Understanding and Intervening on Alcohol-Related Comorbidities in HIV Treatment

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Acknowledgements

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ARCH: Research Components

• Alcohol and HIV-Associated Brain Dysfunction (Cohen)
• Brief Alcohol Intervention for HIV-Infected MSM in a Primary Care Setting (Kahler)
• Brief Intervention to Reduce Alcohol Use and Sexual Risk Behaviors in the Emergency Department (Monti)
• Sexual Minorities Research Resource Core (Operario)
• Mechanisms of Behavior Change Resource Core (Kahler)
Alcohol Consumption and Risk of Incident HIV Infection

Alcohol Consumption and Risk of Incident HIV Infection in MSM

Sander et al. (2013). *AIDS.*
Odds of Unprotected Sex Among PLWH

Shuper et al. (2009). *AIDS Behav.*
Odds of 95% HAART adherence by drinking level

Hendershot et al. (2009). *JAIDS*. 
Consistent Associations

• Associations between increasing alcohol use and non-adherence shown in (Neuman et al., 2012):
  – Women and men
  – IDUs
  – Numerous countries: USA, France, Switzerland, Sweden, Australia, South Africa, Cameroon, Ethiopia, Botswana, coastal West Africa, Brazil, Thailand, India.
Percent non-adherence by drinking status

Braithwaite et al. (2005). ACER.
Reasons for Non-Adherence

• Forgetfulness and conscious decisions (Sankar et al., 2007)

• Beliefs about interactive toxicity between alcohol and ARVs (Kalichman et al., 2009; 2012).
  – Present in about 1/4 of patients who drink.

• General disruption associated with drinking problems. Decreased healthcare utilization (Azar et al., 2010)

• Heavy drinkers have worse interactions with HIV tx providers, with shorter visits and less engaging counseling statements (Korthuis et al., 2011)
Alcohol, Serious Illness, and Death

• More serious non-AIDS events among HIV-infected adults who drink (Belloso et al., 2010)
• Higher risk of death associated with >7 drinks/week among women (Hessol et al., 2007)
• History of heavy vs. low alcohol consumption associated with higher risk of death: 37% vs. 25% (Bonacini, 2011)
• No association between heavy drinking and death in recent longitudinal study controlling for VL and Karnofsky score (Cohn et al., 2011)
Alcohol and HIV Outcomes

- 10 studies published from 2003 to 2009
- Examined either alcohol use disorders (AUD) or hazardous drinking
- 5 found positive associations with increased viral load
- 4 found associations with decreased CD4 count
- Only 3 found no associations. Possible limitations in alcohol measurement, sample inclusion, or sample size.

Azar et al. (2010). *Drug and Alcohol Dependence.*
Impact of ETOH on Treatment

<table>
<thead>
<tr>
<th>Drug Use</th>
<th>Alcohol Use</th>
<th>Antiretroviral Therapy&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Adherence&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Virologic Suppression&lt;sup&gt;c&lt;/sup&gt;</th>
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<td>1.0 (Reference)</td>
<td>1.0 (Reference)</td>
<td>1.0 (Reference)</td>
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<tr>
<td>No</td>
<td>Moderate</td>
<td>1.14 (0.95-1.37)</td>
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<td>1.00 (0.84-1.20)</td>
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<tr>
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<td>Hazardous</td>
<td>0.57 (0.42-0.77)</td>
<td>0.36 (0.25-0.53)</td>
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<td>0.60 (0.46-0.78)</td>
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<td>Moderate</td>
<td>0.68 (0.54-0.88)</td>
<td>0.40 (0.30-0.54)</td>
<td>0.64 (0.50-0.82)</td>
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<tr>
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<td>Hazardous</td>
<td>0.40 (0.29-0.57)</td>
<td>0.32 (0.20-0.51)</td>
<td>0.50 (0.32-0.76)</td>
</tr>
</tbody>
</table>

from Chander, Topics in Antiviral Medicine, 2011
At-risk = 4+ drinks/wk for women, 5+ drinks/wk for men
Shacham et al., 2011, *AIDS and Behavior*
Alcohol and HIV Outcomes

