VIRTUAL 2020 NATIONAL RYAN WHITE CONFERENCE ON HIV CARE & TREATMENT

Building PositiveLinks: mHealth for RWHAP Stakeholder Engagement & Implementation Support

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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.
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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.

Part 1:Evidence for mHealth in HIV

HIV Care Challenges Rural VA

HIV Care Challenges Rural VA Continued

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

mHealth

- "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

Aranda-Jan et al. BMC Public Health. 2014.

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**

The JAMA Network

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

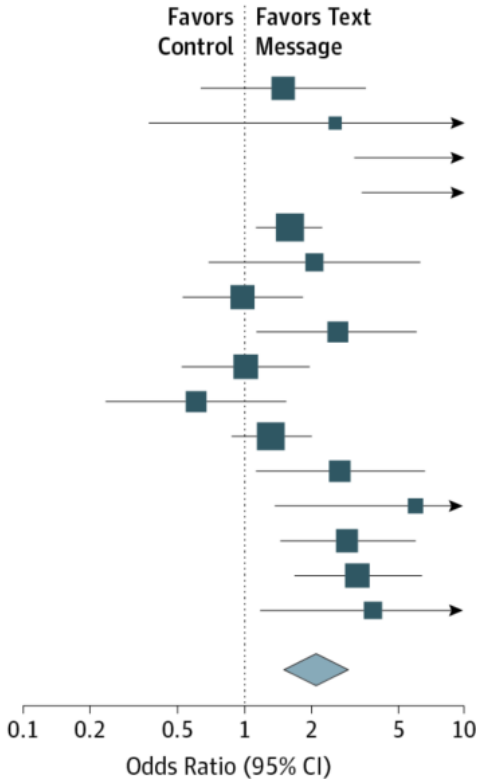

Figure Legend:

Meta-analysis of the Effect of a Mobile Telephone Text Message Intervention on Medication Adherence[a]. 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).

JAMA Intern Med. Published online February 01, 2016. doi:10.1001/jamainternmed.2015.7667

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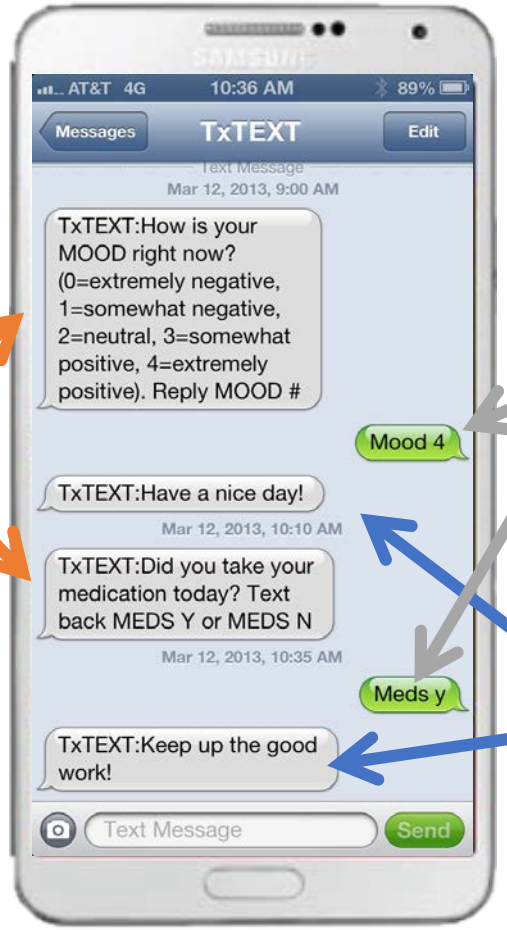
TxText: Self-monitoring queries

Step 1: System sends automatic EMA queries for mood twice/day and medications at time of dosing



Step 2: Patient responds with keyword and answer

Step 3: Patient-designed responses automatically sent by system

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

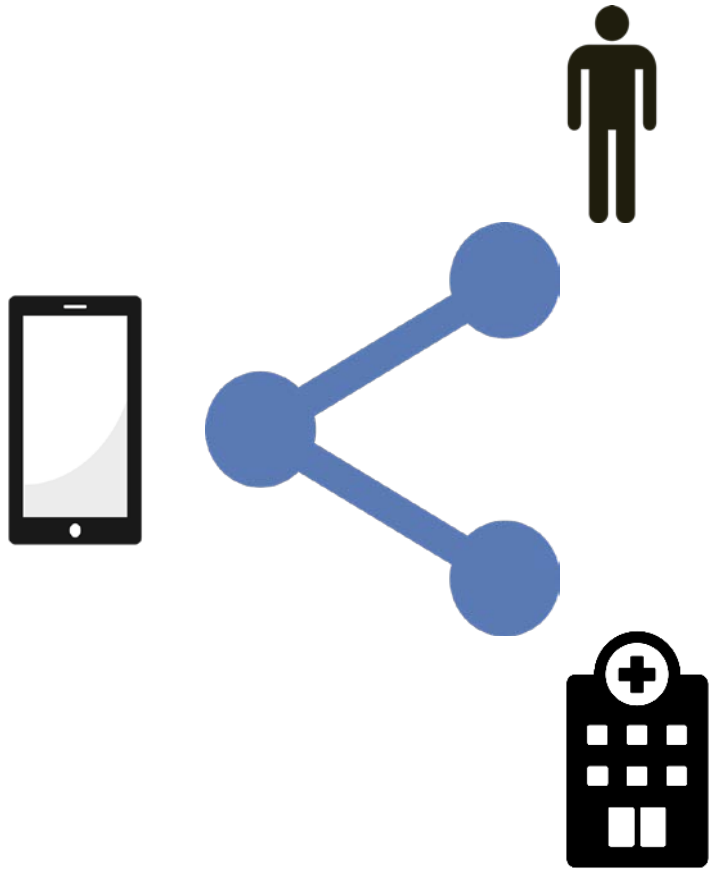
- Better studied
- Phones are cheaper
- Harder to crack phone screens when dropped

App

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

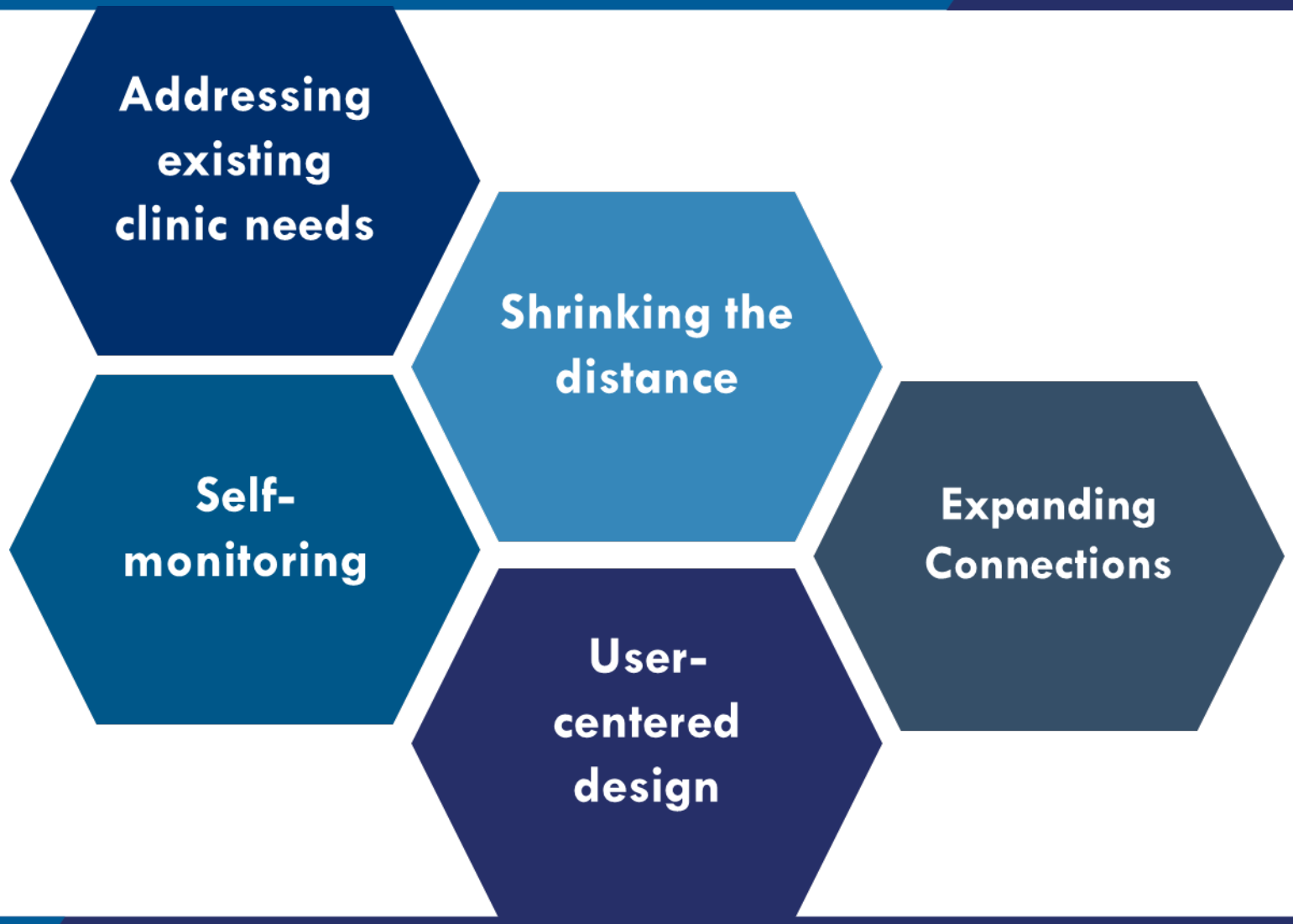
Consistent Phone Access and Engagement in Care

