

Examining Multilevel System Dynamics Affecting HIV Community Viral Load

Project Steering Committee

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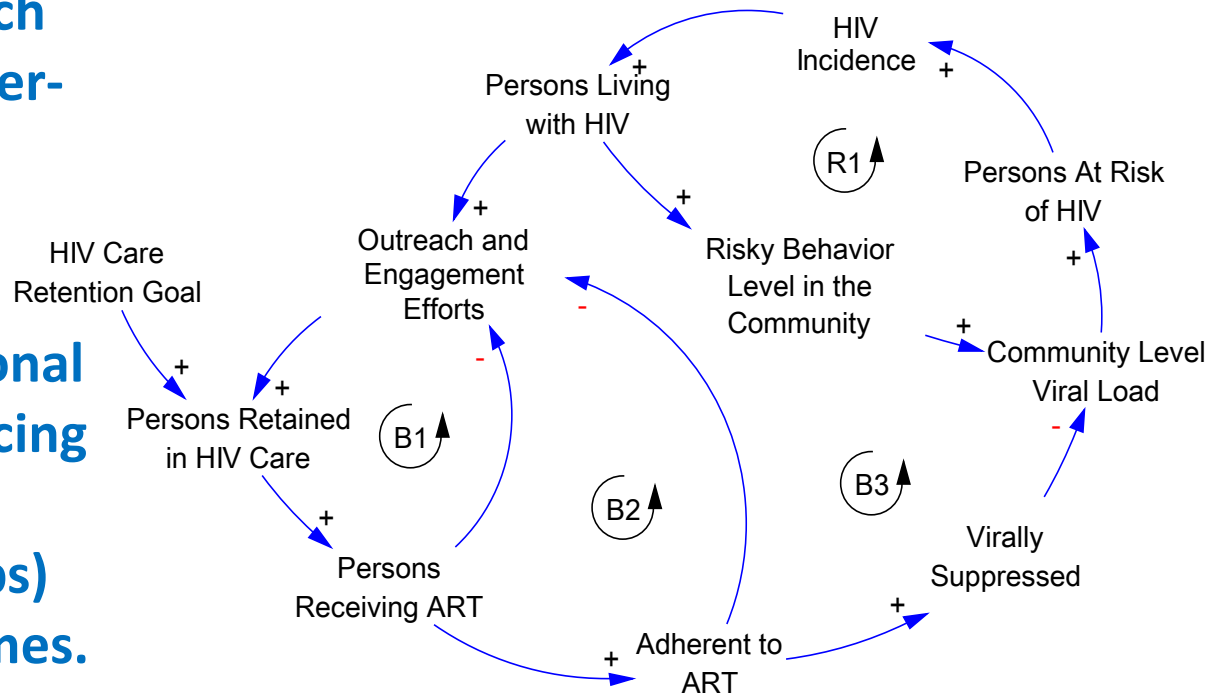
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Purpose

- This 3-year study of the HIV Test & Treat (T&T) continuum of services in Greater Hartford examines contributors to the treatment cascade and community viral load (CVL).
- The study engages community stakeholders (providers and people-with-HIV/at-risk) to develop a comprehensive system dynamics (SD) model of the HIV T&T continuum that can inform systems strategies to reduce CVL and the HIV epidemic.
- The SD modeling approach recognizes the role of inter-organizational service networks and the many interacting social, organizational, and personal factors that create balancing and reinforcing dynamic processes (feedback loops) affecting HIV T&T outcomes.

Causal Loop System Dynamics (SD) Model Depicting Some of the Dynamics of Community Viral Load

