

**BRIEF DEPRESSION INTERVENTION TO OPTIMIZE INTENSIVE  
OUTPATIENT METHAMPHETAMINE TREATMENT AMONG GAY  
AND BISEXUAL  
MEN WHO HAVE SEX WITH MEN:  
EFFECTS OF THE COMPUTERIZED “MOODGYM” DEPRESSION INTERVENTION ON  
METHAMPHETAMINE USE, SEXUAL RISK-TAKING, DEPRESSION,  
AND HIV MEDICATION ADHERENCE**

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*All results preliminary, do not cite without permission.*

# INTRODUCTION

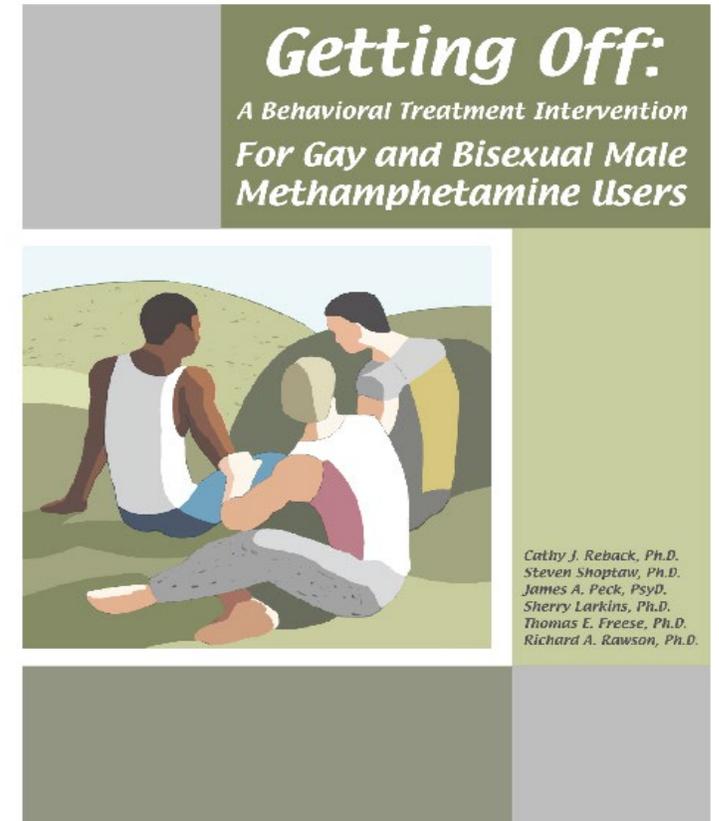
- Annually, the CDC estimates ~70% of new HIV infections in the United States occur among gay, bisexual, and other men who have sex with men (hereafter, GBM)
- Methamphetamine (MA) use is significantly more prevalent among GBM than among other US adults populations, particularly along the West Coast of the United States
  - In Los Angeles County, samples of substance-using GBM routinely evidence rates of MA use as high as 28%-30% in the last 30 days
  - Rates of MA use in the last 30 days among substance-using GBM living with HIV are even higher, with prevalence at ~40%.
- MA use has consistently demonstrated strong associations with HIV transmission risk among GBM, and is identified as a critical factor influencing the HIV epidemic in the United States
- Research suggests depression both mediates and moderates linkages between MA use and engagement in sexual risk among GBM
  - The dramatic increases in sexual risk archetypally associated with MA use among GBM appears to occur largely among GBM with comorbid depression.

# THE CURRENT PILOT STUDY

- Test the effects of supplementing intensive outpatient MA treatment for GBM with a pre-existing, low-cost, low-intensity, automated depression intervention.
- GBM who newly enrolled into the *Getting Off* MA treatment program at Friends Community Center were offered the chance to co-enroll in the computerized *MoodGym* intervention to reduce depression symptoms.
- Participants' MA use outcomes, HIV sexual risk behaviors, depression symptoms, and PrEP/ART behaviors were tested pre-/intra-/post-intervention.

