LINCS (LINKAGE, INTEGRATION, NAVIGATION, AND COMPREHENSIVE SERVICES)

Evidence-Informed Structural Intervention
Evidence-Informed for Retention in HIV Care
Evidence-Informed for Viral Suppression

INTERVENTION DESCRIPTION

Goals of Intervention

- Improve re-engagement in HIV care
- Increase retention in HIV care
- Improve viral suppression

Intended Population

- People with HIV (PWH) who are not in care (NIC)

Brief Description

LINCS uses data-to-care (D2C) strategies to identify PWH who are NIC and patient navigation services to re-engage them in HIV care. LINCS uses three D2C referral strategies – referrals from (1) health care providers, (2) HIV surveillance epidemiologists, and (3) LINCS navigators using a clinical electronic medical record (EMR) registry matched to surveillance. All referrals are identified via the absence of viral load or CD4 test results or the presence of a recent high viral load (VL) value (VL >1500 copies/mL within last 4 months or no VL in >15 months). HIV surveillance epidemiologists use the viral load or CD4 criteria to identify patients in the Enhanced HIV/AIDS Reporting System (eHARS) for referral. Provider referrals also include patients with no evidence of care post-diagnosis, who have not accessed care over many months, or who are not adherent to medication. The clinical EMR match uses a registry developed through Health Resources and Services Administration HIV Ryan White quality improvement activities and includes all PWH receiving care in the public health clinics where LINCS navigators serve. The eHARS and clinical EMR are matched, and lists are sent to LINCS to determine current NIC status for referrals from all three sources prior to beginning outreach. Navigators attempt to locate individuals within 30 days of assignment using multiple electronic systems including the local STD surveillance database, the public health hospital EMR, and other disease intervention searching tools. PWH who are enrolled in LINCS are required to attend a re-linkage appointment with an HIV care provider and receive short-term case management for up to 90 days; navigators provide a range of field-based services such as benefits navigation, appointment reminders, clinic accompaniment, motivational interviewing, and modified Anti-Retroviral Treatment and Access to Services (ARTAS) strengths-based case management.

Theoretical Bases
- Motivational Interviewing
- Strengths-based case management

Intervention Duration
- 30-days to locate NIC PWH and 90 days of providing case management

Intervention Setting
- Public health clinic

Deliverers
- Health care provider
- HIV surveillance epidemiologists
- LINCS navigator

Delivery Methods
- Appointment accompaniment
- Appointment reminders
- Case management
- Counseling
- Data-to-care
- Patient navigation

Structural Components
- Access – HIV health care
  - Increased access re-engagement in HIV medical care
- Capacity Building—Hiring staff
  - Hired additional LINCS Navigators to expand resources and collaboration
- Policy/Procedure—Institutional policy/procedure
  - LINCS and HIV surveillance collaborated to develop and implement a citywide D2C program using surveillance data to identify PWH NIC for re-linkage

INTERVENTION PACKAGE INFORMATION

The intervention package is not available at this time. Please contact **Susan Scheer**, 25 Van Ness Avenue, San Francisco, CA 94102.

Email: susan.scheer@sfdph.org for details on intervention materials.

EVALUATION STUDY AND RESULTS

Study Location Information
The original evaluation study was conducted in San Francisco, California between 2015 and 2017.

Key Intervention Effects
- Increased retention in HIV care
- Increased viral suppression

Recruitment Settings
- Large public health clinics

Eligibility Criteria
People with HIV were eligible if they were not in care or had a high recent viral load (>1500 copies/mL within the last 4 months).

Study Sample
The baseline study sample of 233 patients is characterized by the following:
- *37% White persons, 27% Black or African American persons, 8% persons who identify as another race/ethnicity*
- *28% Hispanic, Latino or Latina persons*
- *85% male persons, 9% female persons, 6% transgender women*
- *42% male-to-male sexual contact (MMSC), 37% MMSC and injection drug use, 15% injection drug use, 4% heterosexual contact, 1% other HIV risk factors at time of diagnosis*
- *2% 13-24 years old, 37% 25-39 years old, 32% 40-49 years old, 29% 50+ years old*
- *45% persons experiencing homelessness in past 12 months*
- *48% methamphetamine use in 12 months before enrollment*
- *30% injection drug use in past 12 months*
- *Length of time from HIV diagnosis: 7% <1 year, 30% 1-5 years, 62% 5+ years*
- *72% ever virally suppressed*
- *18% suppressed at last viral load within 12 months before enrollment*

Note: Percentages may not add up to 100% due to rounding.

Comparison
The study uses a cohort or pre-post research design. Outcomes from 233 PWH from the 12-month period before LINCS enrollment were compared to outcomes during the 12-month period after LINCS enrollment.

Relevant Outcomes Measured
- Retention in HIV care, defined as having 2 tests (viral load, CD4, or genotype) at least 90 days apart in the 12 months before LINCS enrollment (pre-LINCS retention) and in the 12 months after LINCS assignment closure date (post-LINCS retention).
- Viral suppression was defined as having at least 1 viral load <200 copies/mL at any time within the 12 months before LINCS enrollment or after LINCS closure.

Participant Retention
Because participant retention is not a criterion for the Structural Interventions chapter, the Prevention Research Synthesis project does not evaluate that information.