- 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**



Colasanti J, Stahl N, et al. J Acquir Immune Defic Syndr. 2017;74 Suppl 2(Suppl 2):S113-S120.

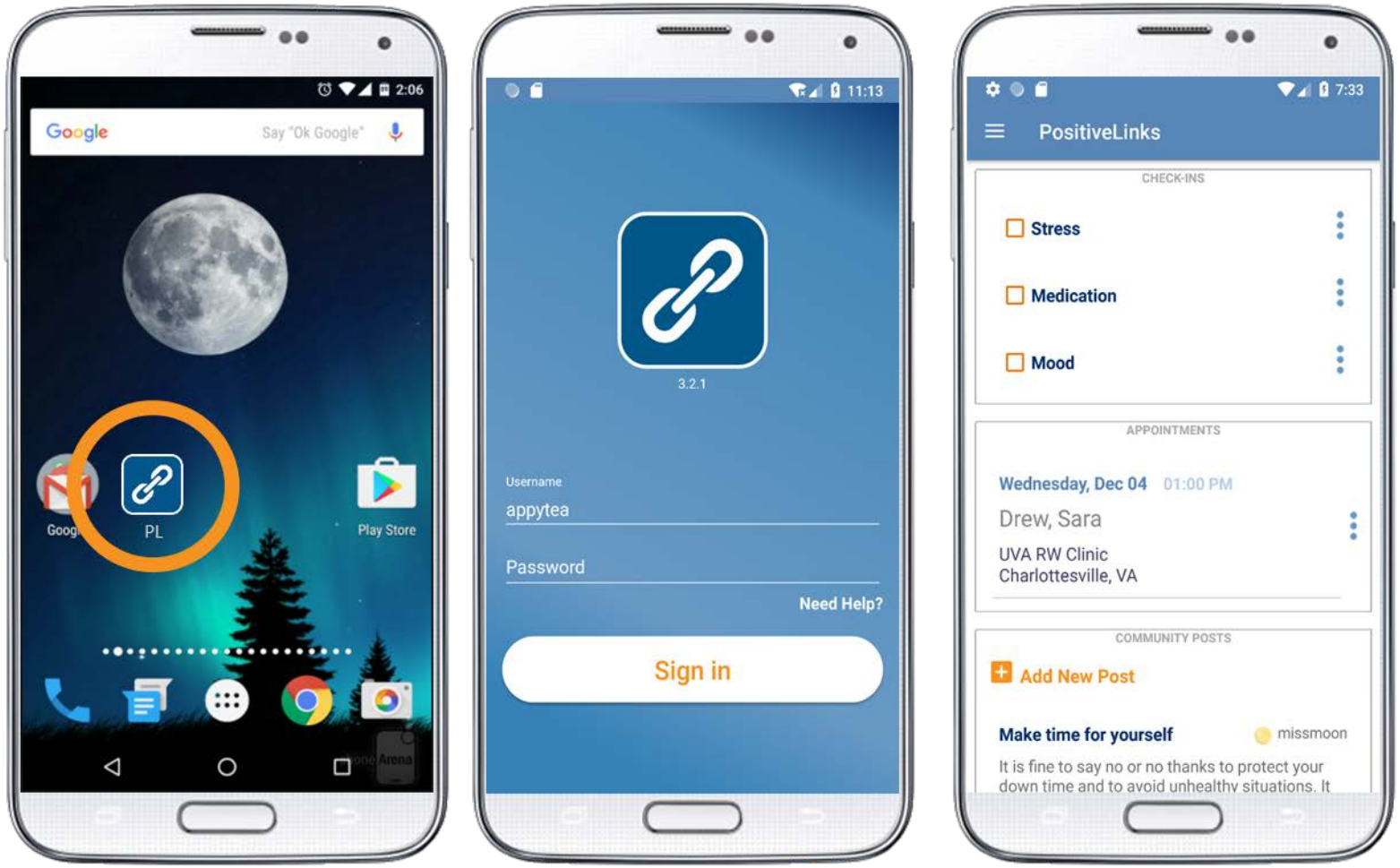
Platform Development Strategy



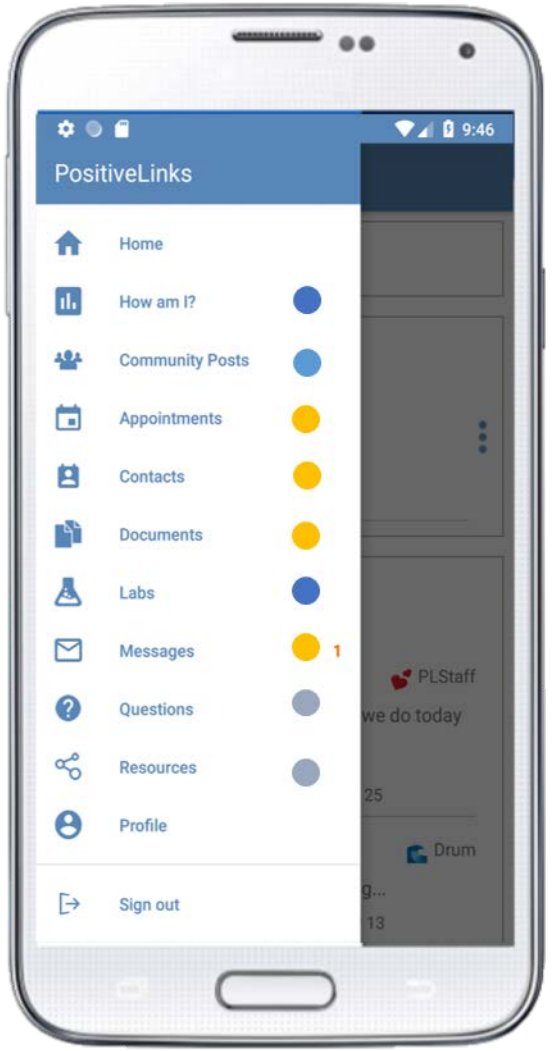
PositiveLinks Users

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

Login and Home Screen

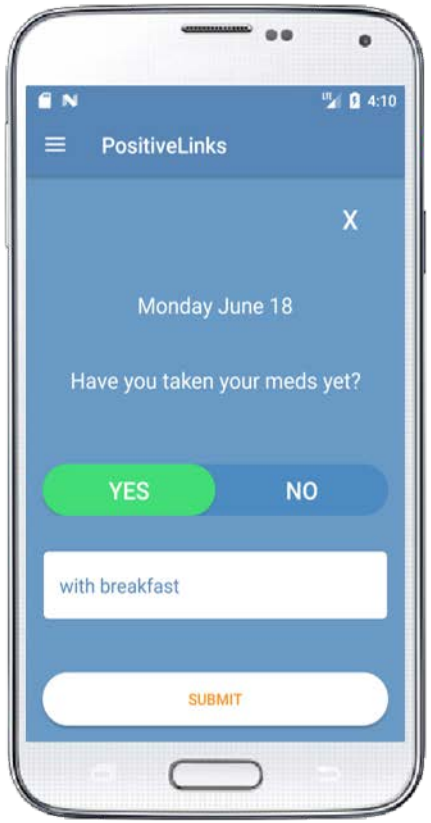


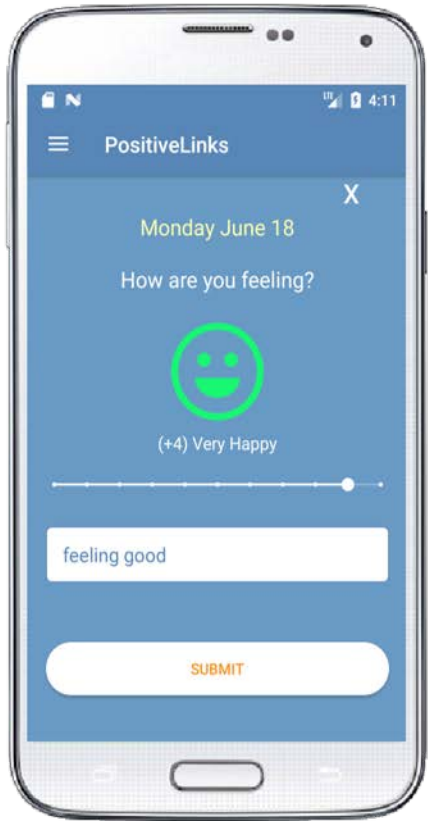
PL App Components

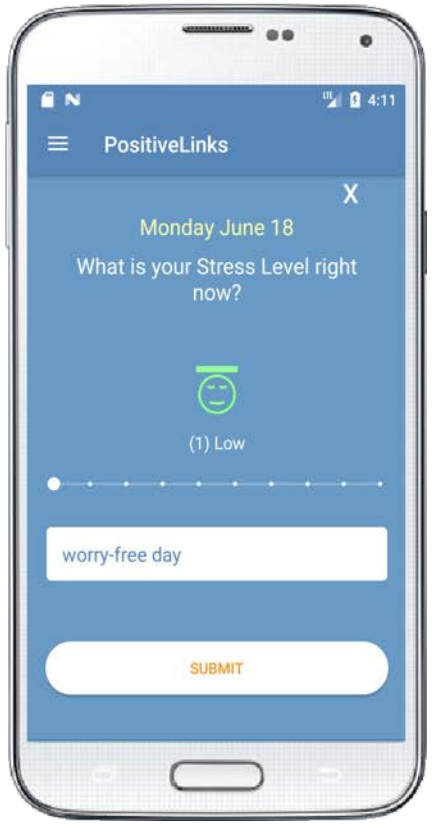


