)†
  - Heavy drinking associated with increased mortality (HR 1.4, CI 1.0-1.97)

IDU, HIV, and Mortality

- IDUs have the worst life expectancy among all transmission categories

- IDU life expectancy post-dx in the US (2005):
  - Male: 15.2 years (CI 14.8-15.5)
  - Female: 15.9 years (CI 15.1-16.6)

- IDU life expectancy almost half compared to those with sexual transmission risk

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- **ART adherence**
- Addiction treatment
Should continued substance use be a reason NOT to start ART?
Alcohol and ART adherence

- Meta-Analysis of 40 studies and over 25,000 participants*
  - Risky or dependent drinkers were less adherent than non-problem drinkers or abstainers (OR 0.5, CI 0.4-0.6)

- Study of African-Americans about beliefs of alcohol and ART (n=82)†
  - “Alcohol and ART do not mix.” (85%)
  - “I will not take my meds if I have been drinking.” (51%)

Efforts to Improve ART Adherence

Two RCTs to improve ART adherence among hazardous drinkers with motivational interviewing

- **ADHERE (n=151)**
  - 4 session intervention
  - No significant differences in medication adherence, CD4 count, VL, or alcohol consumption

- **Hazardous drinkers in New York City (n=143)**
  - 8 session intervention
  - Significant differences in VL, CD4 count at 3 months, but not 6 months

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IDUs and ART Adherence

- HIV-infected persons (n=578) first prescribed ART between 1996-2000*
  - Classified as current IDU, former IDU, or non drug user
  - Current IDUs were less likely to suppress their HVL compared to non-drug users
  - Former IDUs were NOT less likely suppress HVL compared to non-drug users

- Similar findings in Swiss Cohort between 1997-2006 (n=8669)†

Interventions to Improve ART Adherence in Drug Users

- RCT of directly observed ART (DOT) in substance users (n=87):
  - Greater HVL suppression (OR 2.2, CI 1.0-4.7)
  - Estimated CD4 count improvement of 45 cells/µL (CI 5 - 85, p=0.03)

Treatment Options

- History of prior drug use is an insufficient reason for withholding ART
- Usually, it is possible to support active drug users such that acceptable ART adherence levels are achieved
  - Requires coordination of drug treatment, medical and psychiatric care, and harm reduction services (e.g., syringe exchange)

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Addiction treatment
Addressing Addiction in HIV Care

- HIV-infected adults (n=951) receiving care at 14 sites*
  - 71% using substances; 24% receiving substance use treatment
  - Less than half reported discussing substance use issues with HIV care provider

- Need for providers to address substance use problems

- Audio-tapes of physician-patient encounters (n=413)†

- Quality of patient-provider communication
  - Good for illicit drug users
  - Worse for those with unhealthy alcohol use (shorter visit length, fewer activating/engaging and psychosocial counseling statements)

Alcohol Use among HIV/HCV-infected Persons

- HIV-LIVE (n=400)
- Those told about HCV diagnosis were more likely to report
  - Abstinence (AOR 1.60, CI 1.13 - 2.27)
  - Not drinking unhealthy amounts (AOR 1.46, CI 1.01 - 2.11)
- Awareness of HCV diagnosis associated with greater abstinence from alcohol and less unhealthy amounts of drinking

Addiction Pharmacotherapy

- **Heroin***
  - Methadone
  - Buprenorphine

- **Alcohol***
  - Naltrexone
  - Acamprosate
  - Disulfiram

- **Cocaine = investigational†**
  - Modafinil
  - GABA-ergic compounds (e.g. vigabatrin, topiramate)
  - Disulfiram
  - Vaccine (TA-CD)

Opioid Agonist Therapy (OAT) & HIV Outcomes

- HIV-infected Vancouver IDUs on ART, 1996-2003 (n=278)*
  - Methadone OAT associated with
    - Adherence (OR 1.5; 95% CI 1.2-2.0)
    - HIV RNA suppression (OR 1.3, CI 1.0-1.8)
    - CD4 cell count rise (OR 1.6, CI 1.3-2.0)

- Prospective cohort of ART-naïve, HIV-infected IDUs in Vancouver, 1996-2008 (n=231)†
  - Methadone OAT associated with
    - Earlier ART initiation (RH 1.6, CI 1.2-2.3)

Integrated OAT & DOT

- RCT compared directly observed ART (DOT) to standard of care
- 12 methadone OAT clinics in the Bronx (n=77); 24-week follow-up
- DOT group at 24 weeks
  - Better adherence (86% vs. 56%, p<0.0001)
  - More likely to have undetectable viral load (OR 3.1, CI 1.1-5.4)

Buprenorphine OAT

- Advantage of buprenorphine OAT*
  - Efficacy and retention comparable to methadone
  - Milder withdrawal symptoms
  - Very low risk of overdose
  - Decreased risk of abuse and diversion
    *(buprenorphine/naloxone)*

- Can be delivered in the office through a collaborative nurse care-manager model†

Buprenorphine OAT

- Longitudinal analysis of HIV+ patients on bup/nal (n=166)
  - bup/nal associated with significant reductions in HIV sex and drug-related risk behaviors from baseline to 12 and 24 weeks

<table>
<thead>
<tr>
<th></th>
<th>BL</th>
<th>12 wks.</th>
<th>24 wks.</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDU in past 3 months</td>
<td>37%</td>
<td>12%</td>
<td>7%</td>
<td>&lt; 0.001</td>
</tr>
<tr>
<td>Sex while “high”</td>
<td>64%</td>
<td>13%</td>
<td>15%</td>
<td>&lt; 0.001</td>
</tr>
</tbody>
</table>

Drug Interactions: ART Impacts Addiction Pharmacotherapy

- IDUs receiving ART and OAT (n=120)
  - Median methadone dose increase:
    - 20 mg/d \((p<0.001)\) with nevirapine
    - 7.5 mg/d \((p=0.004)\) with efavirenz
  - No significant increase required for patients on ritonavir-boosted lopinavir

Drug Interactions: Addiction Pharmacotherapy Impacts ART

- Methadone increases serum zidovudine levels by 40%, but question if clinically relevant*
  - No such interaction observed with buprenorphine

- Buprenorphine had no effect on early and newer protease inhibitors (early PIs n=30)† (newer PIs n=21)‡

12-Step Programs (AA, NA, CA)

- Focus on abstinence
- Life long participation is emphasized
12-Step Programs & HIV-Infected Patients

- HIV-LIVE Study (n=400); 43% alcohol dependent, 43% drug dependent

- 56% attended 12-step meeting in past 6 months

- Less likely to attend:
  - Women (OR 0.6, CI 0.3, 0.9)
  - Alcohol-using social support system (OR 0.6, CI 0.4-0.8)

- More likely to attend:
  - HCV antibody positive (OR 2.3, CI 1.4-3.6)
  - Homeless (OR 1.6, CI 1.2-2.3)
  - Drug dependence diagnosis (OR 1.4, CI 1.1-1.8)

Addressing Substance Use: Talk Therapy- Beyond CAGE

- Physicians can play an important role in early detection and intervention.
- Assess patient’s readiness to change alcohol or drug use behavior
- Brief intervention: 5-15 min counseling to motivate change
  - FRAMES: Feedback, Responsibility, Advice, Menu of Options, Empathy, Self-efficacy

“Only those who survive have a chance of coming off drugs.”

-Marion Casper-Merk, Secretary of State for Drug Addiction, Germany