FINANCIAL INCENTIVES FOR VIRAL SUPPRESSION

Best Evidence – Medication Adherence

Evidence-Based Structural Intervention

INTERVENTION DESCRIPTION

Goals of Intervention

- Improve antiretroviral therapy (ART) adherence
- Improve viral suppression

Intended Population

- People with HIV who have detectable viral loads (>200 copies/mL)

Brief Description

Financial Incentives for Viral Suppression is designed to suppress viral load and improve medication adherence among people with HIV through financial incentives. The financial incentive program is managed using a web-based computer program. Throughout the intervention, study participants can receive up to $10 per day that are uploaded on a reloadable credit card for providing a blood sample with an undetectable viral load (<200 copies/mL) or a decrease in viral load of 0.15 log per week. At the initial visit, participants receive $70 for bringing their ART medication bottle containing at least a 2-day supply of medication to the research center. Participants also provide a blood sample at the initial visit. Subsequent blood samples and viral load tests are conducted at visits scheduled on random weeks to ensure participants do not take ART selectively prior to viral load testing. Viral load tests occur weekly and increase to once every 2 weeks after participants provide blood samples that meet the incentive criteria for 4 consecutive weeks. The inter-test interval then increases to every 4-, 6-, 8-, and 12-weeks after participants meet incentive criteria on 2 consecutive blood samples. Participants contact the Incentive program every Monday to determine if they need to provide a blood sample during that week and receive $5 for each Monday call made. If a participant does not complete a blood sample collection or a blood sample does not meet incentive criteria, the participant does not receive an incentive, their schedule returns to weekly testing, and their incentive amounts decrease to $3 per day. Once the participant earns $3 per day, the incentive amount increases to $6 per day, and subsequently, back to the $10 per day amount. Participants can receive incentives for up to 2 years and earn a maximum of $7,300 in total (730 days x $10 per day=$7,300).

Theoretical Basis

- None reported

Intervention Duration
- Two years

Intervention Setting
- Center for Learning and Health, Department of Psychiatry and Behavioral Sciences at Johns Hopkins University School of Medicine

Deliverer
- Staff member

Delivery Methods
- Financial incentives

Structural Components
- Capacity Building – Technology
  - Used a web-based computer program to manage the financial incentives program.
- Social Determinants of Health – Survival
  - Provided financial incentives on reloadable credit cards to encourage and improve viral suppression, which could be utilized to make purchases at most businesses

INTERVENTION PACKAGE INFORMATION

An intervention package is not available at this time. Please contact **Kenneth Silverman**, Johns Hopkins University School of Medicine, 5200 Eastern Avenue, Suite 350 East, Baltimore, MD 21224.

Email: ksilverman@jhmi.edu for details on interventions materials.

EVALUATION STUDY AND RESULTS

Study Location Information
The original evaluation was conducted in Baltimore, Maryland between 2015 and 2018.

Key Intervention Effects
- Increased viral suppression
- Improved ART adherence

Study Sample
The baseline study sample of 102 persons with HIV is characterized by the following:

Incentive Intervention (n = 52)
- *88% Black or African American, 10% White, 2% other*
- *54% males*
- *Mean age of 47 years*

- *67% high school diploma or GED*
- *83% living in poverty*
- *87% unemployed*
- *HIV exposure: 48% heterosexual sex, 19% injection drug use, 15% men who have sex with men, 12% other, 6% multiple exposures*

Usual care (n = 50)
- *90% Black or African American, 10% White, 0% other*
- *54% males*
- *Mean age of 47 years*
- *68% high school diploma or GED*
- *82% living in poverty*
- *76% unemployed*
- *HIV exposure: 64% heterosexual sex, 16% injection drug use, 14% men who have sex with men, 4% other, 2% multiple exposures*

Recruitment Settings
Baltimore locations serving people with HIV

Eligibility Criteria
Participants were eligible if they were 18 years or older, diagnosed with HIV for a minimum of 12 weeks, had a detectable viral load (>200 copies/mL), and not currently receiving HIV medical care or had been in HIV medical care for a minimum of 12 weeks.