• Recent study controlled for HAART adherence (Wu et al., 2011)
  – Association between daily drinking and HIV viral load
  – Found among those on HAART, not in those not on HAART
  – No association with CD4 count
  – Cross-sectional
Hazard Ratio for Decline in CD4 to <200 cells/µl

- Moderate = <1 drink/day; Frequent = >2 drinks/day

Baum et al., 2010, AIDS Res Hum Retroviruses

$p < .05$

$p < .01$
Alcohol and Non-HIV Outcomes

• The VACS Index provides the strongest prediction of mortality risk (Justice et al., 2009)

• Incorporates information on
  – Age
  – Hepatitis
  – Viral Load
  – CD4
  – FIB-4
  – eGFR
  – Hemoglobin
Combining HIV and Non-HIV Biomarkers

Justice et al., 2010, *HIV Med*
Liver Disease

- Liver disease has surpassed AIDS-defined illnesses as a cause of death in PLWH (Rosenthal et al., 2007; Tedaldi et al., 2003)
- Heavy alcohol use is present in almost 50% of deaths from liver disease in HIV patients (Rosenthal et al., 2009)
- Alcohol is well known to be hepatotoxic at high doses
- HIV infection may exacerbate these effects (Barve et al., 2010; Szabo et al., 2011)
  - Increase gut permeability
  - Increase inflammation, fat accumulation, insulin resist.
  - Interaction with HAART (Akhtar et al., 2008; Nunez et al., 2006)
Liver Disease

- Alcohol abuse/dependence in HIV patients associated with increased fibrosis/cirrhosis (Lim et al., 2008)
- Heavy alcohol intake increases risk of liver fibrosis in HIV/HCV co-infection (Carton et al., 2011)
- Hazardous drinking associated with greater AST to platelet ratio index (Chaudhry et al., 2009)
Liver Disease

• In a longitudinal sample of HIV patients with a history of alcohol problems

• Hazardous alcohol use was
  – associated with higher AST and ALT in HIV/HCV-coinfected patients
  – not associated with AST and ALT in HIV mono-infected

Tsui et al., 2013, *Journal of Studies on Alcohol and Drugs*
Liver Disease

- **FIB-4**: \(\text{FIB-4} = \frac{\text{age} \times \text{AST}}{\left(\text{platelet} \times \sqrt{\text{ALT}}\right)}\) (Sterling et al., 2006)
  - Best predictor of cirrhosis/fibrosis (Shire et al., 2009) in co-infected patients
  - Elevated even in HIV mono-infection (Blackard et al., 2011)
  - HIV RNA level positively associates with FIB-4 (Blackard et al., 2011; Justice et al., 2010)
  - Predicts hepatocellular carcinoma (Park et al., 2011) in HIV patients
  - In HIV infected and uninfected women, \(ns\) association between alcohol use and FIB-4 (Blackard et al., 2011)
Alcohol and Hemoglobin

- Alcohol use associated with moderately higher values (Milman et al., 2009)
  - Men: $r = .14$, 1.3% increase for heavy drinking
  - Women: $r = .08$, 1.9% increase for heavy drinking

- Reductions in red cell count, and increase in mean corpuscular volume (Whitehead et al., 1995)

- Similar effects are seen with smoking

- No studies published in HIV patients
Alcohol and Kidney Function

• In rats, a diet with a high % calories from alcohol led to:
  – Reduced glomerular filtration rate (GFR)
  – Reduced catalase (CAT) activity (Ojeda et al., 2012)

In human observational studies:
• Evidence of lower risk of reduced GFR with consumption of 7+ drinks/week (Schaeffner et al., 2005)
• Drinking freq and quant associated with lower risk of chronic kidney disease (Fumakoshi et al., 2012)
Key Questions

- How does alcohol relate to each component of the VACS Index?
- What drinking parameters are most important?
  - Drinks per week, drinking freq, frequency of heavy drinking, hazardous drinking
- Does HAART adherence account for those associations? Do they vary by HAART status?
- Does HCV enhance these associations?
Method

