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HIV CARE & TREATMENT

# Building PositiveLinks: mHealth for RWHAP Stakeholder Engagement & Implementation Support

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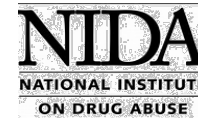
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# Disclosures



- Rebecca Dillingham, MD/MPH and Ava Lena Waldman, MHS/CCRP provide consulting services for Warm Health Technology, Inc.
- Warm Health Technology is a wholly owned subsidiary of the University of Virginia Licensing & Ventures Group, a non-profit organization focused on the development of novel technology and research derived from the University of Virginia.
- Julie Schexnayder and Ben Elliott have no relevant financial or non-financial interests to disclose.
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- Commercial support was not received for this activity.

# Learning Outcomes



- At the conclusion of this activity, participants will be able to:
  1. Identify mHealth technologies associated with improved HIV viral load suppression and visit adherence.
  2. Describe stakeholder types needed to inform mHealth platform implementation in RWHAP settings.
  3. Apply tools that can assist RWHAP programs to assess and improve their readiness for mHealth technologies.



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# Part 1: Evidence for mHealth in HIV

# HIV Care Challenges Rural VA



# HIV Care Challenges Rural VA



- Stigma
- Transportation
- Poverty
- Isolation
- Alcohol/drug use
- Mental health challenges

- “mHealth refers to the use of mobile communication technologies to promote health by supporting healthcare practices (e.g. health data collection, delivery of healthcare information, or patient observation and provision of care).”

mHealth can facilitate interventions addressing one or more challenges to living well with HIV when and where clients want and need it



# SMS to Promote Adherence to ART



- Relatively small and short studies in diverse populations
- Acceptable and feasible
- Promising effects
- Mostly focused on medication adherence
- Perceived as supportive across cultures – “Someone cares...”

Lester et al. Lancet. 2010; Pop-Eleches 2011; Da Costa et al. 2012; Mbuagbaw et al., 2012; Rodriques et al 2012; Lewis et al 2013; Dowshen et al, 2012; Horvath et al 2012; van der Kop 2012; Ingersoll et al 2015.

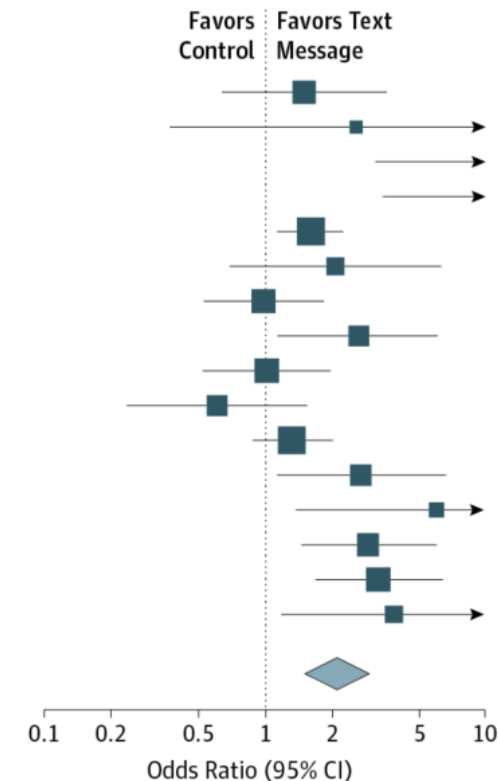
# Mobile Text Messaging for Adherence



## From: **Mobile Telephone Text Messaging for Medication Adherence in Chronic Disease: A Meta-analysis**



Source	Statistics for Each Study		
	Odds Ratio	(95% CI)	P Value
Márquez Contreras et al, <sup>43</sup> 2004	1.508	(0.631-3.605)	.36
da Costa et al, <sup>29</sup> 2012	2.571	(0.371-17.831)	.34
Hardy et al, <sup>30</sup> 2011 <sup>a</sup>	21.131	(3.161-141.237)	.002
Khonsari et al, <sup>31</sup> 2015 <sup>a</sup>	12.273	(3.405-44.236)	<.001
★ Lester et al, <sup>32</sup> 2010	1.612	(1.144-2.271)	.006
Lv et al, <sup>21</sup> 2012	2.074	(0.686-6.251)	.20
Lua and Neni, <sup>33</sup> 2013	0.985	(0.535-1.812)	.96
★ Maduka and Tobin-West, <sup>34</sup> 2013	2.644	(1.135-6.160)	.02
★ Mbuagbaw et al, <sup>35</sup> 2012	1.026	(0.519-2.026)	.94
Park et al, <sup>36</sup> 2014	0.610	(0.236-1.585)	.31
★ Pop-Eleches et al, <sup>37</sup> 2011	1.330	(0.882-2.005)	.17
Quilici et al, <sup>38</sup> 2013	2.705	(1.109-6.596)	.03
Strandbygaard et al, <sup>39</sup> 2010	6.018	(1.368-26.466)	.02
Vervloet et al, <sup>40</sup> 2012	2.959	(1.448-6.046)	.003
Wald et al, <sup>41</sup> 2014	3.267	(1.686-6.331)	<.001
Wang et al, <sup>42</sup> 2014	3.857	(1.180-12.606)	.03
Overall	2.107	(1.517-2.926)	<.001



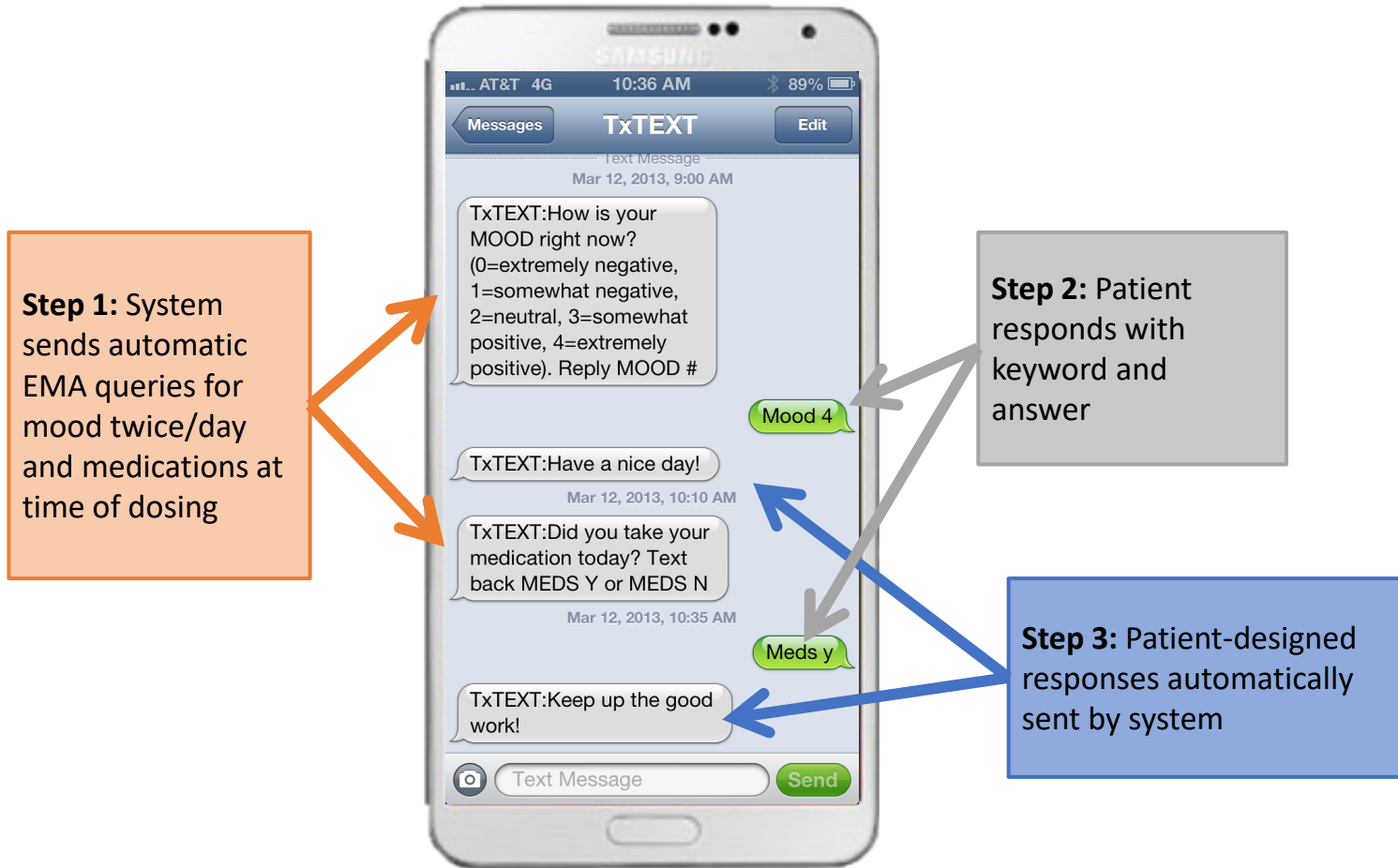
### Figure Legend:

Meta-analysis of the Effect of a Mobile Telephone Text Message Intervention on Medication Adherence<sup>a</sup>. The text message intervention significantly improved adherence (odds ratio, 2.11; 95% CI, 1.52-2.93; P < .001). The effect remained significant after excluding 2 studies with extreme outcomes (Hardy et al and Kohnsari et al) (odds ratio, 1.78; 95% CI, 1.35-2.35; P < .001).