Assignment Method
Participants (N = 102) were individually randomized to 1 of 2 study arms: Incentive intervention (n = 52) or a usual care comparison (n = 50).

Comparison Group
Participants in the comparison group received the usual care services.

Relevant Outcomes Measured and Assessment Time
- Viral suppression was measured at 3, 6, 9, and 12 months post-initiation of intervention and assessed as the percentage of blood samples with undetectable viral loads (<200 copies/ mL).
- Medication adherence was measured at 3, 6, 9, and 12 months post-initiation of intervention and assessed as:
    - Participants' self-report of taking > 90% of all scheduled medication doses within the past 90 days
    - Percentage of months that participants refilled an ART prescription

Participant Retention
Incentive intervention:
- 98% retained across 4 assessments (3, 6, 9, and 12 months post-initiation of intervention)

Usual care comparison:
- 98% retained across 4 assessments (3, 6, 9, and 12 months post-initiation of intervention)

Significant Findings on Relevant Outcomes

- Across the 4 assessments (3, 6, 9, and 12 months post-initiation of intervention), a significantly greater percentage of intervention participants achieved viral suppression than usual care participants (missing data imputed: 72.1% vs 39.0%; Odds Ratio (OR) = 15.6; 95% CI: 4.2 – 58.8; $p < 0.001$; without missing data imputation: 76.9% vs 41.5%; OR = 14.3; 95% CI: 4.3 – 47.7; $p < 0.001$).
- Across the 4 assessments (3, 6, 9, and 12 months post-initiation of intervention), a significantly greater percentage of intervention participants self-reported ART adherence than usual care participants (missing data imputed: 65.9% vs 42.5%; OR = 4.7; 95% CI: 1.6 – 14.0; $p = 0.006$; without missing data imputation: 69.9% vs. 45.2%; OR = 5.9; 95% CI: 1.9 – 18.2; $p = 0.002$).
- Across the 4 assessments (3, 6, 9, and 12 months post-initiation of intervention), intervention participants had a significantly greater percentage of months with filled ART prescriptions than comparison participants (without missing data imputation: 87.9% vs 80.5%; OR = 5.1; 95% CI: 1.0 – 25.4; $p = 0.046$).

Considerations

Additional significant positive findings on non-relevant outcomes

- None reported

Non-significant findings on relevant outcomes

- Although there were significant intervention effects across the four assessments in an intention-to-treat analysis with missing data imputed for viral suppression and self-reported ART adherence, there were no significant intervention effects on filled ART prescriptions across the four assessments in the intention-to-treat analysis with missing data imputed.
- There were no significant intervention effects on retention in HIV care across the four assessments in the intention-to-treat analysis with missing data imputed and without imputation.
- There were no significant differences between the two groups in the percentage of blood samples provided or the percentage of self-reports provided.

Negative findings

- None reported

Other related findings

- This intervention is also determined to be evidence-based for the Structural Interventions (SI) chapter.
- Among the Incentive intervention arm, 94.2% of study participants completed self-reported data, and 93.8% of study participants provided blood samples.

Implementation research-related findings

- None reported

Process/study execution findings

- Incentive participants earned an average (SD) of $178 ($72) for Monday calls and $2,096 ($1,210) for meeting the viral suppression criteria.

Adverse events

- Incentive Intervention participants reported more adverse events than the usual care comparison. Among 10 adverse events reported, 8 were reported by Incentive Intervention participants. Adverse events reported included congestive heart failure, dehydration, chest pain, infection, kidney failure, urinary problems,

pneumonia, psychiatric treatment, and rash. There were also 3 deaths among Incentive Intervention participants. None of the reported adverse events or deaths appeared related to study participation. The higher rate of adverse events reported by Incentive participants may have resulted from study staff having more contact with Incentive participants.

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REFERENCES AND CONTACT INFORMATION

Silverman, K., Holtyn, A. F., Rodewald, A. M., Siliciano, R. F., Jarvis, B. P., Subramaniam, S., Leoutsakos, J. M., Getty, C. A., Ruhs, S., Marzinke, M. A., & Fingerhood, M. (2019). Incentives for viral suppression in people living with HIV: A randomized clinical trial. *AIDS and Behavior, 23*, 2337-2346.

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