- **Self-Monitoring and Management**
- **Care Coordination**
- **Educational Resources**
- **Social Support**

Self-monitoring Check-Ins



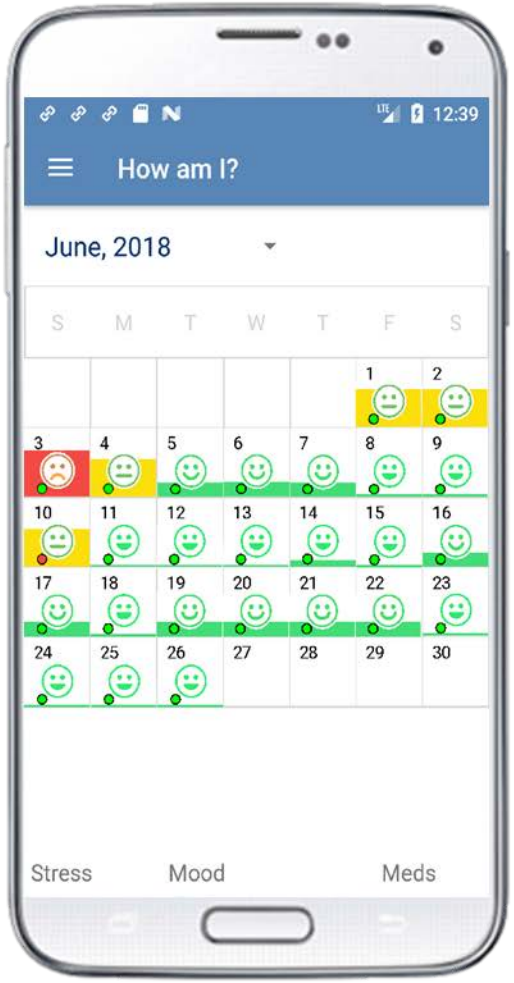




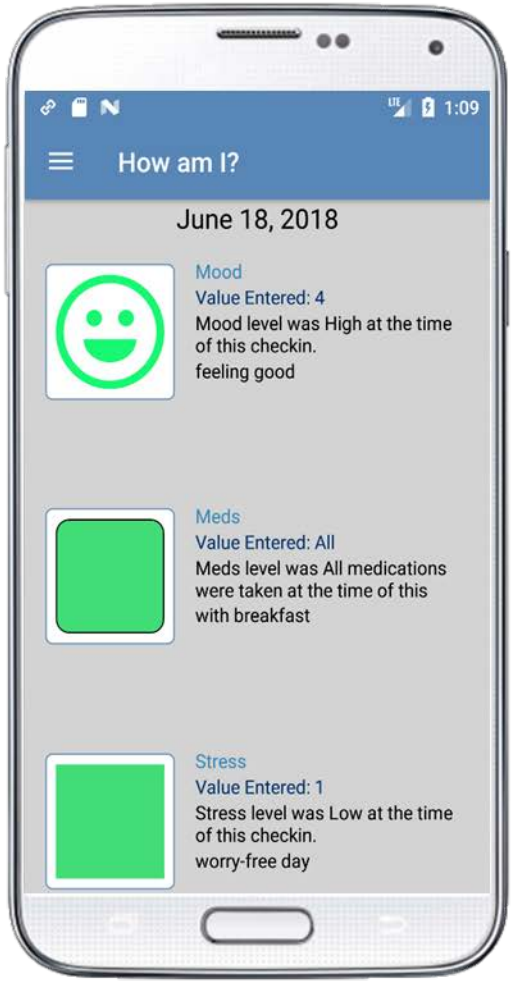
"The questions make me focus on my mood and my stress and makes me more in touch with myself you can say. When it pops up, it makes me stop and think. I usually don't think about that kind of thing."

- PL Participant

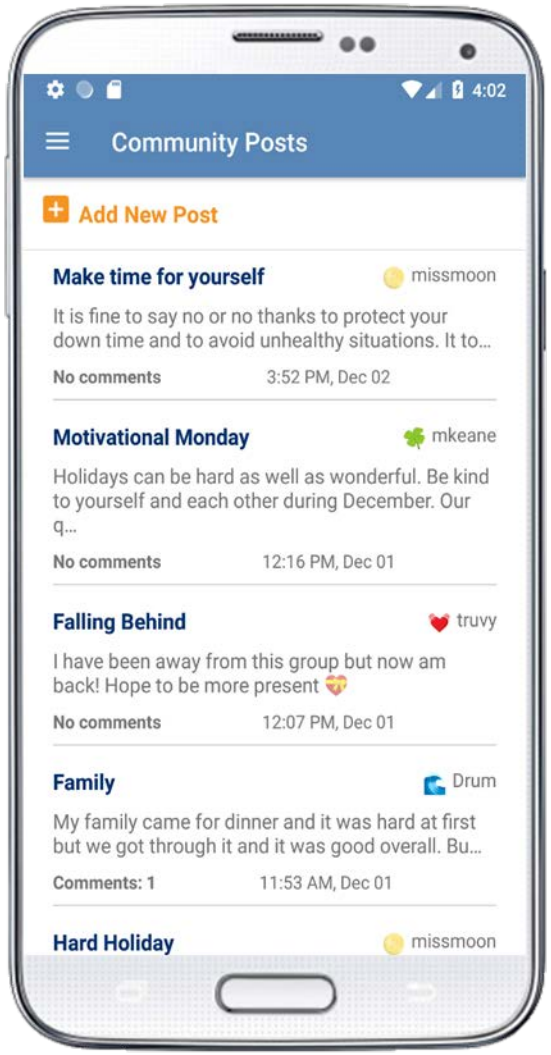
How am I?