# TxText: Self-monitoring queries



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# Perspectives on TeXT - Medication



“It feels good that I can actually talk to someone every day about it. Even if it’s a machine, its feels great to know that there's someone there to affirm to me that this is a good and right thing. “congratulations” sounds good, you know?”

“It gave me more positive feeling about myself that I’ve done something good that day for me. Having somebody at your back is a positive thing.”

# Text versus App



## Text

- Better studied
- Phones are cheaper
- Harder to crack phone screens when dropped



## App

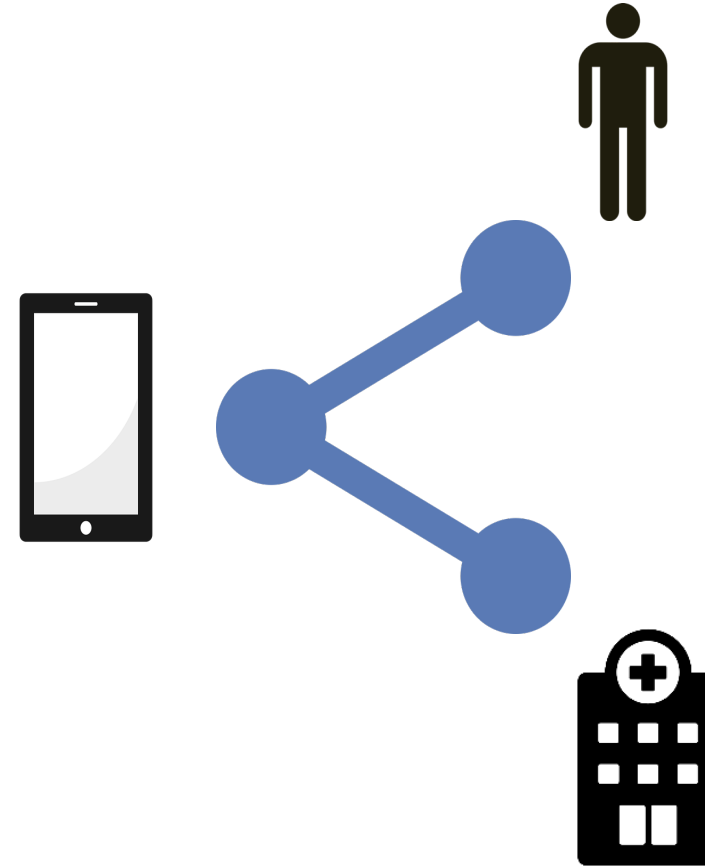
- App
- More secure
- Can send more messages without added cost
- Consumer demand
- Rich media views, videos and community functions

# Consistent Phone Access and Engagement in Care



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- Recent literature underscores importance of access to consistent communication
- Those who experienced a **change in phone number** during the past year were **significantly more likely to be not engaged in care**



# Platform Development Strategy



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**Addressing  
existing  
clinic needs**

**Shrinking the  
distance**

**Self-  
monitoring**

**Expanding  
Connections**

**User-  
centered  
design**

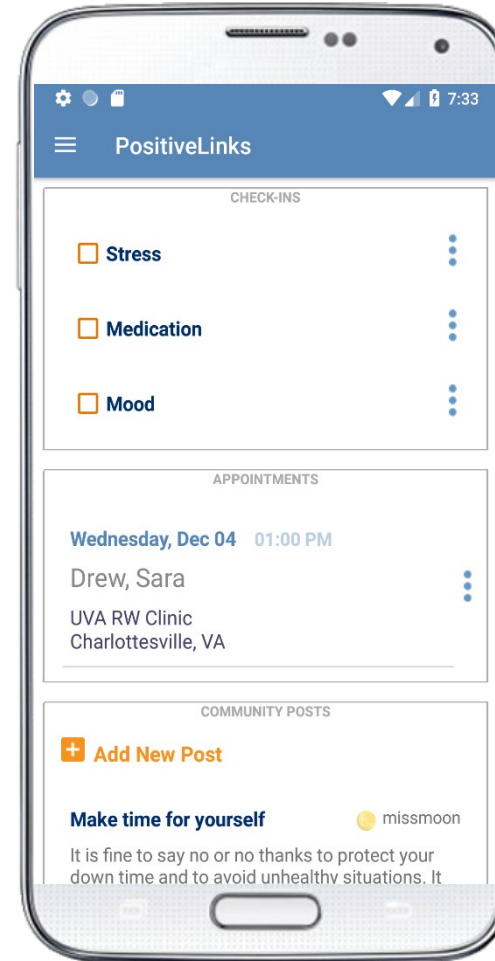
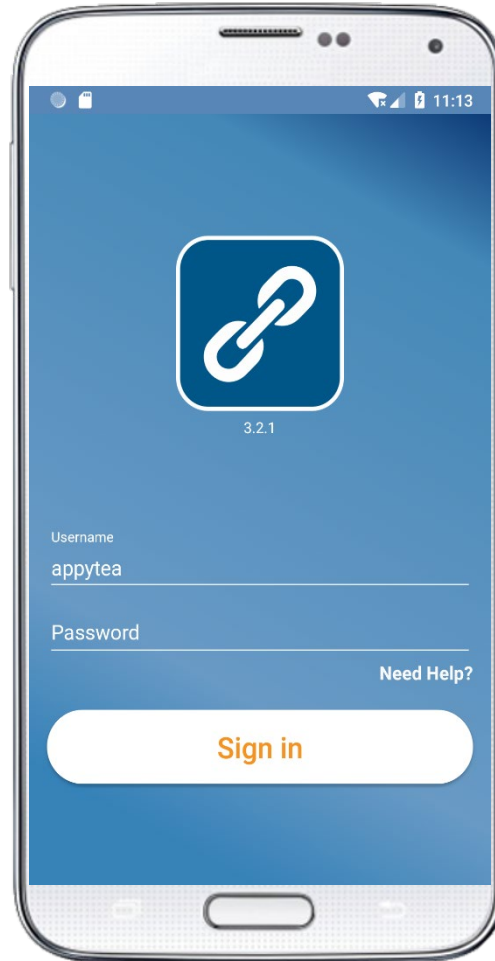
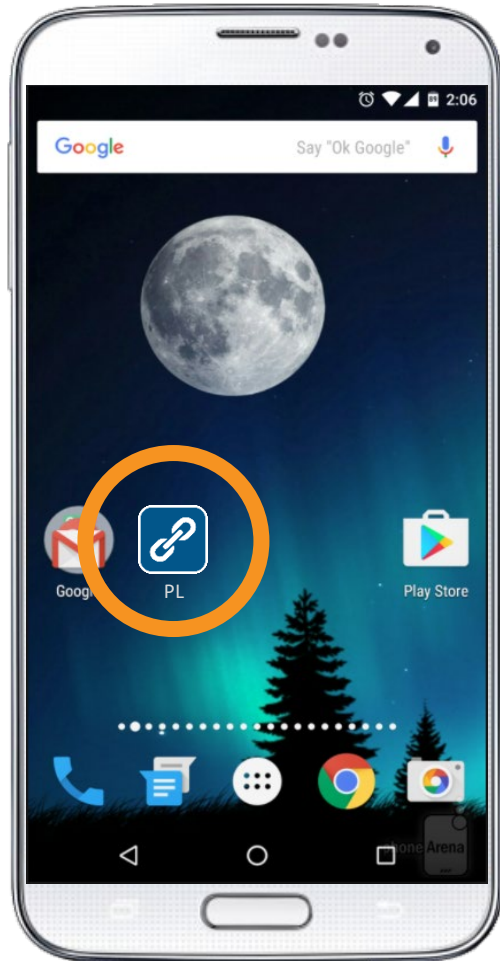
# PositiveLinks Users