• SUN Study (Study to Understand the Natural History of HIV and AIDS in the Era of Effective Therapy): CDC Supported
• N = 689
• Exposed only to combination highly active antiretroviral therapy
• Followed for 7 years with assessments every 6 months
• 6754 total assessments (mean visits = 9.8)
SUN Study Sites

Minneapolis
St. Louis
Denver
Providence
Demographics

- 23.8% Female
- 14.7% MSW; 61.5% MSM; 23.8% women
- 11.9% below HS education
- 58.2% White; 29.9% AA; 9.7% Hispanic/Latino
- 12.7% HCV co-infection

- Alcohol use at baseline (past 30 days)
  - 31.6% non-drinkers
  - 39.2% drinking without heavy drinking (4+ W/ 5+ M)
  - 20.9% report infrequent heavy drinking (1-3 days)
  - 8.5% report frequent heavy drinking (4+ days)
Analysis Plan

• Repeated measures analysis using generalized estimating equations (GEE)
• HCV and demographics at baseline
• Alcohol use as a time-varying covariate
• Adherence as time-varying covariate
• Interaction between HCV and alcohol use
• Interaction between HIV medication status and alcohol use
Adherence

• Across visits, 18.0% of valid patient observations included at least 1 missed dose in the past 3 days

- Strong associations with heavy drinking
  - Some heavy vs. no-heavy/non-drinking
    - OR = 1.73, 95% CI (1.42, 2.11), p = <.0001
  - Frequent heavy vs. infrequent heavy drinking
    - OR = 1.48, 95% CI (1.15, 1.91), p = .003
Log Viral Load

- Across visits, 28.2% of valid patient viral loads were in the detectable range
  - Weak non-sign. association with heavy drinking
  - Some heavy vs. no-heavy/non-drinking
    - $B = 0.08$, 95% CI (-0.02, 0.16), $p = .12$
  - Frequent heavy vs. infrequent heavy drinking
    - $B = -0.07$, 95% CI (-0.21, 0.06), $p = .29$
  - Not significantly moderated by HIV med status
CD4 Count

- Across visits, the mean CD4 cell count was 567.9 ($SD = 275.2$)
- Trend towards negative association with heavy drinking
  - Some heavy vs. no-heavy/non-drinking
    - $B = -13.67$, 95% CI (-27.79, 0.18), $p = .053$
  - Frequent heavy vs. infrequent heavy drinking
    - $B = -5.99$, 95% CI (-24.11, 12.12), $p = .52$
CD4 Count

• Significant interaction with HIV meds

❖ Among those on HIV medications:
• Some heavy vs. no-heavy/non-drinking
  – $B = -20.01$, 95% CI (-34.35, -5.79), $p = .006$
• Frequent heavy vs. infrequent heavy drinking
  – $B = -7.74$, 95% CI (-27.23, 11.74), $p = .44$
• Robust to control for medication adherence
Log FIB-4

• Across visits, 20.2% of FIB-4 values were equal or above a clinical cutoff of 1.45; 18% missing
  ➢ Log FIB-4 values positively associated with heavy drinking
• Some heavy vs. no-heavy/non-drinking
  — $B = 0.050$, 95% CI (0.019, 0.080), $p = .0011$
• Frequent heavy vs. infrequent heavy drinking
  — $B = 0.046$, 95% CI (0.002, 0.089), $p = .039$
• No interaction with HCV or gender or ARV
• Positively associated with log VL and negatively associated with CD4
Renal Function (GFR: MDRD)

- Across visits, estimated GFR was 98.85 ($SD = 25.59$); only 4.1% below a value of 60
- GFR was not significantly associated with heavy drinking
- Some heavy vs. no-heavy/non-drinking
  - $B = 0.52$, 95% CI (-1.92, 0.88), $p = .47$
- Frequent heavy vs. infrequent heavy drinking
  - $B = 0.09$, 95% CI (-1.61, 1.78), $p = .92$
Hemoglobin

• Across visits, average hemoglobin was 14.53 ($SD = 1.68$); with 33.5% below 14 and 6.8% below 12