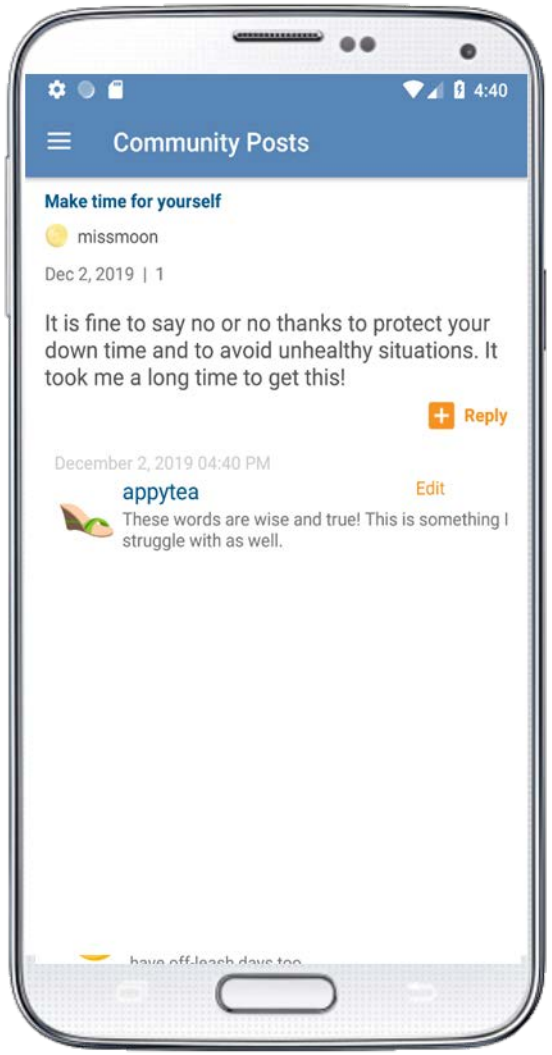

12:39
How am I?
June, 2018
S M T W T F S
1 2
3 4 5 6 7 8 9
10 11 12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
Stress
Mood
Meds

9:34
How am I?
Stress
Low
Medium
High
Mood
Very Happy
Happy
Ok
Unhappy
Very Unhappy
Meds
All
Some
None
No data
Weekly Meds Adherence
100
0
86%
100%
100%
86%
May 23
May 30
Jun 6
Jun 13
Medication


1:09
How am I?
June 18, 2018
Mood
Value Entered: 4
Mood level was High at the time of this checkin.
feeling good
Meds
Value Entered: All
Meds level was All medications were taken at the time of this with breakfast
Stress
Value Entered: 1
Stress level was Low at the time of this checkin.
worry-free day

Community Board

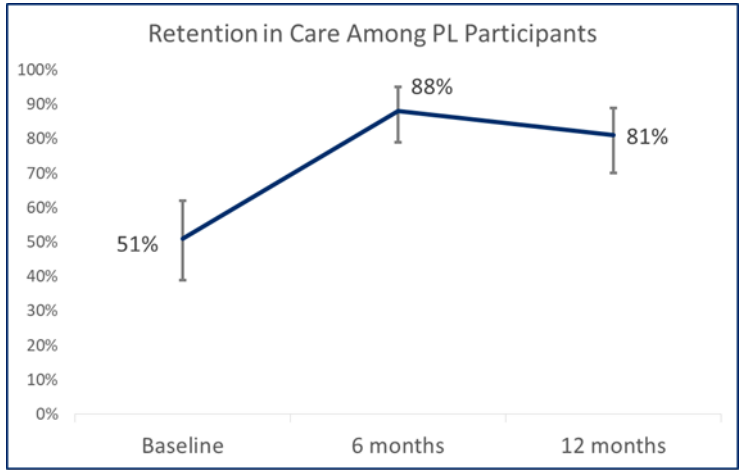


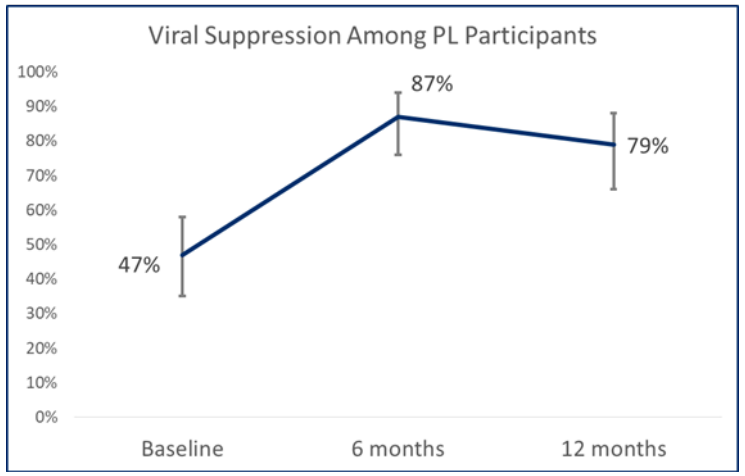


"You get to talk to people who are going through exactly what you are going through. When you are down somebody uplifts you, when somebody else is down you can uplift them, it's basically like one big family"

- PL Member

PL V1.0 Outcomes





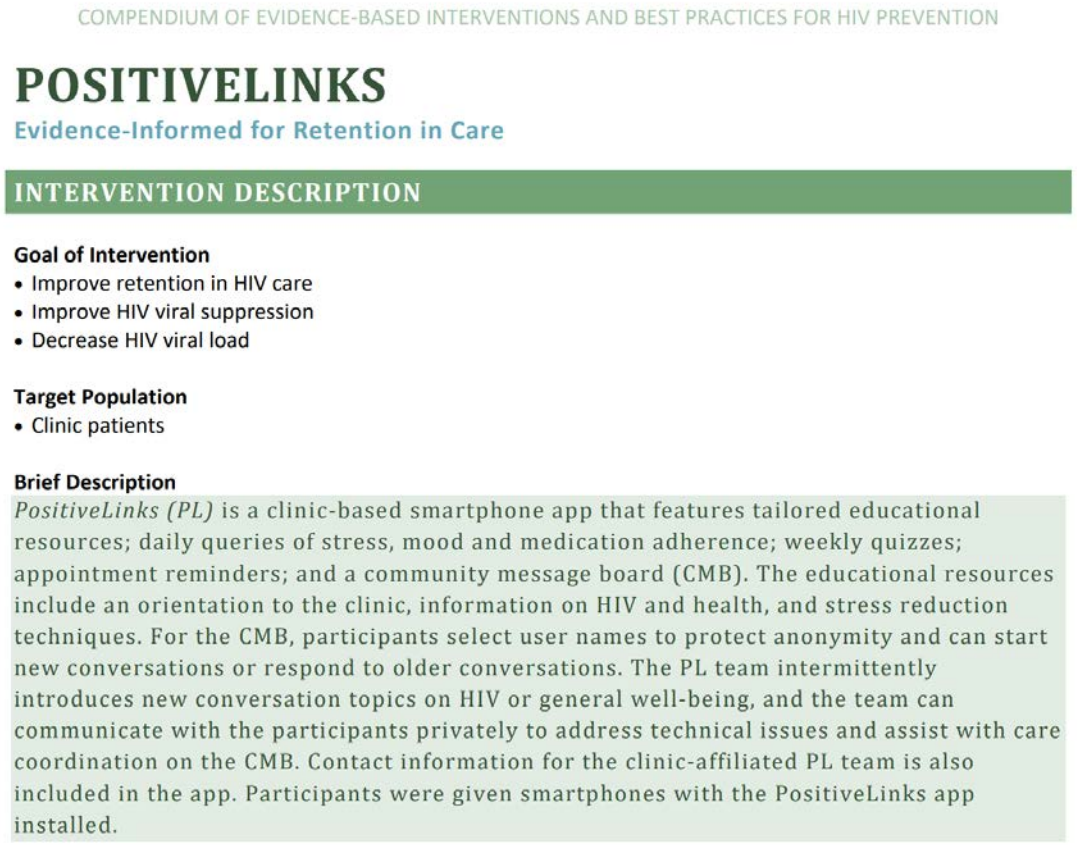
- Significant ***increases*** in engagement in care (top) and in HIV viral load suppression (bottom) over one year of follow-up (n=77)
- **Stigma** scores are improved with increased used of the community message board.*
- **Social support** is sought and provided regularly. **
- In app **patient-provider**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

Dillingham et al, AIDS Pat Care STDs 2018, *Flickinger et al AIDS Behav 2018, **Flickinger et al AIDS Behav. 2017, ***Flickinger et al. Telemed & eHealth 2019

CDC Compendium

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.