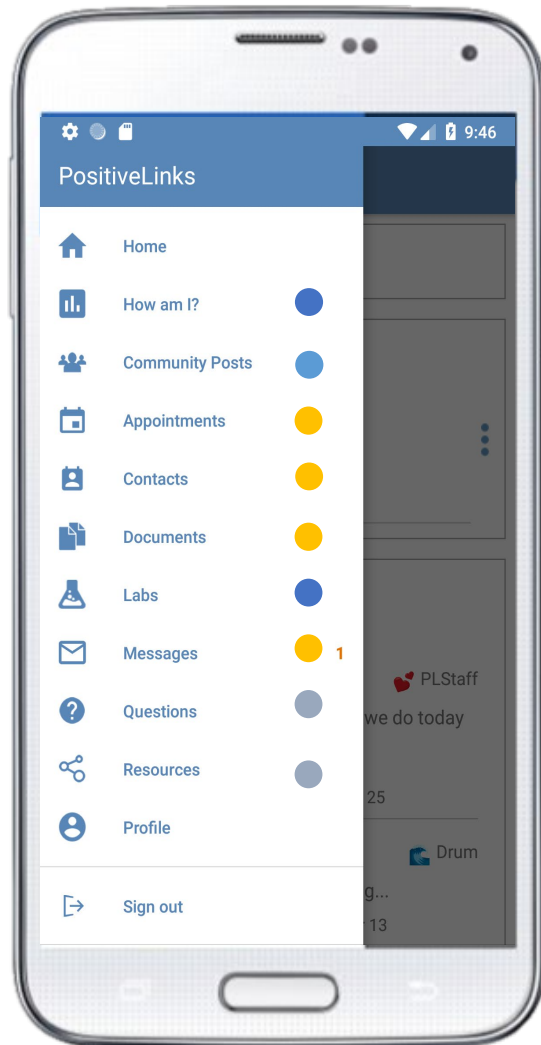
- Providers
  - Nurse practitioners
  - Doctors
  - Case managers
  - Community health workers
- Members
- Administrators



# Login and Home Screen

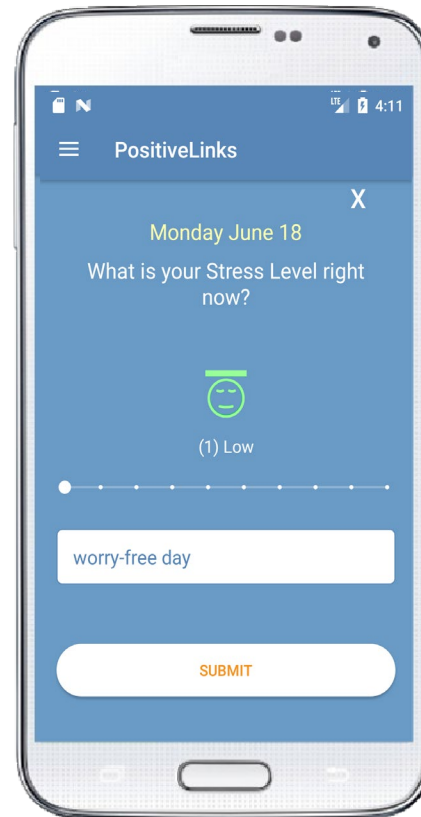
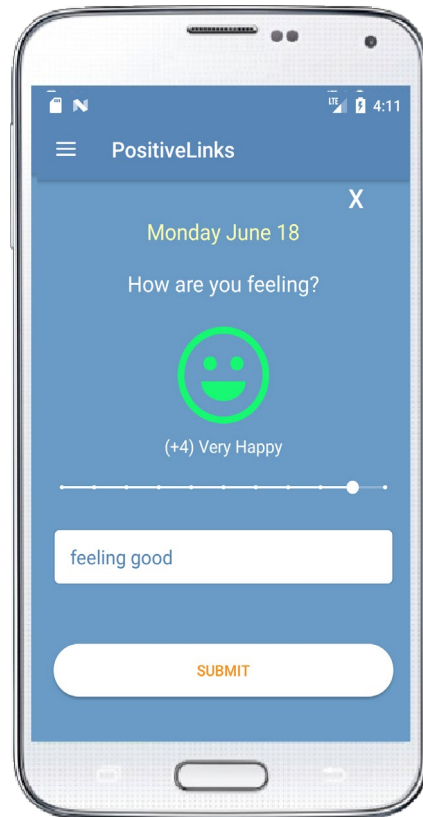
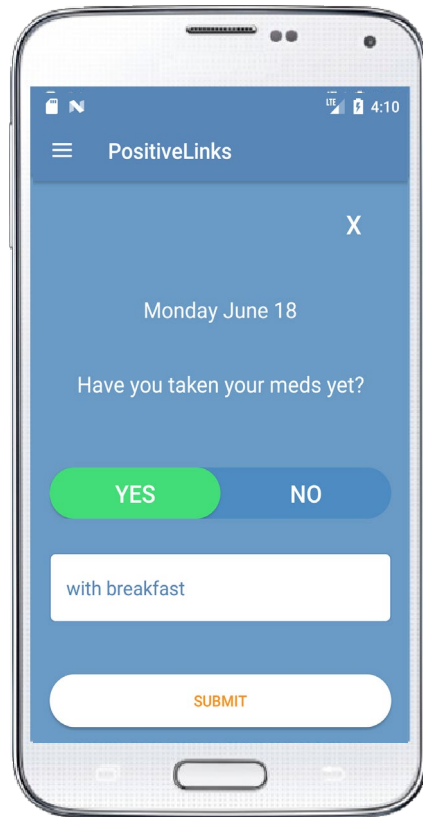


# PL App Components



- Self-Monitoring and Management
- Care Coordination
- Educational Resources
- Social Support

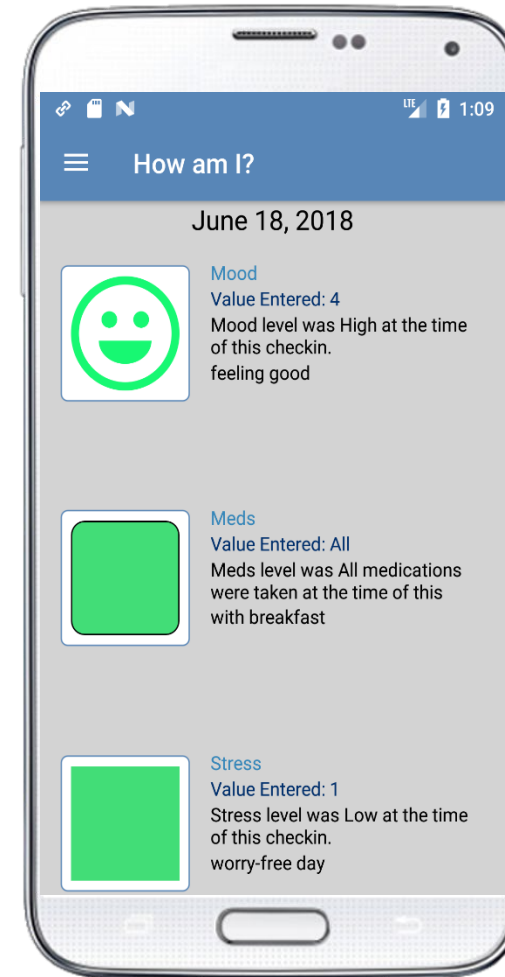
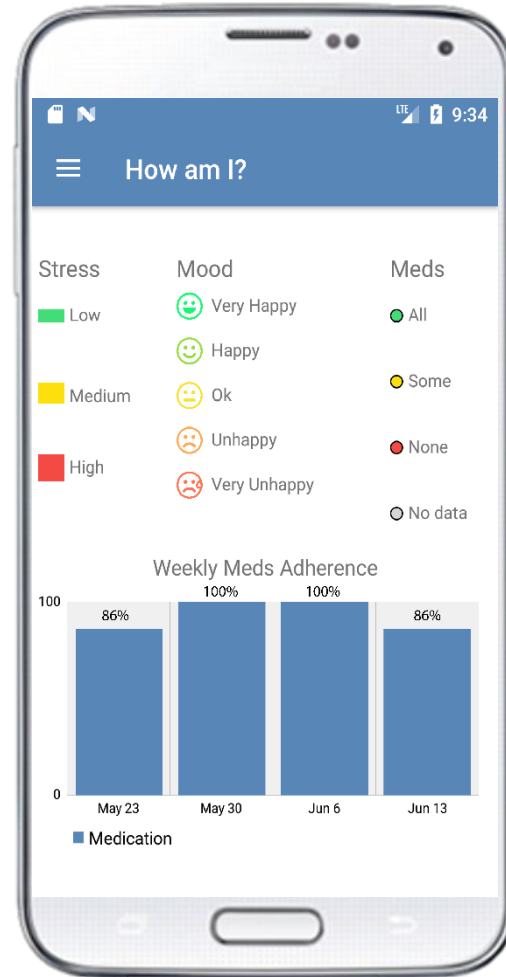
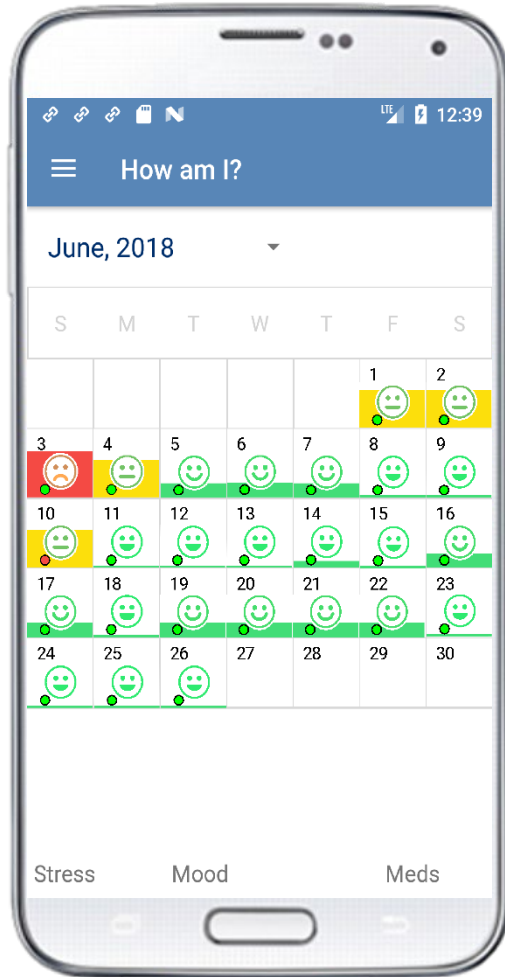
# Self-monitoring Check-Ins