❖ Hemoglobin was significantly and positively associated with heavy drinking

• Some heavy vs. no-heavy/non-drinking
  – $B = 0.15$, 95% CI (0.07, 0.24), $p = .0003$

• Frequent heavy vs. infrequent heavy drinking
  – $B = 0.02$, 95% CI (-0.08, 0.12), $p = .73$

• Robust to control for smoking status

• Independent of medication adherence
Causal Inference

- Challenging to establish in obs. wave data
- Numerous confounds that can impact alcohol use, adherence, and biomedical outcomes
- Inference can be strengthened through causal modeling
  - Alcohol use and adherence can be presumed to occur before the biomarker assessment
  - Alcohol use causing non-adherence far more plausible than the converse
- Recent methods can handle these confounds with lagged data (Valeri & VanderWeele, 2013, Psych Methods)
Causal Inference
Preliminary Results

• Significant natural indirect (mediated) effects of heavy alcohol use on viral load and to a lesser extent CD4 through its impact on ARV adherence.
  – No significant natural direct effect

• Significant natural direct effect of heavy alcohol use on FIB-4.
  – No significant natural indirect effect through adherence
INFORMATION

WHAT TO DO WITH IT
RCTs of Interventions for PLWH Who Drink Hazardously

• RCT of 8-session behavioral intervention (MI & CB) vs. time and content-equivalent control found effects at 3 but not 6 months on:*
  – Greater adherence, lower viral load, higher CD4
  – Substantial but equal change in alcohol use

• Information was equivalent in both groups, such that means of delivery was the only experimental factor

*Parsons et al. (2007). J AIDS.
RCTs of Interventions for PLWH Who Drink Hazardously

• RCT with 253 HIV-infected MSM comparing 4 individual sessions +4 peer sessions to education and referral only:*
  – At 12 months, ~30% greater reduction in drinking
  – Effect on sex risk only among those who reported same day drinking and sex: ~50% greater reduction
  – No effects on biomedical outcomes reported

*Valasquez et al. (2009). *JCCP.*
RCTs of Interventions for PLWH Who Drink Hazardously

*Valasquez et al. (2009). JCCP.*
RCTs of Interventions for PLWH Who Drink Hazardously

- Pilot RCT with 75 HIV-infected patients in Kenya who report hazardous drinking
- Clinic based: 8-session CBT vs. usual care
- Strong treatment effects on:
  - Percent drinking days/drinks per drinking day
  - ARV adherence
  - Viral load and CD4

*Papas et al. (2011). JAIDS.*
RCTs of Interventions for PLWH Who Drink Hazardously

*Papas et al. (2011). JAIDS.
RCTs of Interventions for PLWH Who Drink Hazardously

• RCT with 258 HIV-infected in a large urban HIV clinic

• 3 conditions: advice-education, MI, MI + HealthCall (IVR-based system)
  – Non-dependent patients: All arms showed ~50% reduction in # drinks/day; *ns* group diff.
  – In dependent patients: MI+HC showed a significant treatment effect in reducing #DPD

*Hasin et al. (in press). Addiction*
Research Component 2

Brief Alcohol Intervention for HIV-Infected MSM in an HIV Primary Care Setting

PI: Christopher Kahler

Co-Investigators: Monti, Mayer, Pantalone, Liu, and Mastroleo
A Randomized Controlled Trial of Goal Choice Interventions for Alcohol Use Disorders Among Men Who Have Sex With Men

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Hunter College and the Graduate Center of the City University of New York

Donald A. Bux Jr.
New York State Psychiatric Institute

Thomas W. Irwin and Milton L. Wainberg
New York State Psychiatric Institute

Frederick Muench
Columbia University

Christopher W. Kahler
Brown University

Susan Marcus and Jay Schulz-Heik
Mount Sinai School of Medicine

This study tested the efficacy of behavioral treatments for alcohol use disorders (AUD) among men who have sex with men (MSM) and who are at risk for HIV transmission. HIV-negative MSM with current AUD (N = 198) were recruited, offered treatment focused on reducing drinking and HIV risk, and followed during treatment and 12 months posttreatment. Participants (n = 89) accepted treatment and were randomized to either 4 sessions of motivational interviewing (MI) or 12 sessions of combined MI...
Alcohol Interventions with MSM