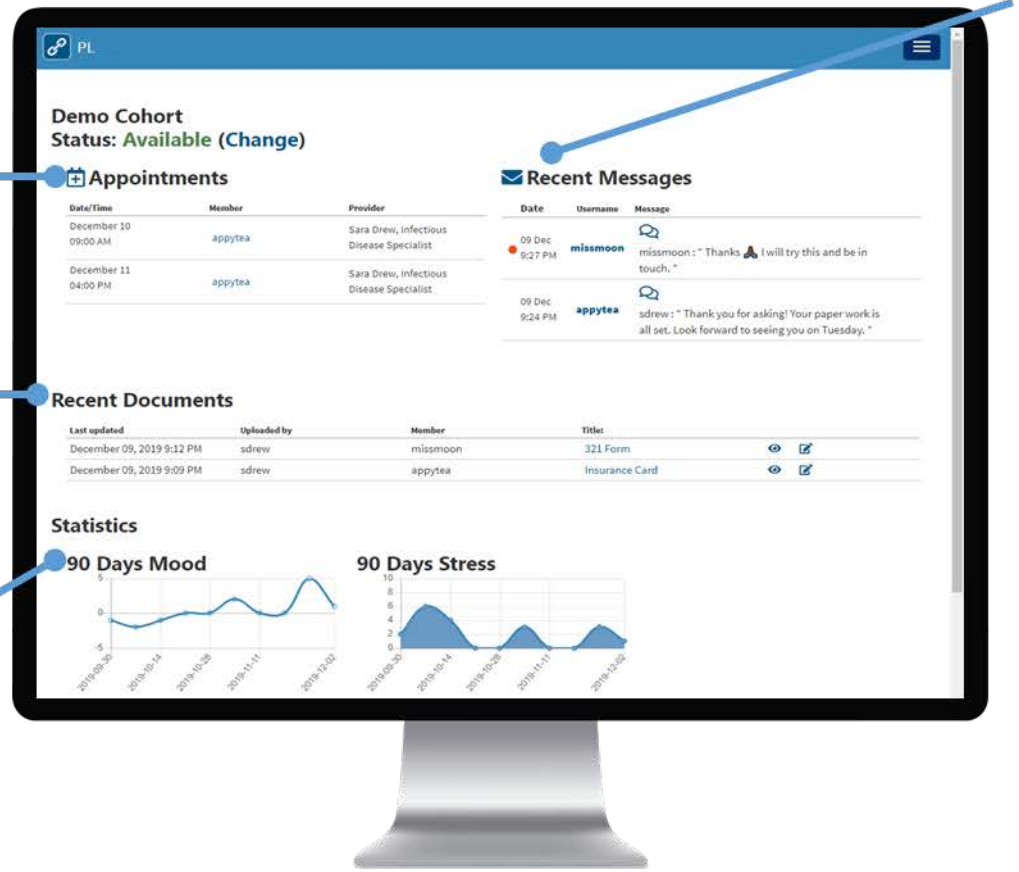
PL Provider Portal Summary

Upcoming Appointments with PL Members

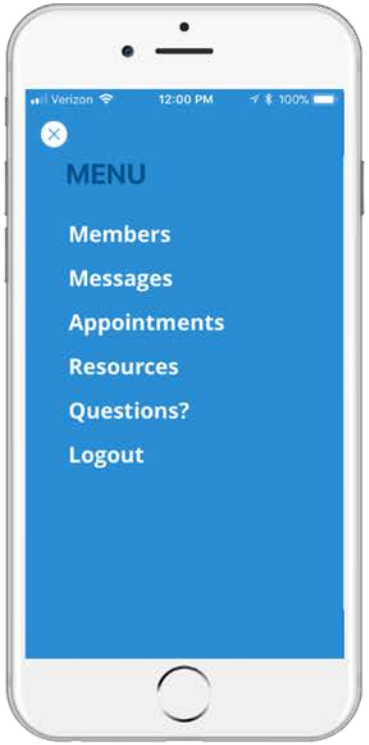
Documents recently shared with or by Members