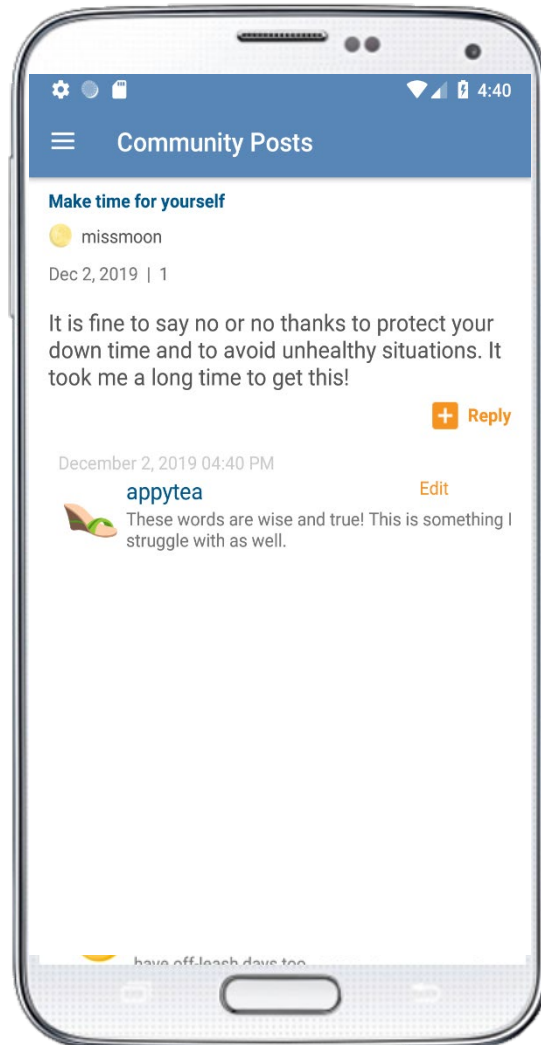
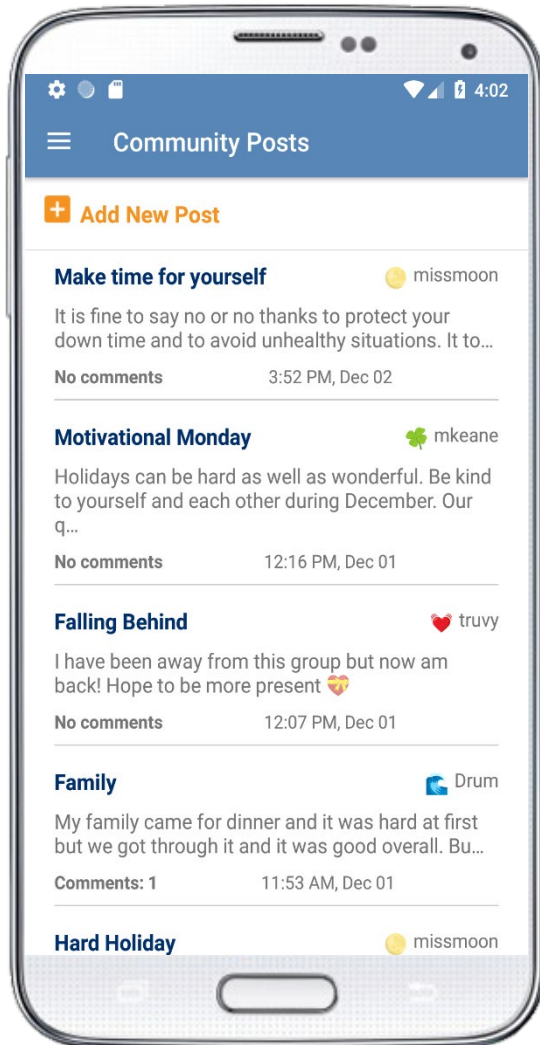
“The questions make me focus on my mood and my stress and makes me more in touch with myself you can say. When it pops up, it makes me stop and think. I usually don’t think about that kind of thing.”

- PL Participant

# How am I?



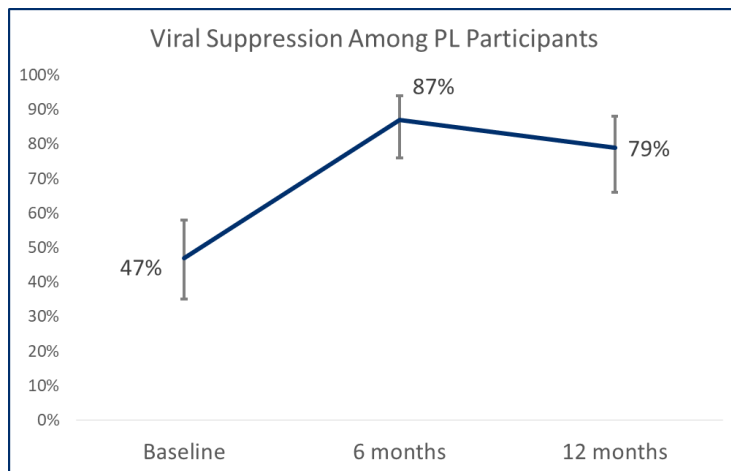
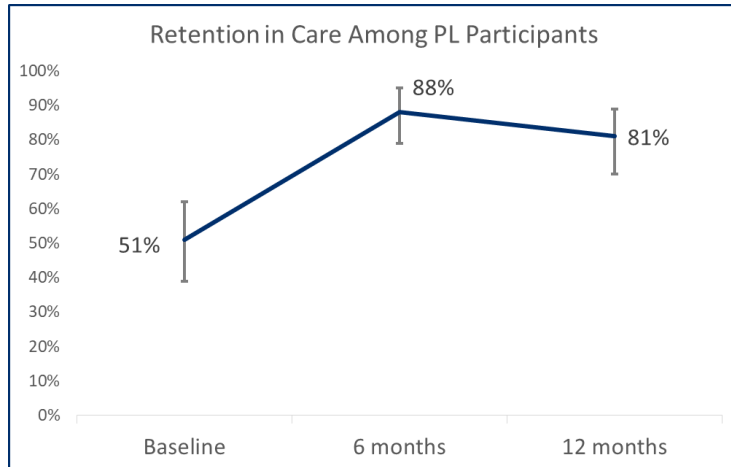
# Community Board



“You get to talk to people who are going through exactly what you are going through. **When you are down somebody uplifts you**, when somebody else is down you can uplift them, it’s basically like one big family”

- PL Member

# PL V1.0 Outcomes



- Significant **increases** in engagement in care (top) and in HIV viral load suppression (bottom) over one year of follow-up (n=77)
- **Stigma** scores are improved with increased use of the community message board.\*
- **Social support** is sought and provided regularly. \*\*
- In app **patient-provider** messaging is a mechanism to build **rapport**.\*\*\*

## Linkage to, Retention in, and Re-engagement in HIV Care (LRC) Chapter

This chapter of the [Compendium](#) categorizes the best practices in promoting Linkage to, Retention in, and Re-engagement in HIV Care among people living with HIV, one of the priorities outlined in the U.S. National HIV/AIDS Strategy. Additional details about the LRC Chapter or the [Prevention Research Synthesis \(PRS\) Project](#) can be obtained by [contacting PRS](#).

