IN THE MIX

Best Evidence – Risk Reduction
Good Evidence – Medication Adherence

INTERVENTION DESCRIPTION

Target Population
- HIV-positive persons

Goals of Intervention
- Improve HIV medication adherence
- Reduce sexual transmission risk behaviors
- Reduce risk compensation beliefs concerning undetectable HIV RNA

Brief Description

In The Mix is a 7-session intervention delivered to individuals and groups of people living with HIV (PLWH). This fully integrated and unified intervention targeting both sexual transmission risk behaviors and medication adherence uses a single model of decision-making skills. The first session is delivered one-on-one by one of the group facilitators to set personal treatment and prevention goals for the upcoming group sessions. The next 5 sessions are delivered to groups of 8-10 participants of mixed gender and sexual orientation by male-female facilitator pairs. Group session 1 focuses on building cohesion and trust and includes a discussion on the relationship between risk reduction and treatment goals and an educational team-building game. Group session 2 centers on HIV treatment and applies decisional balance exercises to treatment decisions and sexual relationships in contexts of viral load. Group session 3 focuses on sexual decision making within the context of various scenarios, including mood, substance use, relationships, viral load, HIV disclosure, and treatment status. Group session 4 builds treatment and safer sex decision skills in relation to substance use with an activity that simulates intoxication while filling a pillbox and then applying a condom to a penis model. Training on medication management and safer sex strategies is also included. Group session 5 focuses on treatment adherence and offers skills-building activities for recognizing STI symptoms. The final individual counseling session delivers a personalized plan for treatment decisions, adherence, and safer sex.

Theoretical Basis
- Conflict Theory of Decision Making

Intervention Duration
- One 45-minute session, five 120-minute sessions, and one 60-minute session delivered over 5 weeks

Intervention Setting
- Community-based AIDS service provider

Deliverers
- Trained male-female facilitator pair

Delivery Methods
- Counseling
- Exercises
- Goal setting/risk reduction plan
- Lecture/teach
- Practice
- Games

INTERVENTION PACKAGE INFORMATION

An intervention package is not available at this time. Please contact **Seth Kalichman**, University of Connecticut, Department of Psychology, 406 Babbidge Road, Storrs, CT 06269.

Email: seth.k@uconn.edu for details on intervention materials.

EVALUATION STUDY AND RESULTS

The original evaluation was conducted in Atlanta, Georgia between 2005 and 2009.

Key Intervention Effects
- Reduced non-serodiscordant unprotected sex†
- Increased medication adherence

Study Sample
The baseline study sample of 436 HIV-positive men and women is characterized by the following:
- *91% black or African-American, 6% white, 2% Hispanic/Latino, 2% other*
- *64% male, 29% female, 7% transgender*
- *55% of men are MSM*
- *Mean age of 44 years*
- *63% completed 12 or fewer years of education*

The analytic subsample of 113 HIV-positive men and women who were on ART and reported <90% adherence at baseline is included in the medication adherence analyses. Sample characteristics for this subsample are not reported.

Recruitment Settings
AIDS services providers and infectious disease clinics

Eligibility Criteria
Men and women were eligible if they were at least 18 years of age, and had name-matching proof of positive HIV status and photo identification.

Assignment Method
Participants (N = 436) were randomly assigned to 1 of 2 study arms: In The Mix (n = 217) or attention control (n = 219). Of the 309 participants that were on ART at baseline, 113 report <90% adherence at baseline and

are the analytical subsample used for the medication adherence and viral load outcome analyses: In The Mix (n = 62) or attention control (n = 51).

Comparison Group

The attention control condition was a contact-matched non-contaminating support group for PLWH that consisted of a 45-minute individual orientation session; five 120-minute group sessions (8 to 10 participants) that focused on group cohesion, accessing health information, cancer prevention, nutrition, exercise, and relaxation; and a final individual counseling session to set personalized health improvement goals. Individual sessions were delivered by the group facilitators, and male-female facilitator pairs conducted all group sessions.

Relevant Outcomes Measured and Follow-up Time

- Sex behaviors (including number of male and female sexual partners; frequency of unprotected† and protected vaginal and anal intercourse with seroconcordant and non-seroconcordant [HIV negative and status unknown] partners during the past 3 months) were measured at 3, 6, and 9 months after baseline, which translates to approximately 1.5, 4.5 and 7.5 months after intervention.
- Medication adherence behavior (using unannounced telephone-based pill counts and pharmacy prescription records) was defined as the percentage of pills taken as prescribed. Monthly pill counts were assessed during monthly telephone assessments over 10 months after baseline, which translates to an 8.5 month post-intervention observation period.
- Self-reported gonorrhea, chlamydia, syphilis and non-gonococcal urethritis were assessed at 3, 6, and 9 months after baseline, which translates to approximately 1.5, 4.5 and 7.5 months after intervention.
- Viral load was self-reported at each monthly telephone assessment after baseline, which translates to an 8.5 month post-intervention observation period.

Participant Retention

- In The Mix
  - 92% retained at 1.5 months after intervention
  - 90% retained at 4.5 months after intervention
  - 89% retained at 7.5 months after intervention

- Attention control condition
  - 92% retained at 1.5 months after intervention
  - 92% retained at 4.5 months after intervention
  - 95% retained at 7.5 months after intervention

Significant Findings

- Sexually active intervention participants reported significantly less non-seroconcordant unprotected sex† during the past 3 months than comparison participants at 1.5 months after intervention (Mean = 0.9 [SD = 5.3] vs. Mean = 2.3 [SD = 15.0], $p < 0.05$) and at 4.5 months after intervention (Mean = 0.2 [SD = 1.0] vs. Mean = 1.0 [SD = 3.8], $p<0.05$) while controlling for baseline.
- Among those with <90% adherence to ART at baseline, intervention participants demonstrated significantly greater adherence than comparison participants over the 10 months after baseline (Wald $X^2 = 4.1$, $p<0.05$).
- A structural equation model showed intervention effects for both reducing non-seroconcordant unprotected sex† (beta = .43, $p<0.05$) and improving medication adherence (beta = .07, $p<0.05$) at 4.5 months after intervention while controlling for baseline levels.

Considerations

- Intervention participants were less likely to report new STIs over the 9 month assessment period, which translates to a 7.5 month post-intervention observation period
- There was no significant intervention effect on self-reported viral load.
- Across all 3 follow up time points intervention participants reported greater use of safer sex risk reduction strategies ($X^2 = 4.9$, $p<0.05$) than comparison participants and greater use of adherence strategies ($X^2 = 4.0$, $p<0.05$) than comparison participants. Intervention participants also showed less endorsement of risk compensation beliefs than the comparison group ($X^2 = 4.8$, $p<0.05$).
- Adherence outcomes included 2 assessment time points during intervention; however, visual representation of the data indicates substantial post-intervention differences between groups over time, suggesting that findings reported above are not due solely to differences observed in the 2 assessments occurring during the intervention.
- Significant intervention effect on unprotected sex† at 1.5 and 4.5 months failed to maintain significance at the 9 month assessment.
- There was no significant intervention effect on condom protected sex or number of sex partners among sexually active participants.

†Unprotected sex measured as sex without a condom.

REFERENCES AND CONTACT INFORMATION

Kalichman, S. C., Cherry, C., Kalichman, M. O., Amarai, C. M., White, D., Pope, H., . . . Cain, D. (2011). Integrated behavioral intervention to improve HIV/AIDS treatment adherence and reduce HIV transmission. *American Journal of Public Health, 101*, 531-538.

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