Cohort Mood and Stress graphs for past 90 days

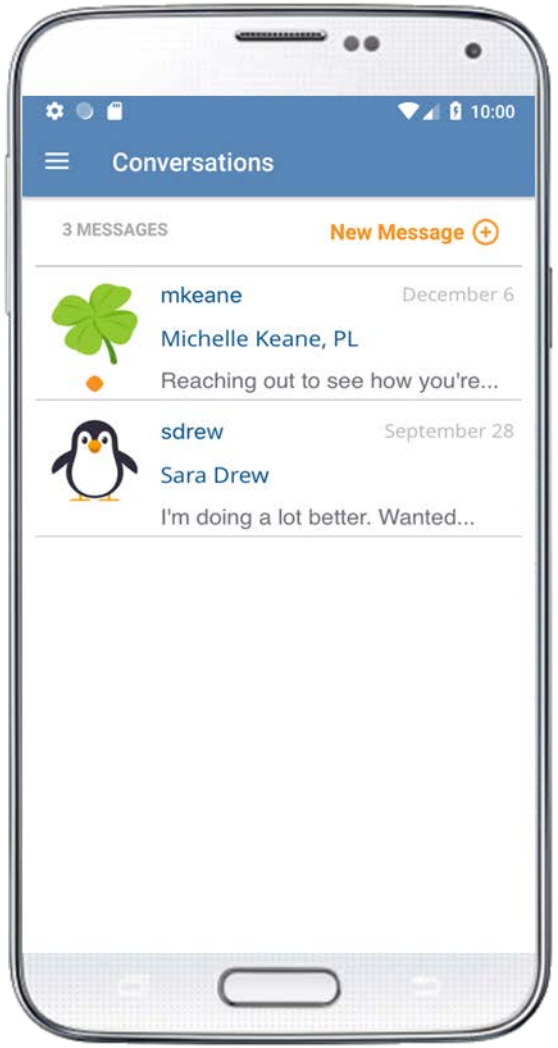
Recent Messages from or to Members



PL Provider App

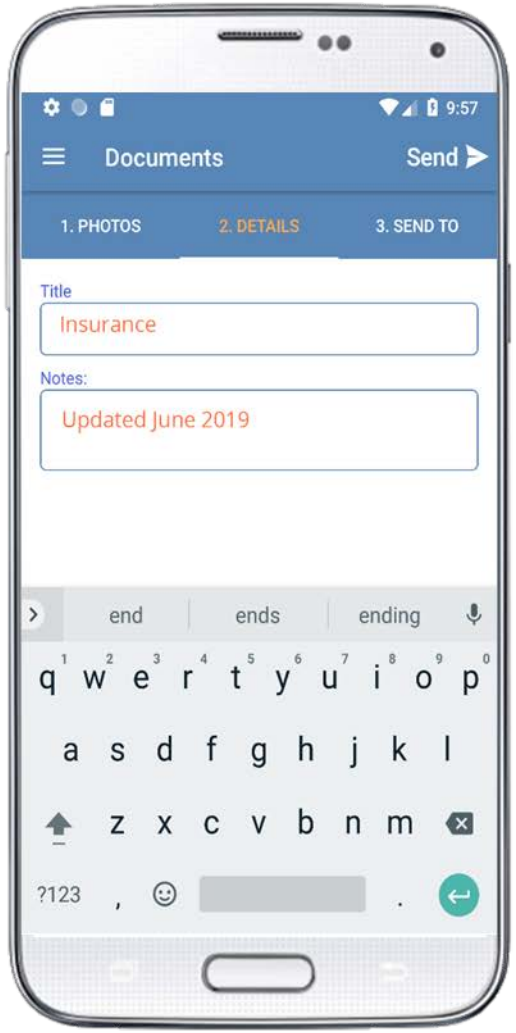


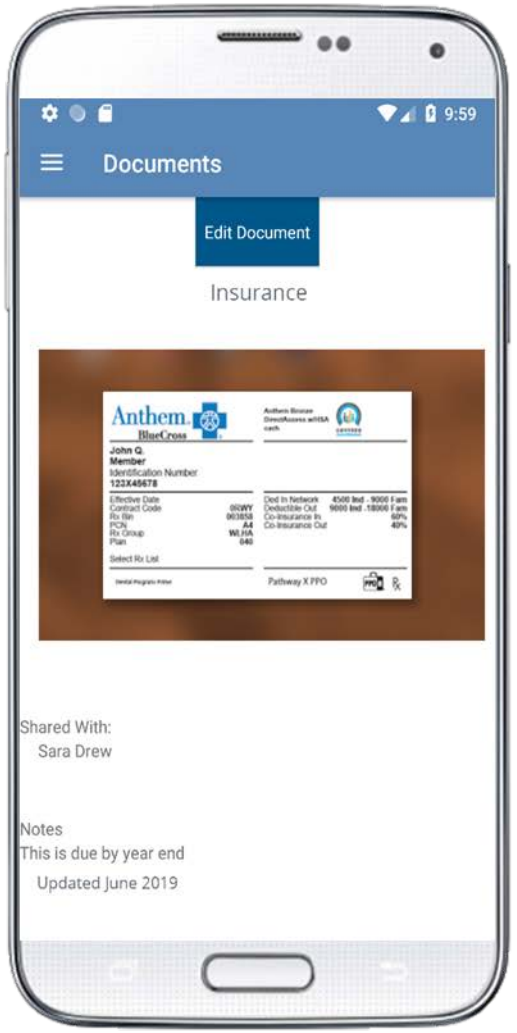
Messaging

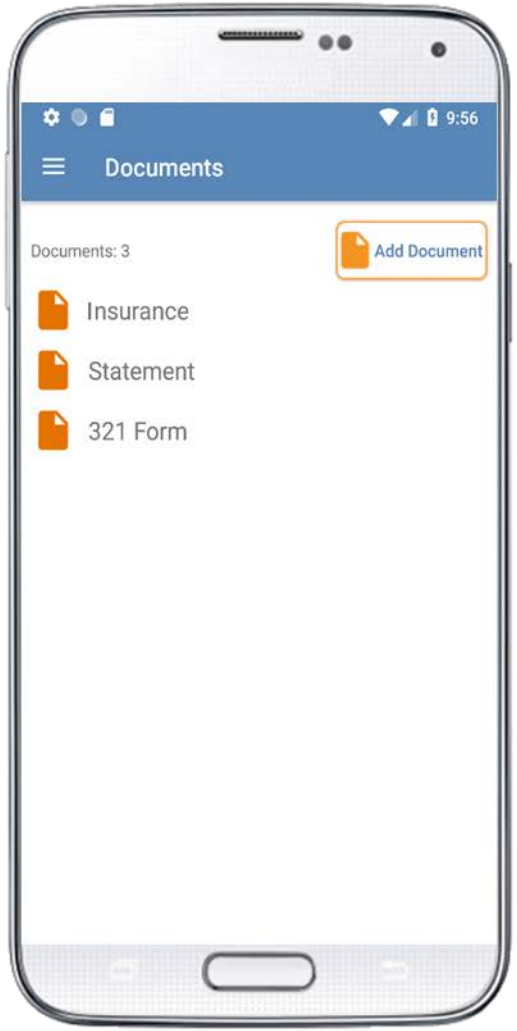

10:00
Conversations
3 MESSAGES
New Message
mkeane
December 6
Michelle Keane, PL
Reaching out to see how you're...
sdrew
September 28
Sara Drew
I'm doing a lot better. Wanted...

10:00
Sara Drew
Hello! Thank you for reaching out. Can you tell me more about the struggle? After I have a better idea we can work together to find ways to make it easier.
Yeah, the main thing is I forget to take my medicine at work. Then when I remember it is long past time.
Got it. Maybe adjusting the time you take your Meds will help. I see you are coming in this week, let's go through this during your visit to find a time that works better for you.
Will do. Thanks!
28 September 2018
I'm doing a lot better. Wanted you to know.
Enter a message

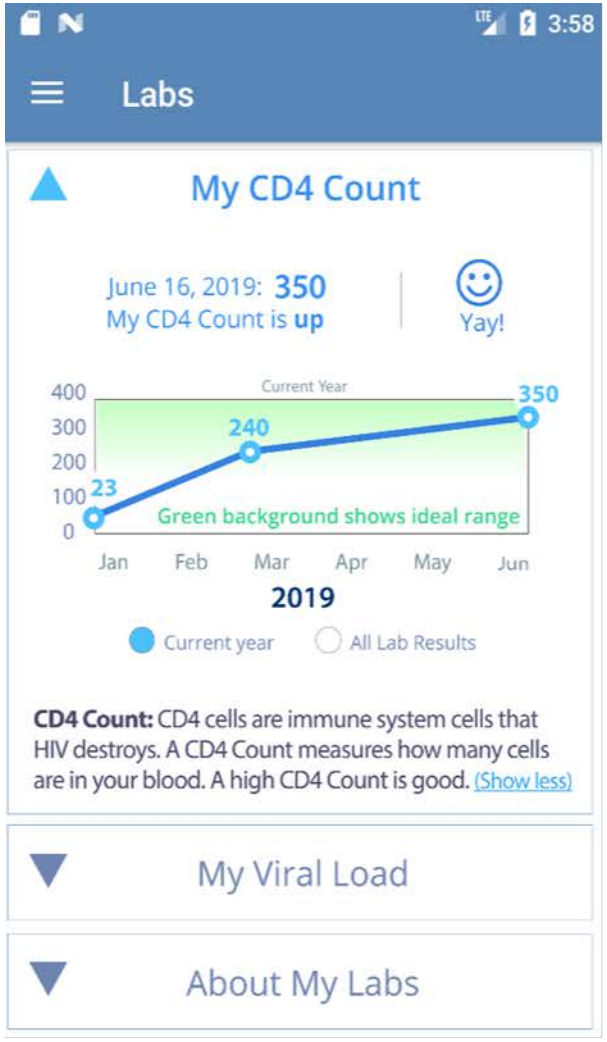
Document Upload

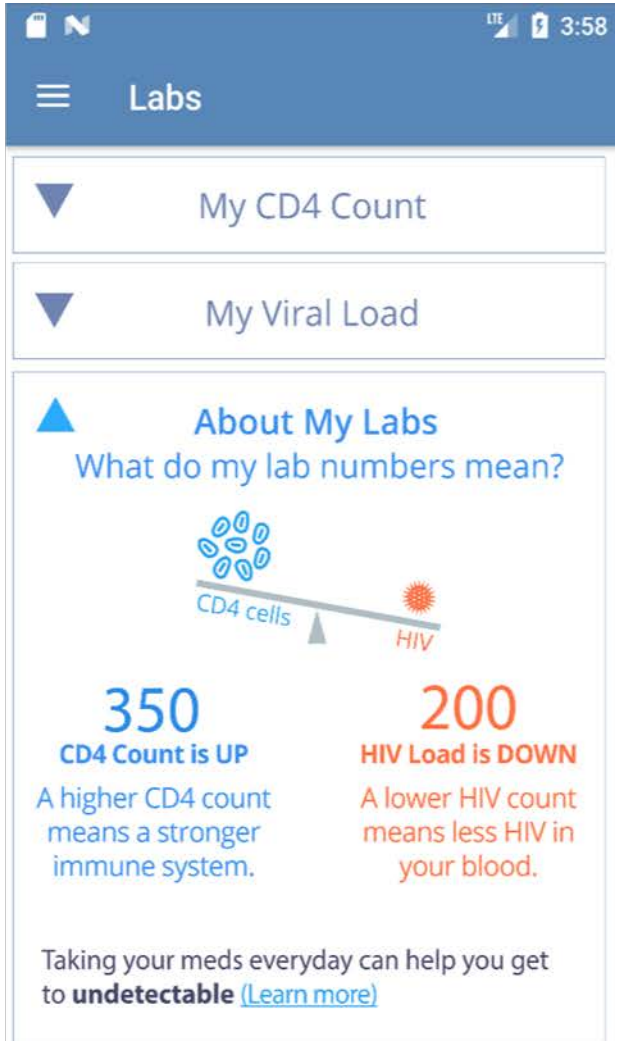






Labs Redesign





Where We Are

Fairfax, VA
Falls Church, VA
Charlottesville, VA
Richmond, VA
Lynchburg, VA
Roanoke, VA
Greenville, SC
Denver, CO
San Antonio, TX
Irkutsk, Russia
Mbarara, Uganda
Tugela Ferry, South Africa
Available in English, Spanish, Russian, and isiZulu

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!