COMPENDIUM OF EVIDENCE-BASED INTERVENTIONS AND BEST PRACTICES FOR HIV PREVENTION

### 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.

# PL Provider Portal Summary



Upcoming Appointments with PL Members

**Demo Cohort**  
Status: Available (Change)

**Appointments**

Date/Time	Member	Provider
December 10 09:00 AM	appytea	Sara Drew, Infectious Disease Specialist
December 11 04:00 PM	appytea	Sara Drew, Infectious Disease Specialist

**Recent Messages**

Date	Username	Message
09 Dec 9:27 PM	missmoon	missmoon : " Thanks 🙏 I will try this and be in touch. "
09 Dec 9:24 PM	appytea	sdrew : " Thank you for asking! Your paper work is all set. Look forward to seeing you on Tuesday. "

**Recent Documents**

Last updated	Uploaded by	Member	Title	View	Download
December 09, 2019 9:12 PM	sdrew	missmoon	321 Form	👁	📄
December 09, 2019 9:09 PM	sdrew	appytea	Insurance Card	👁	📄

**Statistics**

**90 Days Mood**

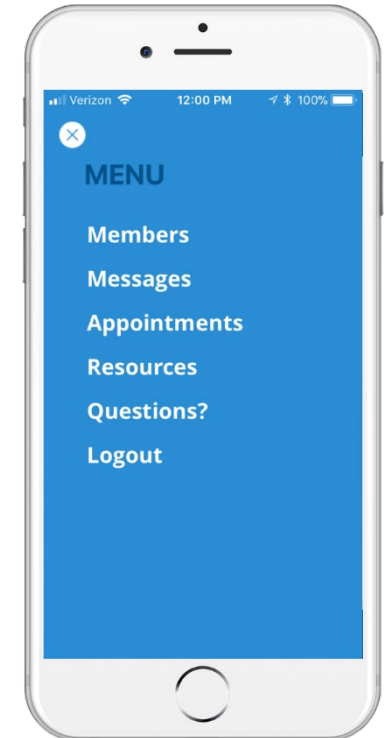
**90 Days Stress**

Documents recently shared with or by Members

Cohort Mood and Stress graphs for past 90 days

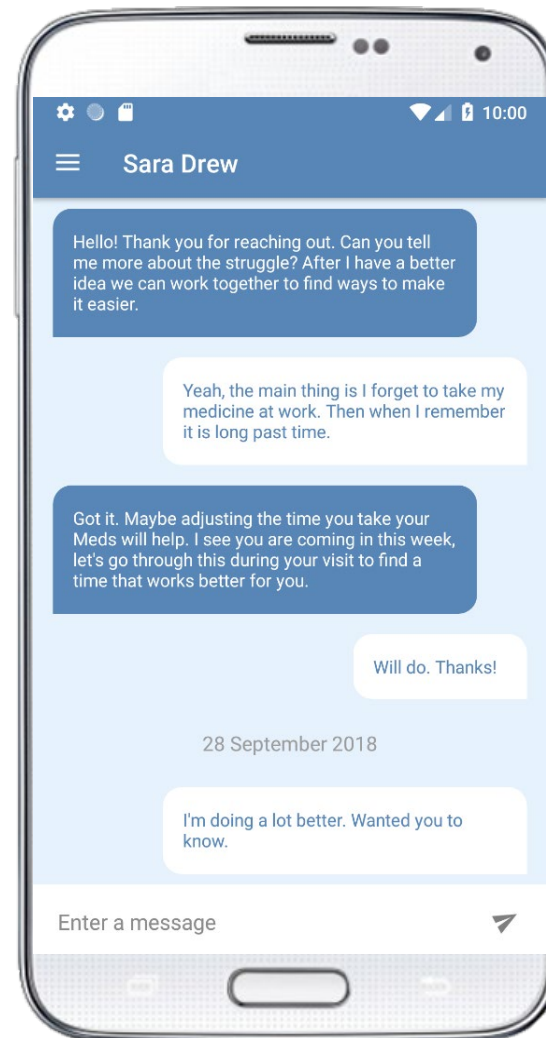
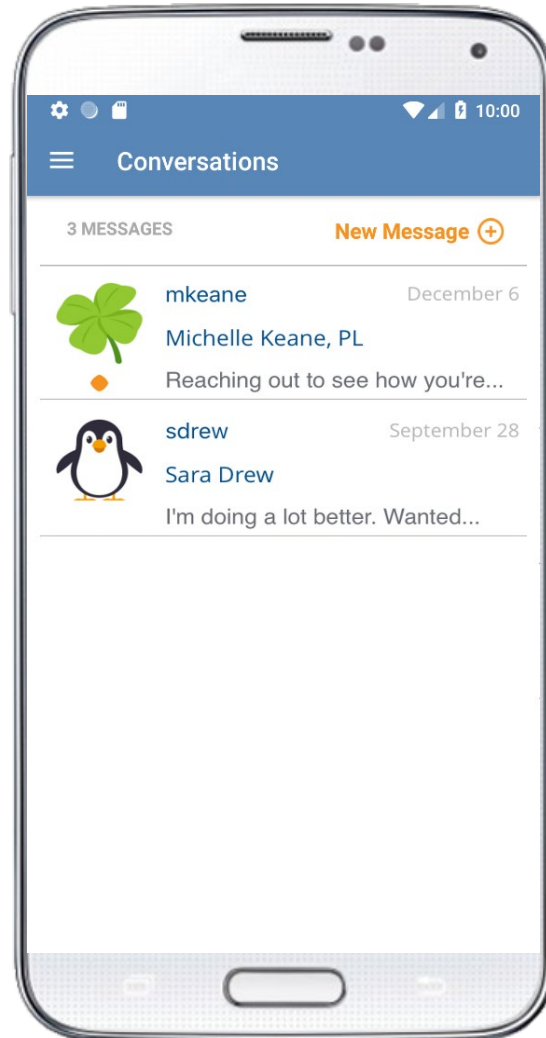
Recent Messages from or to Members

PL Provider App





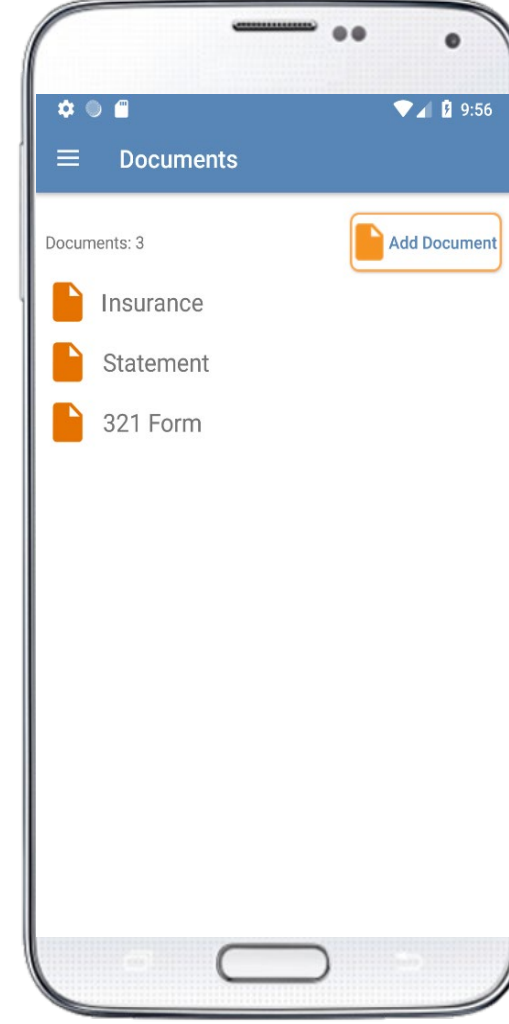
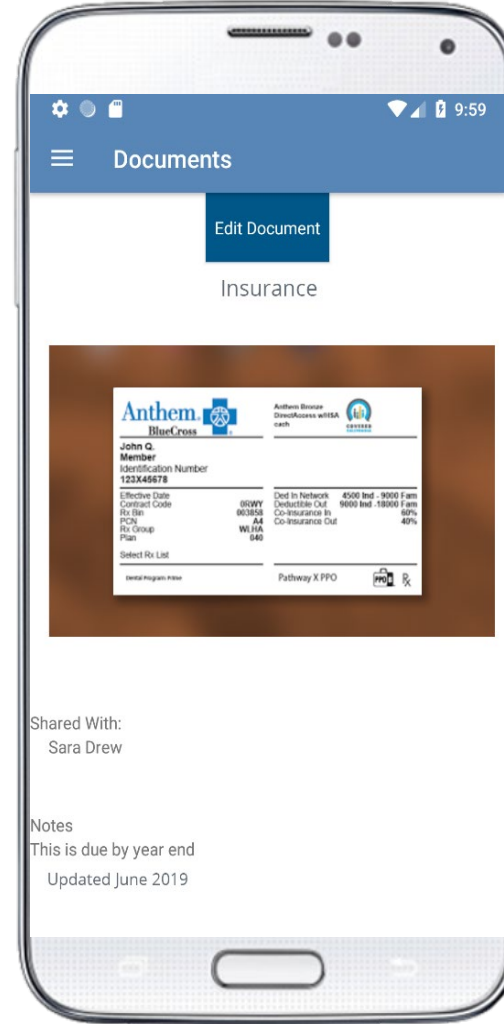
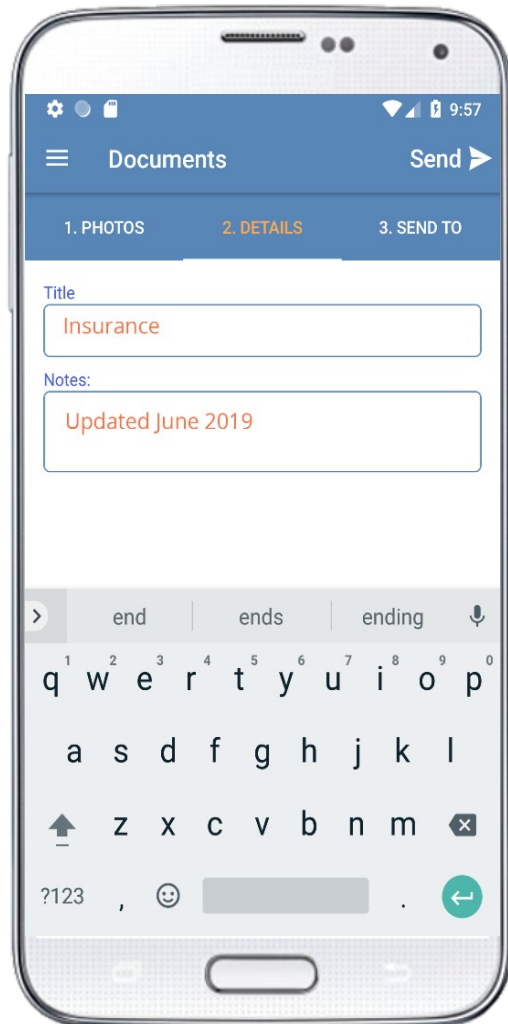
# Messaging



# Document Upload



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# Labs Redesign

☰ Labs

▲ My CD4 Count

June 16, 2019: **350**  
My CD4 Count is **up** 😊 Yay!