# GETTING OFF

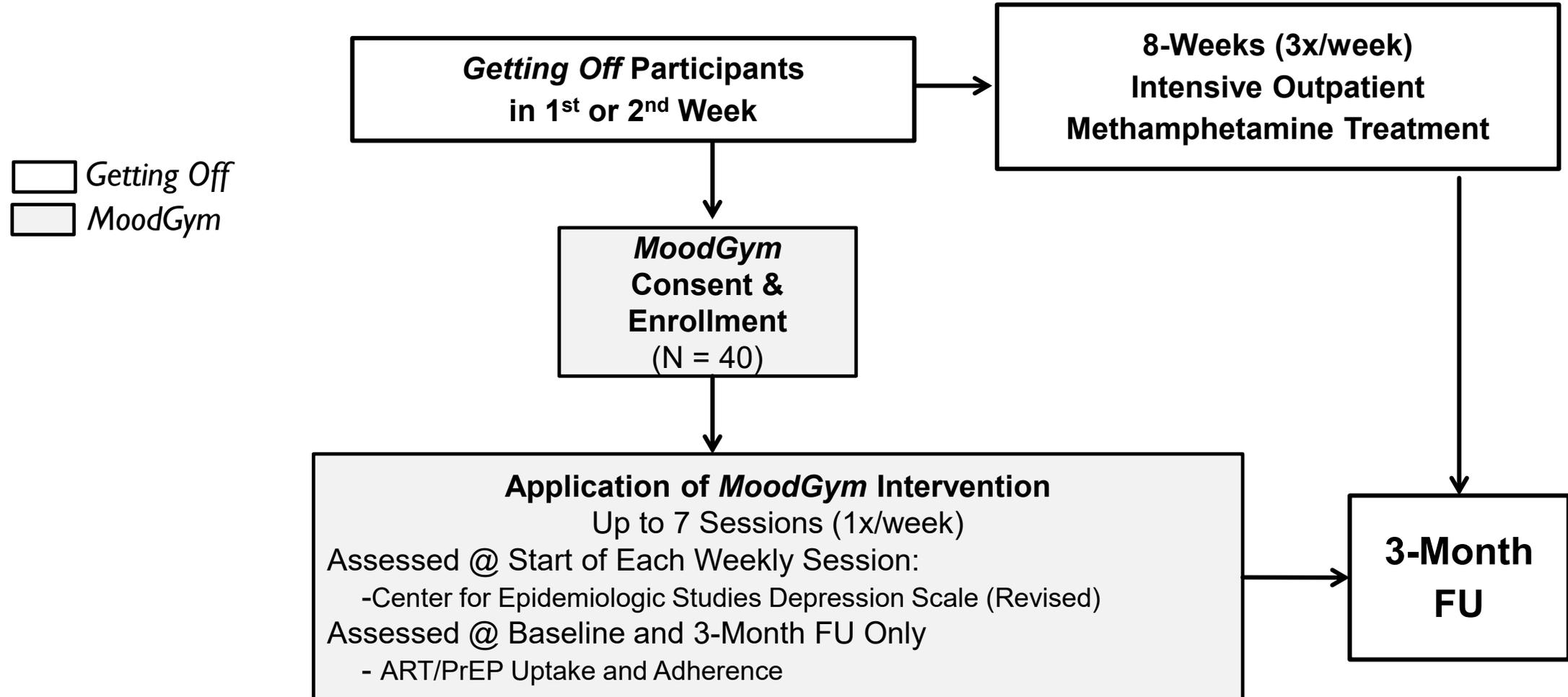
- *Getting Off* is an evidence-based intervention, developed by Drs. Reback and Shoptaw and colleagues at UCLA Integrated Substance Abuse Programs, designed to work with gay and bisexual men to reduce or stop MA use and HIV risk behaviors.
- The eight-week manualized intervention consists of 24 sessions of cognitive behavioral therapy coupled with a low-cost contingency management (CM) intervention, which offers valued rewards (e.g., a Target gift card, computer supplies) in exchange for providing urine samples that are MA metabolite-free.
- Participants attend *Getting Off* group sessions thrice-weekly (M,W,F) and provide a urine sample for urinalysis; participants who provide a MA metabolite-free sample earn CM rewards.