*Figure 3. Posttreatment mean drinks per day by treatment condition (two groups). MI = motivational interviewing; CBT + MI = coping skills training plus motivational interviewing.*

*Morgenstern et al. (2007). JCCP.*
A Randomized Clinical Trial of Naltrexone and Behavioral Therapy for Problem Drinking Men Who Have Sex With Men

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Columbia University

Alexis N. Kuerbis
Research Foundation for Mental Hygiene and Columbia University

Andrew C. Chen
Columbia University

Christopher W. Kahler
Brown University

Donald A. Bux, Jr.
Research Foundation for Mental Hygiene

Henry R. Kranzler
Perelman School of Medicine, University of Pennsylvania, and Philadelphia VA Medical Center, Philadelphia, Pennsylvania

Objective: This study tested the comparative effectiveness of modified behavioral self-control therapy (MBSCT) and naltrexone (NTX), as well as the added benefit of combining the 2, in problem drinking men who have sex with men (MSM) seeking to reduce but not quit drinking. Method: Participants ($N = 200$) were recruited and urn randomized to 1 of 2 medication conditions, NTX or placebo (PBO), and either MSBCT or no behavioral intervention, yielding 4 conditions: PBO, NTX, MSBCT, and NTX + MSBCT. In addition, all participants received a brief medication compliance intervention. Participants were treated for 12 weeks and assessed 1 week after treatment completion. Two primary outcomes—sum of standard drinks and number of heavy drinking days—and 1 secondary outcome, percentage of those...
Alcohol Interventions with MSM

*Morgenstern et al. (2012). JCCP.*
Reducing Alcohol-related Comorbidities in HIV treatment (ReACH)

• 224 HIV-infected MSM from Fenway Health, Boston
• Hazardous drinking by NIAAA criteria
  – 5+ drinks at least once a month
  – >14 drinks per week
• Randomized to treatment as usual (TAU) or TAU + Brief alcohol intervention (TAU-BI)
• Follow-ups at 3, 6, and 12 months
Sample Description (77 to date)

- Alcohol Use
  - 30.4 (28.9) drinks per week
  - 34.4% (25.6) heavy drinking days
  - SIP score: 10.4 (7.7)
- Depressive symptoms (CESD): 18.6 (11.9)
- High risk sex: 44.0%
- ARV adherence: 19.5% are < 90% adherent
- Detectable VL: 12.5%; CD4 < 400: 22.4%
- Abnormal liver function: 38.7%
- HCV: 4.0%
Treatment Development

- Conducted sessions with 5 participants with basic manual
- Conducted reviews of audiofiles
- Core challenges
  - Severity of problems
  - Length of assessment and intervention
  - Need to have sustained effects on drinking but also be scalable
  - Complexity of the feedback on alcohol and HIV
Brief Alcohol Intervention

- Based on Motivational Interviewing
- 1 60-minute session after baseline assessment
- Brief 20 min sessions at 3 and 6 months
- Follow-up phone calls after each session
  - Provide results of most recent blood tests
- Focus centers on alcohol but includes:
  - Virology/immune function, cognitive function, liver function, adherence, sex risk, other drug/tobacco use as motivation for changing drinking
BI Components

• Open-ended, non-confrontational discussion:
  – Pros and cons of drinking
  – Exploring goals and values
  – Assessing motivation

• Normative feedback on drinking (in some cases)

• Feedback on medical and behavioral measures
  – Provide results of most recent blood tests

• Development of a change plan
# Assessment

## Project REACH - Pre-Baseline TLFB

**Day 1**
- # of doses Rx:
  - [ ] P1: FT?
  - [ ] Others:
- # doses taken:
  - [ ] Others:

**Day 2**
- # of doses Rx:
  - [ ] P2: FT?
  - [ ] Others:
- # doses taken:
  - [ ] Others:

**Reasons for non-adherence**
- [ ] Med characteristics
- [ ] Routine disruption
- [ ] Psych factors
- [ ] Med mistrust
- [ ] Subs use, intentional
- [ ] Subs use, unintentional