Month	CD4 Count
Jan	23
Feb	240
Mar	240
Apr	240
May	240
Jun	350

CD4 Count: CD4 cells are immune system cells that HIV destroys. A CD4 Count measures how many cells are in your blood. A high CD4 Count is good. [\(Show less\)](#)

▼ My Viral Load

▼ About My Labs

☰ Labs

▼ My CD4 Count

▲ My Viral Load

June 16, 2019: **200**  
My Viral Load is **down** 😊 Excellent!

Month	Viral Load
Jan	10,000
Feb	10,000
Mar	10,000
Apr	800
May	800
Jun	200

Viral Load is a test that tells how many HIV particles are in a sample of your blood. It is good when Viral Load is low. When Viral Load gets very low, HIV becomes undetectable. [\(Show less\)](#)

▼ About My Labs

☰ Labs

▼ My CD4 Count

▼ My Viral Load

▲ About My Labs  
What do my lab numbers mean?

**350**  
CD4 Count is **UP**  
A higher CD4 count means a stronger immune system.

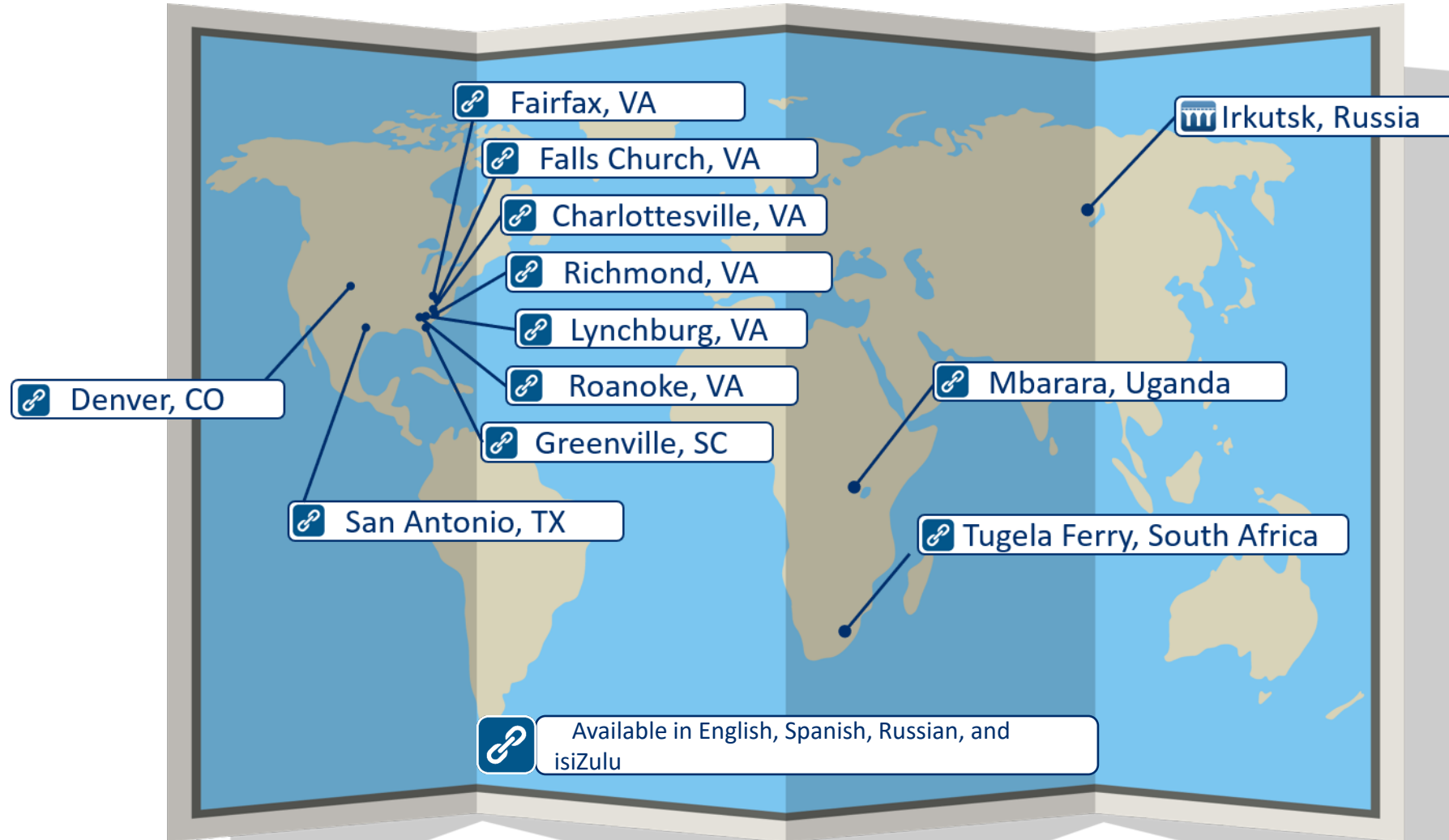
**200**  
HIV Load is **DOWN**  
A lower HIV count means less HIV in your blood.

Taking your meds everyday can help you get to **undetectable** [\(Learn more\)](#)

# Where We Are



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# Part 2: Common Stumbling Blocks of mHealth Implementation

# Procurement of Prepaid Devices



Need: Smartphone ownership and internet access are essential

Challenge: Major retailers limit each customer to two prepaid phones per purchase

Strategies:

- Find allies at the retailers to minimize hassle if possible
- Advocate to allow healthcare organization to access more phones
- Anticipate that, while a minority, a substantial number of participants will need a phone
- Phone cases, screen protectors, pop sockets increase durability of the device
- PL Phone Provision and Replacement Policy

# Phone Service Providers & Phone Credits



Need: Consistent phone numbers to support patient engagement in care

Challenge: Limited data plans and poor service provider coverage impact user experience and possible benefit

Strategies:

- Monthly phone credit earned based on app usage
- PL Phone and Phone Credits Processes Guide
- PL Phone Tracker
- Creative thinking!

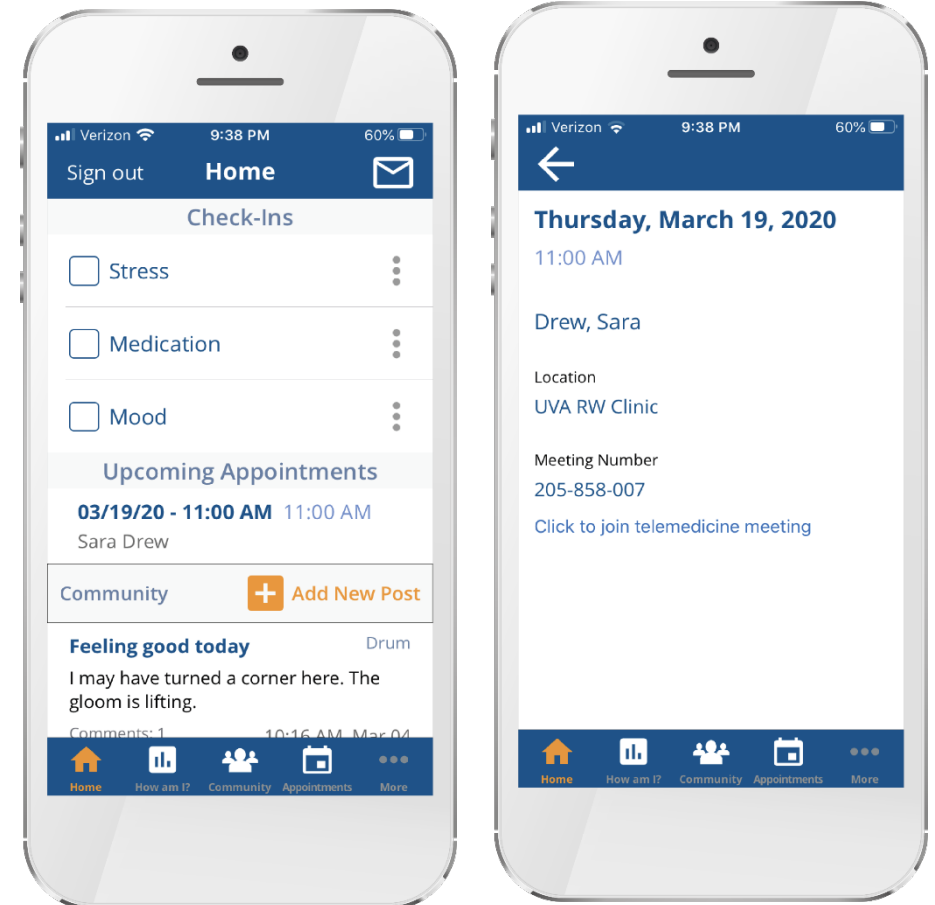
# In the Time of COVID-19

Need: Staying connected while social distancing

Challenge: Overcoming barriers to HIV Care existing prior to and exacerbated by pandemic