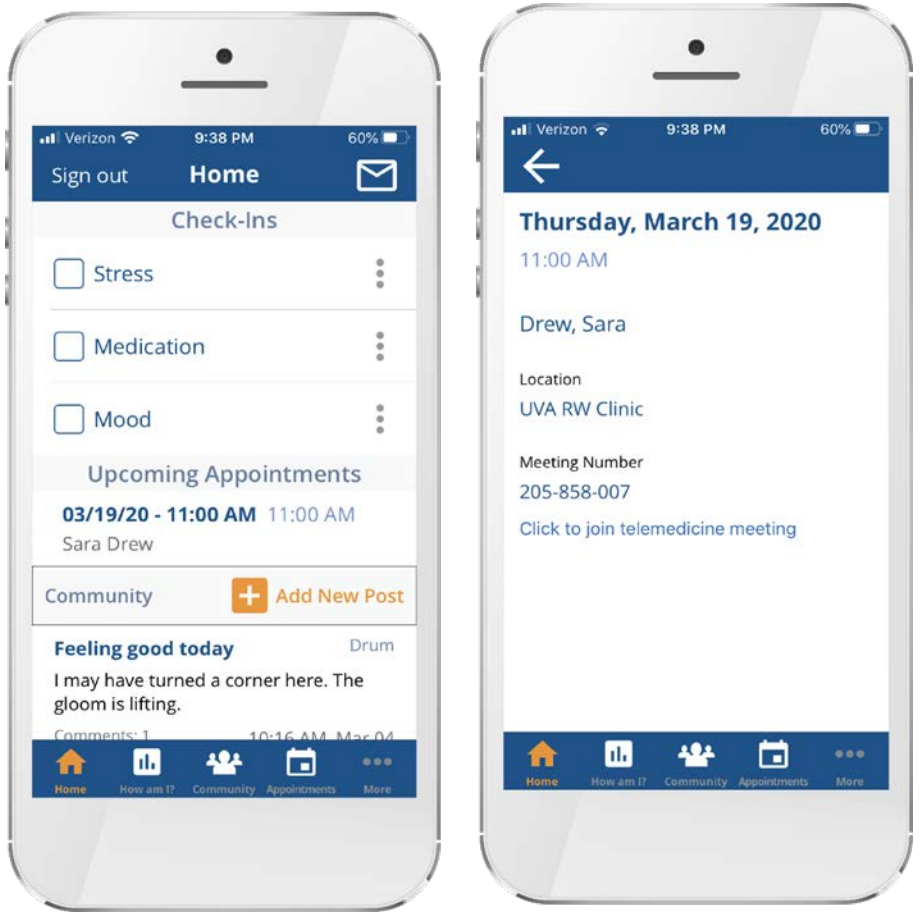
In the Time of COVID-19

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

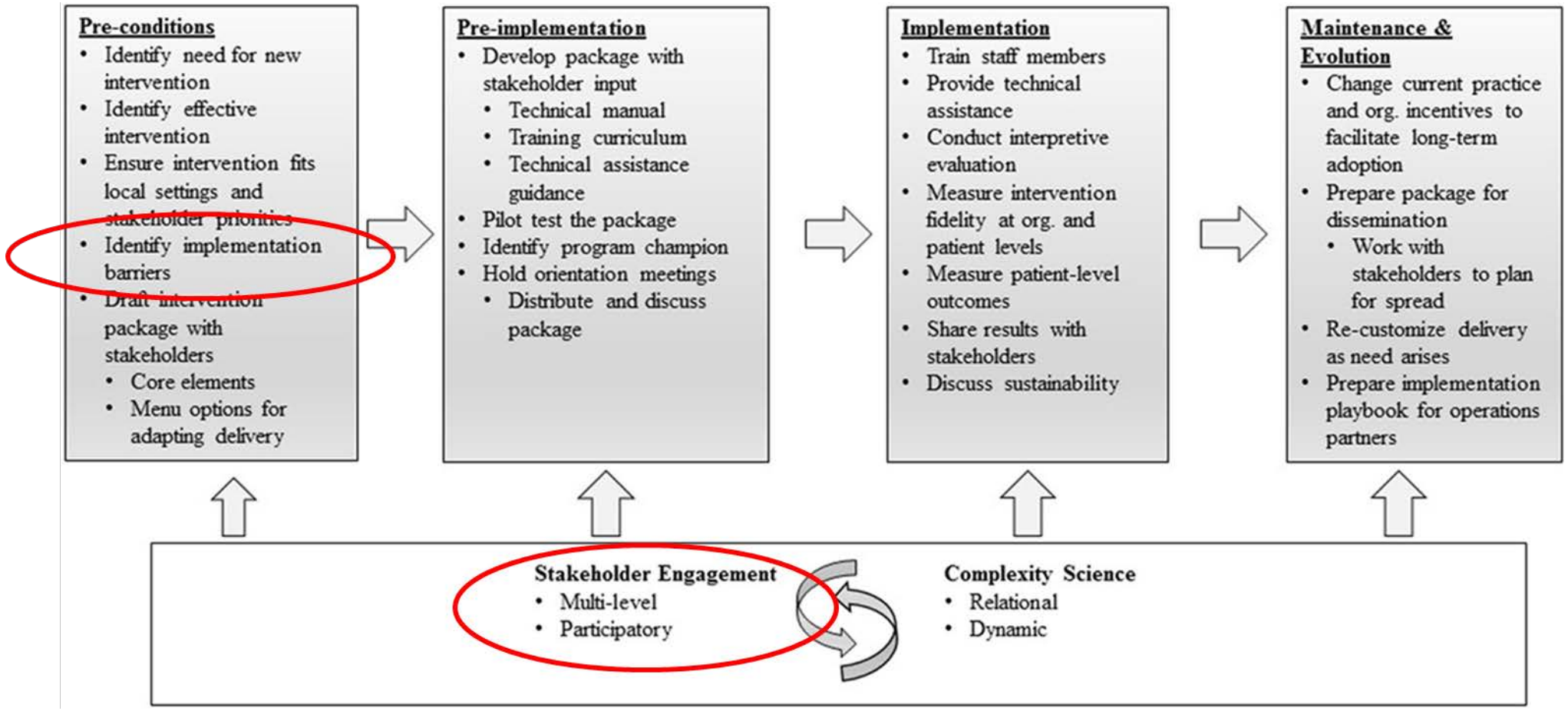
Implementation Models

- 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
- Ottowa Model
- Knowledge to Action Model (K2A)
- Replicating Effective Programs Framework
- Quality Implementation Framework