Significant Findings on Relevant Outcomes
- A significantly greater percentage of post-intervention participants were retained in HIV care at 12 months than pre-intervention participants (57.5% vs. 35.2%; Relative Risk (RR) = 1.63 [95% CI: 1.34-2.00]).
    - In subset analyses, a significantly greater percentage of post-intervention participants were retained in HIV care at 12 months than pre-intervention participants for the following subgroups: 50+ years old, 13-49 years old, male persons, White persons, Black or African American persons, Hispanic/Latino persons, persons experiencing homelessness in past 12 months, persons not experiencing homelessness in past 12 months, no injection drug use in the past 12 months or unknown injection drug use in the past 12 months, no methamphetamine use in the past 12 months or unknown methamphetamine use in the past 12 months, ever virally suppressed, and never virally suppressed.

  - In subset analyses (n = 167), a significantly greater percentage of post-intervention participants who were referred by providers were retained in HIV care at 12 months than pre-intervention participants referred by providers (58.1% vs. 40.12%; RR = 1.45, 95% CI: 1.16-1.81).
  - In subset analyses (n = 38), a significantly greater percentage of post-intervention participants who were referred by surveillance were retained in HIV care at 12 months than pre-intervention participants referred by surveillance (71.0% vs. 31.6%; RR = 2.25, 95% CI: 1.37-3.71).
  - In subset analyses (n = 28), a significantly greater percentage of post-intervention participants who were referred by a combination of providers and surveillance were retained in HIV care at 12 months than pre-intervention participants referred by a combination of providers and surveillance (35.7% vs. 10.7%; RR = 3.33; 95% CI: 1.02-10.92).
- A significantly greater percentage of post-intervention participants were virally suppressed at 12 months than pre-intervention participants (53.2% vs. 18.0%) (RR = 2.95, 95% CI: 2.23-3.90).
  - In subset analyses, a significantly greater percentage of post-intervention participants were virally suppressed at 12 months than pre-intervention participants for the following subgroups: 50+ years old, 13-49 years old, male persons, female persons, White persons, Black or African American persons, Hispanic/Latino/Latina persons, persons who identify as another race/ethnicity, and, in the past 12 months, persons experiencing homelessness, persons not experiencing homelessness, injection drug use, no injection drug use, unknown injection drug use, methamphetamine use, no methamphetamine use, unknown methamphetamine, and ever virally suppressed.
  - In subset analyses (n = 167), a significantly greater percentage of post-intervention participants who were referred by providers were virally suppressed at 12 months than pre-intervention participants referred by providers (55.1% vs. 23.3%; RR = 2.36, 95% CI: 1.79-3.11).
  - In subset analyses (n = 38), a significantly greater percentage of post-intervention participants who were referred by surveillance were virally suppressed at 12 months than pre-intervention participants referred by surveillance (63.2% vs. 2.6%; RR = 24.00, 95% CI: 3.25-177.40).

Strengths

- At least one follow-up assessment occurred at 12 or more months. This is a strength because longer follow-up assessments may indicate continuous care.
- The total pre-intervention sample size is 100 or greater.

Considerations

Additional significant positive findings on non-relevant outcomes

- None reported

Non-significant findings on relevant outcomes

- Subgroup analyses for retention in care found no significant pre-post differences for female persons; transgender persons; persons who identify as race/ethnicity other than White, Black, and Latino; persons who used injection drugs in the past 12 months; and persons who used methamphetamine in the past 12 months.
- Subgroup analyses for viral suppression found no significant pre-post differences for transgender persons.

Negative findings

- None reported

Other related findings

- This intervention is also determined to be evidence-informed for the Linking to, Retention in, and Re-engagement in HIV care (LRC) chapter.
- Of the 140 PWH who were virally suppressed after LINCS enrollment, 125 had enough follow-up time to evaluate durable viral suppression. Of those, 87 (70%) remained durably virally suppressed. Among PWH who had never been virally suppressed, 54% were virally suppressed post-LINCS.

Implementation research-related findings

- None reported

Process/study execution findings

- A unique aspect of LINCS is that some LINCS navigators were placed within public HIV clinics and built trust with clinical teams while also conducting field outreach and utilizing multiple data systems to locate patients. By strengthening the collaboration between the health department navigators and HIV care teams over time, providers better understood the capability of LINCS and more readily initiated referrals of quasi-engaged and NIC PWH to navigation.

Adverse events

- None reported

Funding

- Centers for Disease Control and Prevention grant "San Francisco PrEP and Data to Care Demonstration Project" (grant number NU62PS005027)
- M.A.C AIDS grant "Getting to Zero: Advancing Retention and Reengagement in HIV Care Demonstration Project" (grant number N-T-YY-21698)

REFERENCES AND CONTACT INFORMATION

Sachdev, D. D., Mara, E., Hughes, A. J., Antunez, E., Kohn, R., Cohen, S., & Scheer, S. (2020). "Is a bird in the hand worth 5 in the bush?": A comparison of 3 data-to-care referral strategies on HIV care continuum outcomes in San Francisco. *Open Forum Infectious Diseases, 7*(9), ofaa369. doi: 10.1093/ofid/ofaa369.

Researcher: **Susan Scheer, PhD, MPH**
HIV Epidemiology Section
San Francisco Department of Public Health
San Francisco, California

Email: susan.scheer@sfdph.org