Strategies:

- Remote PL Enrollment Best Practices
- Member-focused training materials developed “How to Download and Install PL App for Android Users” vimeo links
- PL Telehealth





# Patient Portals



Need: Care coordination

Challenge: Not one size fits all

Strategies:

Labs and Appointments

- Manual data entry
- Capture EPIC data feed to connect to PL@UVa
- Embed URL to existing patient portal within the PL app

Messaging

- Redirect members to patient portal

# PL Member Recruitment



Need: Recruiting the target population for PL

Challenges:

- Reaching the target population

Strategies:

- Messaging to target population
- Encouraging provider referrals
- Proactive outreach vs. passive referral
- Coordinating with staff who support the target population

# PL Member Engagement



Need: Promoting PL engagement for diverse members

Challenge:

- Differences in tech literacy
- Variable preferences for PL use

Strategies:

- Assessing technology barriers
- Training
- Monitoring
- Engagement and Retention Activities

# PL Provider Engagement



Need: Provider buy-in and use of PL platform is essential

Challenge: What kind of PL user am I and what am I responsible for?

Strategies:

- Training and role definition: PL Training & Certification Program
- Recruitment plan and how PL fits into clinic workplan
- Know how to contact PL Coordinator and PLC is present/available/point person



# Part 3: Evidence-Based Tools for Assessing and Responding to mHealth Implementation Barriers

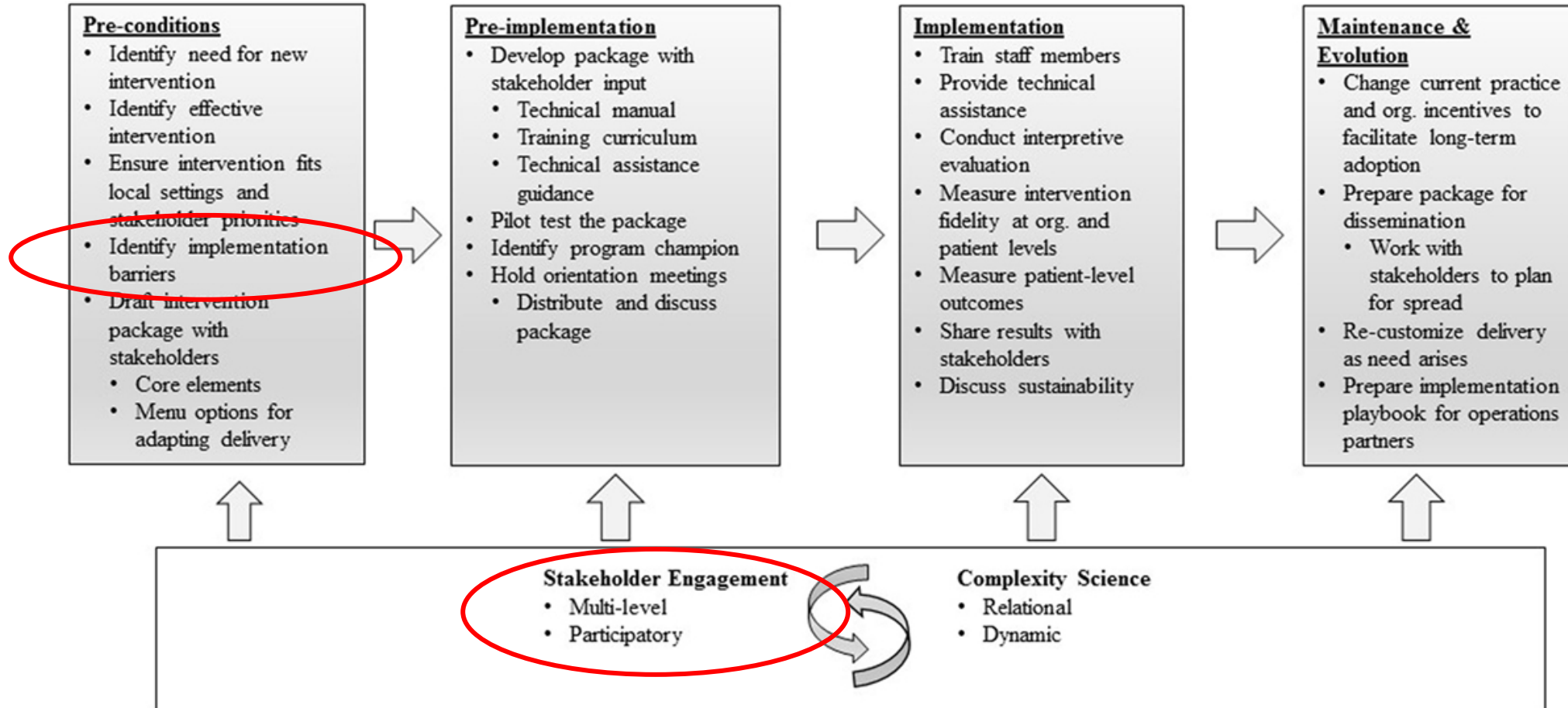
# Implementation Models



- Process Models can guide the “*how to*” of mHealth implementation
- Organized by stages of implementation and emphasize careful planning
- Many models available, including models developed for use for HIV prevention:

- Knowledge-to-Action Framework
- Stetler Model
- Iowa Model
- Ottawa Model
- Knowledge to Action Model (K2A)
- **Replicating Effective Programs Framework**
- Quality Implementation Framework