**Relationship codes**
- [ ] FT = first time
- [ ] A = anonymous
- [ ] CA = casual
- [ ] DT = dating
- [ ] LT = long-term

**Enter Date of Day 1:**
- [ ] Month
- [ ] Day
- [ ] Year

**Past 30 days, number of different sex partners:**
- [ ]

**Past 30 days, number of different sex partners, with unprotected sex:**
- [ ]

**NOTES:**
- [ ]
Adherence: Day Level Assoc.

- 75 participants data on 30-day BL TLFB
- 2,250 days of data to report on.
- 31(41%) of those 75 participants reported at least one missed dose
- 148 missed does days (6.6% of days)
- 95 of 148 days were drinking (64.2%)
- 53 of 148 days were non-drinking (35.8%)
# Adherence: Reasons (all endorsed)

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<th>Yes</th>
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<td><strong>Psych factors</strong></td>
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Your Drinking

Currently about 71% of men in the United States drink alcohol regularly. Rates of drinking are generally higher for men who are sexually active with other men, and for people who are living with HIV. Among urban men who are sexually active with men, rates of drinking are estimated at about 87%. The more alcohol that men with HIV drink, the more likely it is that alcohol will lead to medical problems as well as social and emotional problems.

Where does your drinking fit in?

The chart below shows the average number of alcoholic drinks consumed per week based on a large telephone survey of urban men who are sexually active with other men. You told us that you drink about ___ days per week, and you drink an average of ___ drinks per day when you drink. At ___ drinks per week, you drink more than ___ out of 100 men in the urban-area survey.
Alcohol and Health – Your Connections

Baseline
The figure below shows six important areas where alcohol use may affect health and health behaviors. The white arrows show connections between drinking and health that have been seen in prior research. The yellow arrows show connections that are of concern with your health based on what you have told us and what your medical tests show. The red arrows show connections that are of especially high concern for your health currently.

Viral Control
Substance Use
Medication Use
Sex Risk
Liver Health
Brain Function
HEALTH STATUS REPORT - BASELINE

VIRAL CONTROL AND IMMUNE FUNCTION
Viral Load (most recent) ___ undetectable ___ Date: 3/10/2011___
CD4 Count (most recent) ___ 325 __________ Date: 3/10/2011___

HIV MEDICATION ADHERENCE
(if person is not on antiretrovirals, this section will say “Not Applicable”)
Adherence in the past 3 months: ___ 81 ___% of pills taken
Total # of days with missed doses in past 30 days: ___ 4 ___ (13%)
On the ___ 15 ___ days you drank, you missed doses on: ___ 3 ___ days (20%)
On the ___ 15 ___ days you did NOT drink, you missed doses on: ___ 1 ___ days (7%)

LIVER HEALTH
AST ___ 67 ___________ Normal Range 5 – 35 Date: 3/10/2011___
ALT ___ 54 ___________ Normal Range 7 – 56 Date: 3/10/2011___
Abnormal bilirubin: □ No □ Yes Date: 3/10/2011___
GGT: (to be conducted): 0 – 30 Normal; 31 – 50 High Normal; 51 + Elevated Abnormal

Hepatitis: □ B □ C

BRAIN HEALTH
Processing speed: Normal (Values for Brain Health will be either ‘normal’ or ‘impaired’)
Learning: Impaired
Memory: Normal
Complex thinking: Normal

SEXUAL HEALTH
# of times having unprotected anal or vaginal sex in the past 3 months: ___ 16 ___
# of partners with whom you had unprotected sex in the past 3 months: ___ 4 ___
Total # of days having unprotected sex in past 30 days: ___ 7 ___ (23%)
On the ___ 15 ___ days you drank, you had unprotected sex on: ___ 6 ___ days (40%)
On the ___ 15 ___ days you did NOT drink, you had unprotected sex on: ___ 1 ___ days (7%)

