POSITIVELINKS

Evidence-Informed for Retention in Care

INTERVENTION DESCRIPTION

Goal of Intervention
- Improve retention in HIV care
- Improve HIV viral suppression
- Decrease HIV viral load

Target Population
- Clinic patients

Brief Description

PositiveLinks (PL) is a clinic-based smartphone app that features tailored educational resources; daily queries of stress, mood and medication adherence; weekly quizzes; appointment reminders; and a community message board (CMB). The educational resources include an orientation to the clinic, information on HIV and health, and stress reduction techniques. For the CMB, participants select user names to protect anonymity and can start new conversations or respond to older conversations. The PL team intermittently introduces new conversation topics on HIV or general well-being, and the team can communicate with the participants privately to address technical issues and assist with care coordination on the CMB. Contact information for the clinic-affiliated PL team is also included in the app. Participants were given smartphones with the PositiveLinks app installed.

Theoretical Basis
- None reported

Intervention Duration
- One year

Intervention Settings
- Anywhere client has access to a mobile phone

Deliverer
- Clinic staff
- Mobile phone/smartphone app

Delivery Methods
- Mobile phone text-based

Structural Components

There are no reported structural components reported for this study.

INTERVENTION PACKAGE INFORMATION

An intervention package is not available at this time. Please contact **Rebecca Dillingham**, Department of Medicine, University of Virginal School of Medicine, P. O. Box 801379, Charlottesville, VA 22908.

Email: rd8v@virginia.edu for details on intervention materials.

EVALUATION STUDY AND RESULTS

Study Location
The original evaluation study was conducted in Charlottesville, VA between September 2013 and May 2015.

Key Intervention Effects
- Increased retention in HIV care
- Improved HIV viral suppression
- Decreased HIV viral load

Recruitment Settings
- Clinics
- AIDS service organizations (ASOs)
- HIV testing sites

Eligibility Criteria
Clinic patients were eligible for participation if they were newly diagnosed with HIV (within 90 days of study enrollment), returning to care after a lapse, or at risk of falling out of care as determined by their care provider.

Study Sample
The baseline study sample of 77 participants is characterized by the following:
- *49% Black, non-Hispanic; 34% white, non-Hispanic; 8% Hispanic; 6% multiple races; 1% Asian, 1% ethnicity unknown (refused)*
- *64% male; 34% female; 3% transgender male to female*
- *19% less than high school education; 45% high school graduate or GED; 27% some college, community college, trade or technical school; 8% college graduate*
- *Mean age of 36 years (SD = 12)*
- *58% income below 50% of the federal poverty level*
- *26% unstable housing status*

Assignment Method
Not applicable

Comparison
The study uses a pre/post research design. Study participants' baseline data were compared to their post-implementation data at 6 and 12 months.

Relevant Outcomes Measured

- Retention in HIV care was defined as:
  - Having kept two appointments with an HIV care provider that were separated by 90 days within a one-year period (HRSA-1 definition)* and
  - Visit constancy: the proportion of four-month time intervals in a one-year period in which one visit with an HIV care provider was completed

- HIV viral load was defined as:
  - The proportion of participants with suppressed HIV viral load (VL < 200 copies) and
  - Mean viral load values represented as log 10 (1+VL)

Participant Retention

Because participant retention is not a criterion for the Linkage to, Retention in and Re-engagement in HIV Care (LRC) chapter, the Prevention Research Synthesis project does not evaluate that information.

Significant Findings on Relevant Outcomes

- A significantly greater percentage of study participants were retained in care (i.e., HRSA-1 definition) at 6 (88% vs. 51%, $p < 0.0001$) and 12 months (81% vs. 51%, $p = 0.0003$) post intervention compared to baseline.
- A significantly greater percentage of study participants were retained in care (i.e., visit constancy) at 6 (36% vs. 22%, $p = 0.0164$) and 12 months (51% vs. 22%, $p = 0.0004$) post intervention compared to baseline.
- A significantly greater percentage of study participants achieved viral suppression (VL<200 copies) at 6 (87% vs. 47%, $p < 0.001$) and 12 months (79% vs. 47%, $p = 0.0007$) post intervention compared to baseline.
- Study participants had a significantly lower mean viral load at 6 (1.41 vs. 2.46, $p <0.0001$) and 12 months post intervention (1.29 vs. 2.46, $p <0.0012$) compared to baseline.

Strengths

- One of the follow-up time points for retention in HIV care occurred at 12 months.

Considerations

Additional significant positive findings on non-relevant outcomes

- Study participants had a significantly higher mean CD4 count at 6 (581 vs. 522, $p < 0.0007$) and 12 months (614 vs. 522, $p < 0.0005$) post intervention compared to baseline.

Non-significant findings on relevant outcomes

- None reported

Negative findings

- None reported

Other related findings

- None reported

Implementation-related findings

- Patients were involved in all steps in app development, from the formative phase to testing and piloting.

Adverse events

- None reported

Funding
M.A.C. AIDS Fund and AIDS United

REFERENCES AND CONTACT INFORMATION

Dillingham, R., Ingersoll, K., Flickinger, T. E., Waldman, A. L., Grabowski, M., Laurence, C., . . . Cohn, W. F. (2018). PositiveLinks: A mobile health intervention for retention in HIV care and clinical outcomes with 12-month follow-up. *AIDS Patient Care STDS, 32*(6), 241-250.

Flickinger, T. E., DeBolt, C., Xie, A., Kosmacki, A., Grabowski, M., Waldman, A. L., . . . Dillingham, R. (2018). Addressing stigma through a virtual community for people living with HIV: A mixed methods study of the positivelinks mobile health intervention. *AIDS and Behavior, 22*(10), 3395-3406.

Flickinger, T. E., Ingersoll, K., Swoger, S., Grabowski, M., & Dillingham, R. (2019). Secure messaging through PositiveLinks: Examination of electronic communication in a clinic-affiliated smartphone app for patients living with HIV. *Telemedicine and e-Health*. Advance online publication. doi: 10.1089/tmj.2018.0261

Laurence, C., Wispelwey, E., Flickinger, T., Grabowski, M., Waldman, A., Plews-Ogan, E., . . . Dillingham R. (2019). Development of PositiveLinks: A smart phone application to promote linkage to care for people with HIV. *JMIR Formative Research, 3*(1), e11578.

Flickinger, T., DeBolt, C., Waldman, A. L., Reynolds, G., Cohn, W. F., Beach, M. C., Ingersoll, K. & Dillingham R. (2017). Social support in a virtual community: Analysis of a clinic-affiliated online support group for persons living with HIV/AIDS. *AIDS and Behavior, 21*(11), 3087-3099.

Flickinger, T., DeBolt, C., Wispelwey, E., Laurence, C., Plews-Ogan, E., Waldman, A. L., & Dillingham, R. (2016). Content analysis and user characteristics of a smartphone-based online support group for people living with HIV. *Telemedicine and e-Health, 22*(9), 746-764.

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