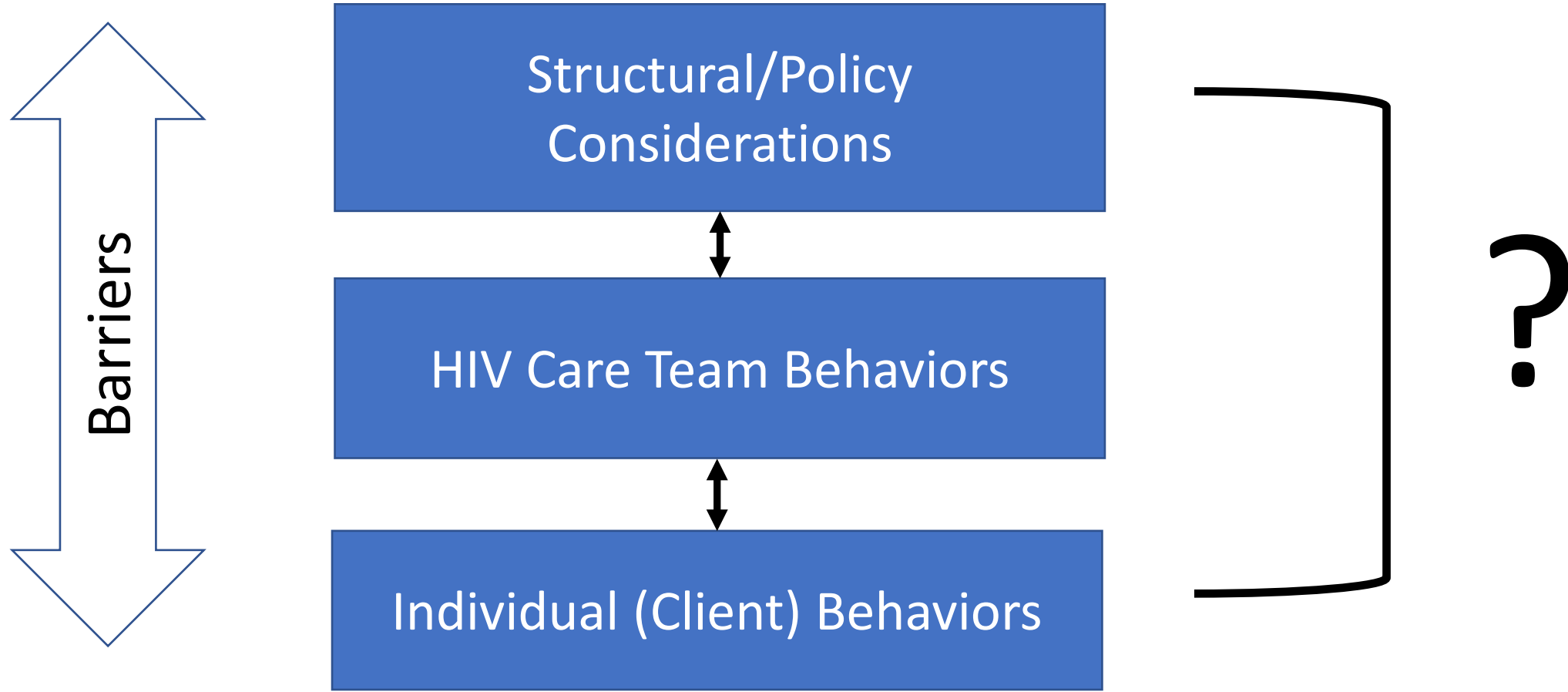
# Challenges in Applying Process Models



# Investigating Barriers to mHealth Implementation



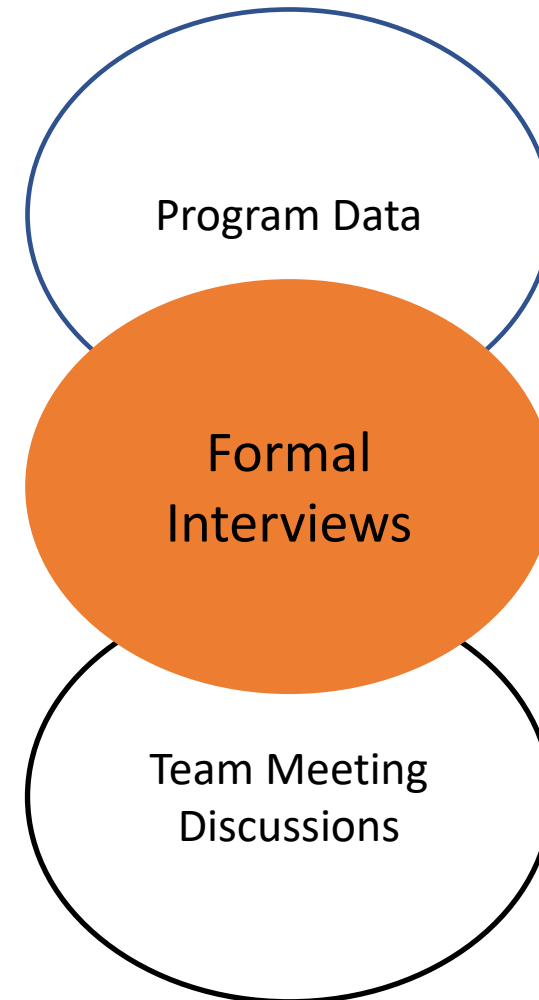
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# Rapid Assessment/Appraisal

- Supports use of data from multiple sources
  - Program data (missed visits, viral load suppression, usage data)
  - Qualitative input of key stakeholders from various sources
  - Balances need for timely AND accurate data for decision making
- Enables responsiveness when modifications to your implementation plan are needed



# Rapid Assessment: PL Implementation at RWHAP Clinics



- Interviews with 8 staff at 4 RWHAP clinics:
  - 3 hospital-affiliated clinics
  - A county health department-based clinic
- Questions were selected from CFIRguide.org
  - Based on the Consolidated Framework for Implementation Research
  - Considers 37 factors that can influence implementation success
  - 10 facilitators and 7 barriers common across sites implementing PL



# Facilitators to PL in RWHAP Clinics



“We had some individuals who would fall out of care or come in intermittently. **And part of that we knew was because the didn’t have access to a stable phone.** They were transient at times. They moved around a lot. We would lose contact with them. And unfortunately, they didn’t have the income to keep their phones on. That’s why we were interested in PositiveLinks.”

## Fit with Patient Needs

# Facilitators to PL in RWHAP Clinics



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“We had some individuals who would fall out of care or come in intermittently. **And part of that we knew was because the didn’t have access to a stable phone.** They were transient at times. They moved around a lot. We would lose contact with them. And unfortunately, they didn’t have the income to keep their phones on. That’s why we were interested in PositiveLinks.”

**Fit with Patient Needs**

“**Clients always come first. Positive Links is exactly what that is.** We realize that clients get busy, life happens. Some deal better with their diagnosis than others. Being able to have that connection with them, I think that works really, really well with our clinic. **I’m very proud of our clinic because I think we are very hands-on with our patients here. And PositiveLinks is just another tool.**”

**Fit with Clinic Values and Needs**

# Early Engagement



- Important role of Information Technology (IT) personnel
- Soft launches, including mock patients and messages, helpful for engaging clinic staff
- Collaboration with staff in other support programs can help generate PL referrals

“We’re still waiting on finalizing security approvals for it. The person who has taken lead on it is our IT. I have just been told that it’s kind of the way it works here because it is a mobile app. **The IT people are the one’s who take care of getting it through security.** And that’s what they’ve been doing.”

# Barriers to PL in RWHAP Clinics



- Access to Wi-Fi networks
- Maintaining patient cellphone access
- Privacy concerns
- Lack of clarity on how to obtain approvals for mHealth use

“Depending on where you are geographically, it can be a little challenging. **For example, there’s certain spots in our clinic where the Wi-Fi is kind of dead.** As far as trying to install the application, I may run into issues with the Wi-Fi signal.”

# Responding to PL Barriers

- Rapid assessment findings presented to PL implementation team as new sites adopt and implement PL
- Purpose is to facilitate iterative review and revision of implementation resources for new PL adoptees



Questions for Reflection



Decision and Task Checklists



Frequently Used Terms



Identify Barriers and Solutions



Develop a PositiveLinks Budget



Site Readiness Checklist



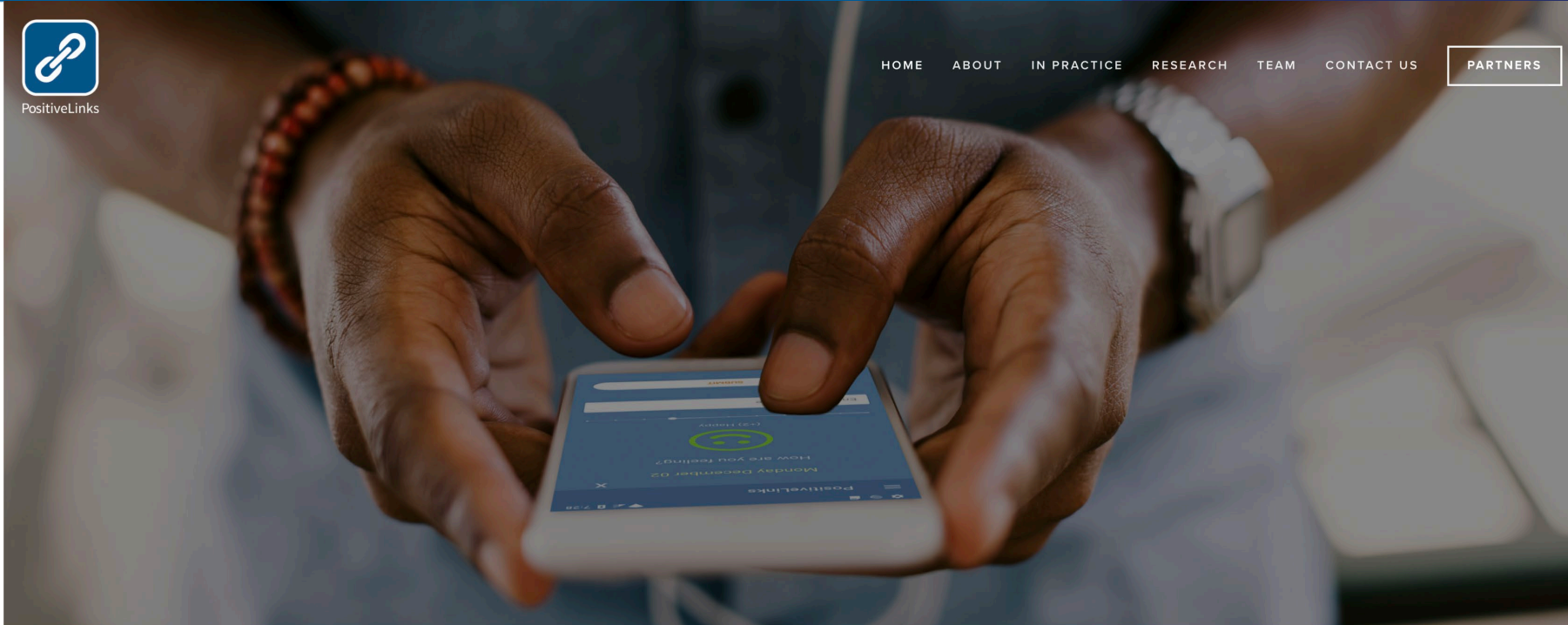
# Conclusion



- Patient-centered mHealth interventions are feasible in RW settings and can enable longitudinal engagement when paired with phone availability
- PL has been adapted to meet the needs of multiple sites while maintaining fidelity to its core, evidence-based functionalities
- Matching PL to clinic and patient needs, maintaining client phone access, knowing when to engage diverse stakeholders, and problem-solving common tech problems can facilitate implementation success



# Contact



<https://www.positivelinks4ric.com/contact>

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