OTHER DRUG USE
Tobacco: □ No □ Occasional □ Regular
Drugs other than alcohol or tobacco: □ No □ Occasional □ Regular
U24 AA022003

Mechanisms of Behavior Change Resource Core for Alcohol-HIV Interventions

PI: Christopher Kahler

Co-Investigators: Howe, Laws, Magill, Mastroleo, Monti, Wilson

External: Fiellin (Yale), McCaul (Hopkins), Saag (UAB), Bryant (NIAAA)
Aims

Objective 1: To conduct state-of-the-art, integrative, and clinically impactful research on mechanisms of behavior change in alcohol interventions among PLWH and those at high risk for HIV infection.

Objective 2: To serve as a national resource for investigators interested in understanding mechanisms of behavior change in alcohol interventions among PLWH and those at high risk for HIV infection.
Participating Trials

- Brown University Emergency Department Study (5R01AA009892-17; Monti, PI)
- Brown University Brief Intervention for MSM Study (P01AA019072-02; Kahler, PI)
- Yale Naltrexone Study (R01AA018923-03; L. Fiellin, PI)
- Yale Stepped Care Study (U01AA020795-01; D. Fiellin, PI; Amy Justice, PI of the Yale CHAART)
- CNICS Alcohol Intervention Implementation Study (U01AA020802-01; Saag, PI; McCaul, PI of the Johns Hopkins CHAART)
### Participating Trials - Targets

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<td>Uninfect.</td>
<td>Paraprofess</td>
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<td>Y*</td>
<td>N</td>
<td>N</td>
<td>Y</td>
<td>N</td>
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</table>
Methods

- **Motivational Interviewing Skills Code (MISC 2.0)**
  - Developed for coding language in MI
  - Code provider behavior as MI-consistent or MI-inconsistent
  - Codes pt. language as change or sustain talk

- **Generalized Medical Interaction Analysis System (GMIAS)**
  - Used to code non MI-specific elements of clinical encounters
  - Used for parsing topics in a clinical interaction and tracking how they are addressed
Methods

• What is common to all discussions of targeted behavior change (TBC)
• Does client language predict behavior?
• Can provider behavior influence client language/behavior in session and improve outcome
2.1 alcohol use

2.11 consumption patterns
2.111 normative comparison
2.112 contexts of consumption

2.12 consequences
2.121 of reduction/cessation
2.122 of use

2.13 change discussion

2.131 barriers to change
2.1311 internal
2.1312 external

2.132 facilitators of change
2.1321 internal
2.1322 external

2.133 tbc goals

2.134 treatments
2.1341 therapy/psych
2.1342 pharmacologic
2.1343 self help/support group
2.1344 detox/28-days

2.135 intermediate change efforts
2.1351 internal
2.1352 external

2.136 intermediate counterchange efforts
2.1361 internal
2.1362 external
Speech Acts

External State (Representatives)

2.1 Factual Information
- 2.11 Behavior ("I", "My")
- 2.12 Logical Deduction
- 2.13 Confirmation ("Right", "No"), not agree to do or agree with opinion
- 2.14 Invocation of shared information

2.121 Explain/Outline aspects of determined future course of action (outside of exam)
- 2.131 Repeat
- 2.132 Finish sentence for

Internal State (Expressives)

2.2 Comprehension or Knowledge

2.3 Value or Belief

2.4 Preference, Taste, Opinion

2.5 Desire, Goal, Intention
- 2.51 Past Desire, Goal, Intention

2.41 Criticize other speaker

2.42 Compliment/Praise other speaker

2.43 Agree with opinion or statement
- 2.431 Disagree with opinion or statement

2.44 Apologize to

2.45 Validating Opinion

2.46 Negating Opinion
Timeline

• Transcribe over 1000 clinical interactions
• Create a combined coding system
• Develop software to assist with coding
• Code clinical interactions: starting in March 2013
• Analyze data from first clinical trials to complete enrollment: starting in late 2013
• Conduct causal analyses applying modern causal modeling approaches
Thank you!