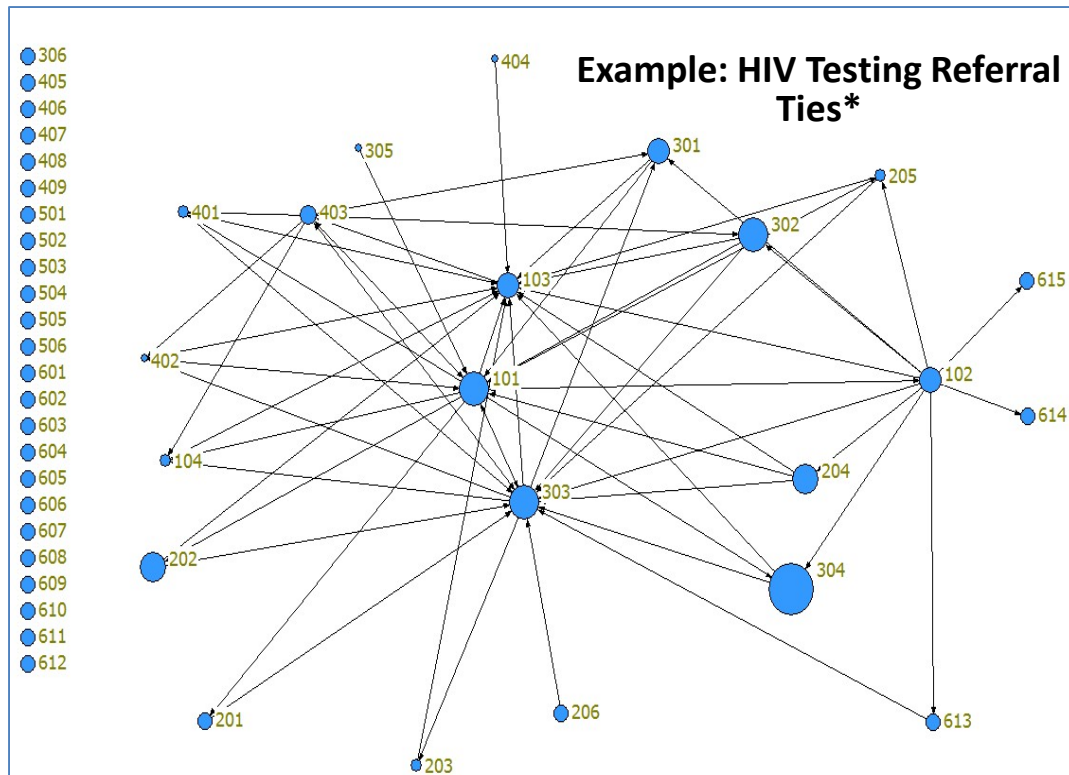


Aims and Methods

1. Identify inter-organizational network factors that facilitate people with HIV (PWH) moving efficiently and effectively across the T&T continuum.
 - A network survey of providers & consumers measures inter-organizational referral ties in order to construct a whole (macro) network map of local area T&T service organizations.
2. Use mixed methods to examine the personal, inter-organizational, and community level factors that interact to generate system dynamics affecting the movement of PWH through the T&T continuum. Methods include:
 - Group interviews and organizational network surveys with 80-90 providers and PWH/at-risk
 - Repeated (BL/6mo/12mo) surveys with 300 PWH/at-risk
 - In-depth, longitudinal case tracking (5 interviews every 3mo) of 40 PWH
3. Using a participatory process with stakeholders and the project Steering Committee, develop a conceptual “system dynamics model” (a visual representation) of HIV T&T and CVL.
 - The model will integrate organizational network and systems structural factors and processes that generate positive and negative feedback loops which accelerate or impede progress toward reducing overall CVL.

Progress to Date

- Group interviews/Network surveys: 5 provider groups (N=31 staff) and 9 PWH/ high-risk groups (N=58) generated a comprehensive list of factors affecting HIV T&T and identified inter-organizational network ties and qualities.
- Baseline cohort surveys with 164 PWH/high-risk and 11 case tracking baseline in-depth interviews have been completed to date.
- Inter-organizational network maps of multiple T&T services (HIV testing, linkage to care; treatment management, support services) have been constructed.
- A system dynamics (SD) 'scoping' modeling of the Greater Hartford HIV epidemic and treatment cascade and CVL has been designed using CT DPH epidemiological profile data.



* Size of node refers to frequency of use of the organization reported by consumers in group interviews.

How did you build this collaboration

- 28-year collaboration between ICR and HIV service and drug-treatment organizations in Greater Hartford for community research on HIV prevention with high-risk populations laid the foundation for the project Steering Committee.
- The Steering Committee was expanded by inviting additional community clinics that provide HIV medical care to engage them in an examination of systems factors affecting the HIV care continuum.
- Recognition of the need to compensate collaborating community organizations for their contribution to the research and model development meant developing contracts with each partner organization to pay them for:
 - Ongoing (bi-monthly) participation of the Director/Program Director on the Steering Committee
 - Assistance hosting group interviews (providers, consumers) and referring participants for research participation

Lessons for the Network

- Group interviews generated a list of numerous barriers and delays that affect PWH's entry into the T&T care continuum and their rapid and sustained achievement of viral suppression. Multiple stakeholder perspectives ensured fullness of the list of factors and identified hypothetical relationships among them.
- Organizational network maps and network analysis suggest ways to identify bottlenecks related to resources and inter-organizational connections to improve network efficiency.
- Development of the initial "scoping" SD model revealed challenges with specifying some of the model parameters that require additional and ongoing stakeholder input.
- The project Steering Committee has been essential for the development and implementation of the study and ongoing interpretation of findings.

Next steps & plans for growth

- Further analysis of the HIV T&T inter-organizational network will focus on structural properties, quality of ties, and possible governance structure that lead to efficiency of moving people through the system and keeping them in it.
- Further development of the SD model will focus on integrating qualitative data from group interviews on barriers/facilitators/ delays as well as resources (T&T staff, programs, supports) available in the system. Through this process we will identify feedback loops that create or can solve problems in system effectiveness.
- The final product will be a SD modeling tool that communities can use to understand system dynamics and identify potential opportunities to improve HIV T&T system effectiveness to reduce CVL.