# MOODGYM

- *MoodGym* is a seven module computer-optimized, evidenced-based intervention for adults with depression symptoms. Though *MoodGym* modules can be taken without assistance, prior evidence suggests results are optimized when *MoodGym* is applied in a structured setting; in this pilot study, *MoodGym* was delivered in the presence of a Study Counselor. Each week for up to seven weeks participants scheduled a one-hour appointment to complete a module of the *MoodGym* intervention in the presence of the Study Counselor.
- *MoodGym* modules are designed to be fun, interactive experiences characterized by interesting fictional character stories, challenging situations, self-assessments, and instructive materials on how to handle depressive symptoms.
- The seven modules comprising the *MoodGym* intervention are: Getting Started, Feelings, Thoughts, Unwarping, Destressing, Relationships, Workbook

**Figure 1: Study Design**



# AIMS

- **Specific Aim:** Estimate the effect of *MoodGym* on the MA use, HIV sexual risk behavior, and depression outcomes of *Getting Off* participants.
- **Secondary Aim:** Estimate the effect of *MoodGym* on the uptake/adherence to ART and PrEP among HIV-positive and HIV-negative participants, respectively.

# ASSESSMENTS

- *Getting Off*
  - Admissions Form
    - Sociodemographics (age, racial/ethnic identity, sexual identity, HIV status)
  - Urinalysis
    - MA Use
  - Behavioral Questionnaire–Amphetamines
    - Sexual Risk Behaviors
  
- *MoodGym*
  - Depression
    - Center for Epidemiological Studies, Depression (revised)– CESD-r
  - HIV Prevention and Care Assessment
    - ART Adherence
    - PrEP Adherence

# PARTICIPANT CHARACTERISTICS (N = 40)

		<u>Mean or N</u>	<u>SD or %</u>
Age	Range: 25 - 60	44.8	10.8
Racial/Ethnic Identity			
	Latinx	20	50%
	White	13	33%
	Black/African American	4	10%
	Asian	2	5%
	Other	1	3%
Sexual Identity			
	Gay	31	78%
	Bisexual	8	20%
	Pansexual	1	3%
HIV-Status (self-report)			
	HIV Positive	29	73%
	HIV Negative	10	25%
	Unknown	1	3%
Education			
	Less than HS/GED	6	15%
	HS Diploma/GED	6	15%
	More than HS/GED	28	70%
Housing Status			
	Currently Experiencing Homelessness	7	18%

## ATTENDANCE AND FOLLOW-UP RATES

- *Getting Off/MoodGym* participants attended an average of 3.7 *MoodGym* sessions, out of a total of six or seven possible (depending on whether the participant enrolled in their first or second week of treatment).
- Twenty-one participants (53%) attended at least five sessions, and 15 participants (38%) attended at least six.
- A total of 147 *MoodGym* sessions were attended over the course of the study, while 64 were missed (i.e., unattended).
- To date, 24 participants (60%) have completed 90-day follow-up.

# OUTCOMES OF INTEREST

- MA Use
  - Operationalized via urinalysis results during the intra-intervention period
- HIV Sexual Risk-Taking
  - Operationalized via an index (average 4 items; Cronbach's  $\alpha = 0.78$ ) including: # sexual partners in the past 30 days, # times MA use during sex in the past 30 days, # times condomless anal sex with a non-primary partner in the past 30 days (one item for insertive, one item for receptive)
- Depression Symptoms
  - Operationalized via the CESD-r pre-/intra-/post-intervention
- ART/PrEP Adherence
  - Operationalized via self-report pre-/post-intervention

# STATISTICAL ANALYSES

- **MA Use Outcomes** were analyzed via a t-test comparing the average number of MA metabolite-free urine samples provided by *Getting Off* participants (n = 40), compared to historical records from prior *Getting Off* participants who did NOT receive the *MoodGym* intervention (n = 401).
- **HIV Sexual Risk-Taking Outcomes** were analyzed via a t-test comparing participants' sexual risk index scores pre-/post-intervention.
- **Depression Symptom Outcomes** were analyzed via a robustly estimated generalized least squares panel regression (to account for the weekly CESD-r assessments) of depression symptoms on study visit.
- **PrEP/ART Outcomes** were analyzed via a t-test of self-reported medication adherence in the past 30 days pre-/post-intervention.

## PRELIMINARY RESULTS—METHAMPHETAMINE USE

- The 39 *Getting Off/MoodGym* pilot participants who provided at least one urine sample during the intervention phase submitted an average of 12.9 (SD = 9.5) MA metabolite-free urine samples during the 8-week intervention period.
- The 401 historical *Getting Off* participants who preceded the pilot participants submitted an average of 11.1 (SD = 9.0) MA metabolite-free urine samples during the 8-week intervention period.
- This difference does not reach statistical significance at the zero-order level ( $t_{440} = 1.19$ ;  $p = 0.235$ ), though caution of a Type-II error should be applied.

## PRELIMINARY RESULTS—SEXUAL RISK-TAKING

- At baseline, *Getting Off/MoodGym* pilot participants' Sexual Risk Index scores demonstrated a mean of 6.57 (SD = 10.8); at follow-up (n = 12), participants' Sexual Risk Index scores had reduced to a mean of 5.15 (SD = 7.6).
- This reduction did not reach statistical significance ( $t_{45} = 0.42$ ;  $p = 0.677$ )

## PRELIMINARY RESULTS—DEPRESSION

- At baseline, *Getting Off/MoodGym* pilot participants demonstrated an average CESD-r score [range 1-5] of 2.67 (SD = 0.9).
- For each *MoodGym* module a pilot participant completed, their depression scores were estimated to drop between 0.095 and 0.030 points (95% CI:  $p < 0.001$ ).

## PRELIMINARY RESULTS—PREP/ART ADHERENCE

- There was insufficient PrEP uptake among *Getting Off/MoodGym* participants (0 currently at follow-up) to include PrEP outcomes in these preliminary analyses.
- At baseline, HIV-positive *Getting Off/MoodGym* participants (n = 19) currently on ART reported missing an average of 8.4 doses (SD = 11.9) in the past 30 days.
- At follow-up (n = 9), pilot participants reported missing an average of 4.3 ART doses (SD = 5.5) in the past 30 days.
- This difference does not reach significance ( $t_{28} = 0.977$ ;  $p = 0.338$ ).

# DISCUSSION

- All results are extremely preliminary, and lack the context necessary to fully interpret.
  - When the full data has been collected, all results will be compared to prior historical controls using a nearest neighbor matching (NNM) algorithm to ensure observed treatment effects are not spurious.
- Participants who received the *MoodGym* intervention in conjunction with the *Getting Off* intervention submitted on average 2 additional “clean” urinalysis samples over the life of the intervention relative to *Getting Off* participants who did not receive supplemental support for their depressive symptoms.
- Participants reduced their average sexual risk index scores by 22% over the eight week intervention period.
- Participants’ depressive symptoms significantly reduced with increased attendance to the *MoodGym* modules.
- HIV-positive participants currently on ART increased the number of ART medication doses taken in the last 30 days by 49% over the eight week intervention period.
- Given that *Getting Off* is an evidence-based intervention that has demonstrated efficacy in three trials, it is not yet possible to know whether or not *MoodGym* has optimized outcomes until the historical control/NNM analysis is completed.
- However, preliminary results are very encouraging; supplementing intensive outpatient MA treatment with low-cost, computerized depression intervention content may be an efficacious and cost-effective way to optimize MA treatment among GBM with depressive symptomology.

## NEXT STEPS

- Finish follow-up data collection
  - Expected finish date: March 10, 2020
- Aggregate with historical *Getting Off* data
  - ~400 previous participants
- Conduct Nearest Neighbor Matching Treatment Effects Analysis
  - Overcome the issues inherent to a lack of randomization or a sampling frame
  - Overcome the current problems with Power and Type-II Hypothesis testing error probability

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