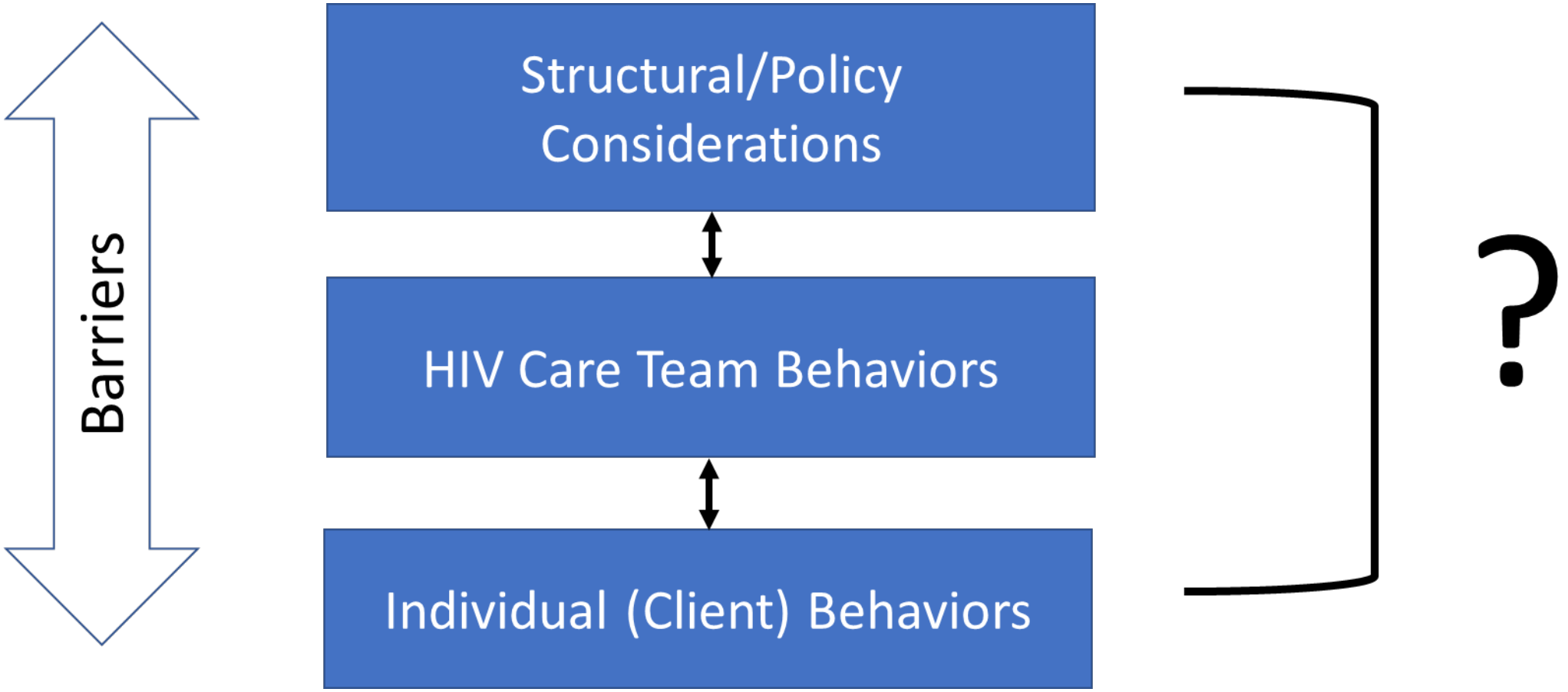
Nilsen, P. *Implementation Sci* 10, 53 (2015).

Challenges in Applying Process Models



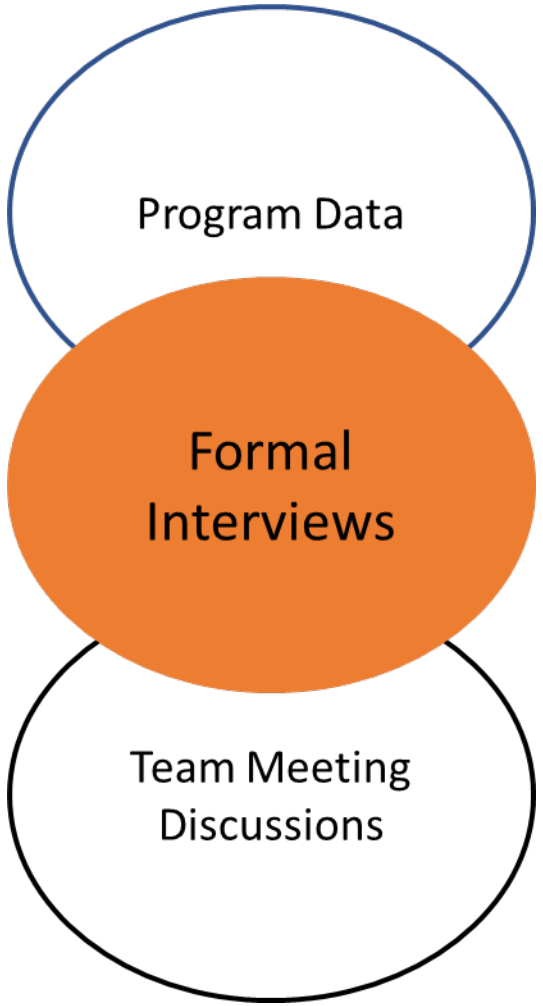
Kraft JM, Mezoff JS, Sogolow ED, *et al*. AIDS Educ Prev. 2000, 12 (5 Suppl): 7-20; Kilbourne, A.M., Neumann, M.S., Pincus, H.A. *et al*. *Implement Sci* 2017; **2,** 42.

Investigating Barriers to mHealth Implementation



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



http://www.pointk.org/resources/files/TIG_6_Rapid_Eval.pdf; https://www.hsrd.research.va.gov/for_researchers/cyber_seminars/archives/video_archive.cfm?SessionID=780

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

Damschroder LJ, Aron DC, Keith RE, et al. *Implement Sci*. 2009;4:50.

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 Continued

"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."

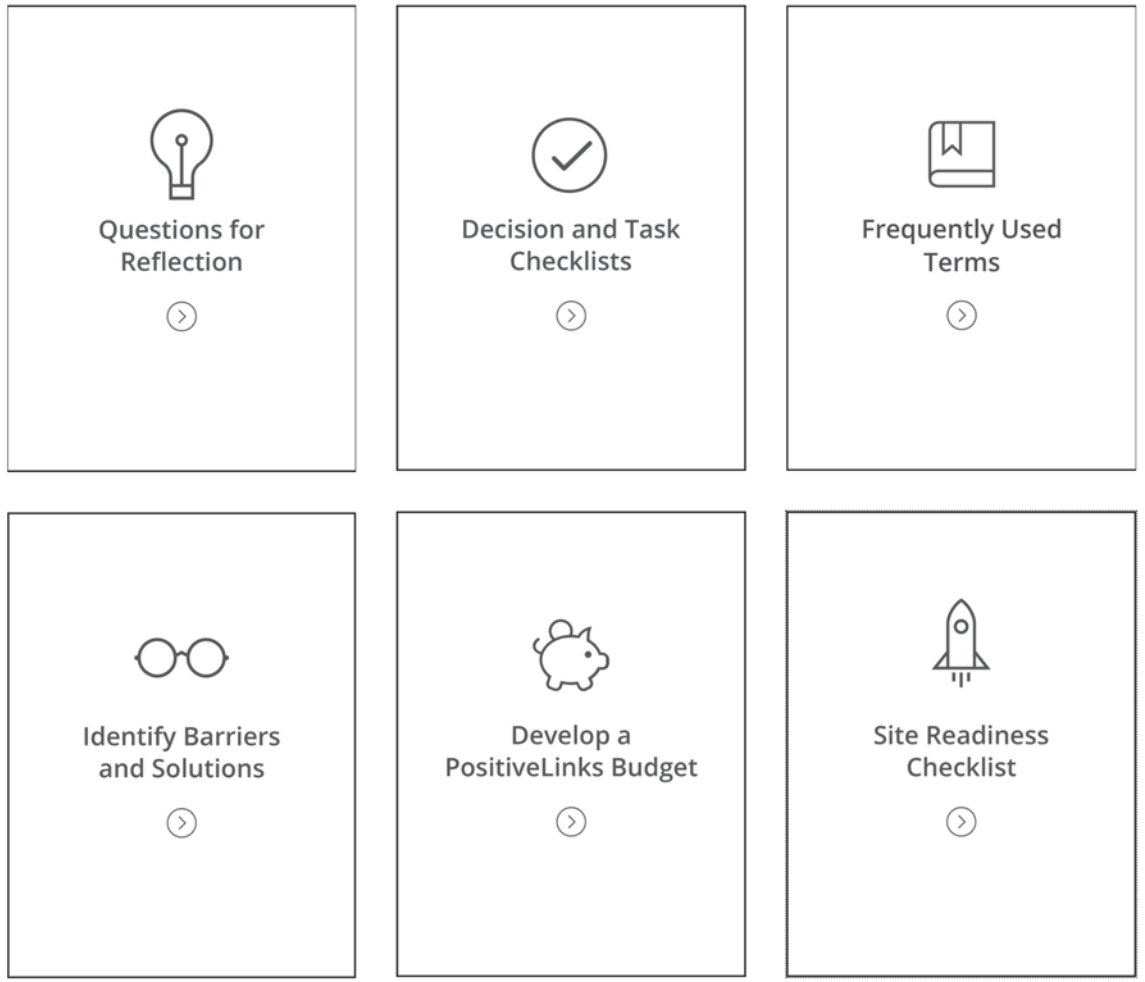
Barriers to PL in RWHAP Clinics

- 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

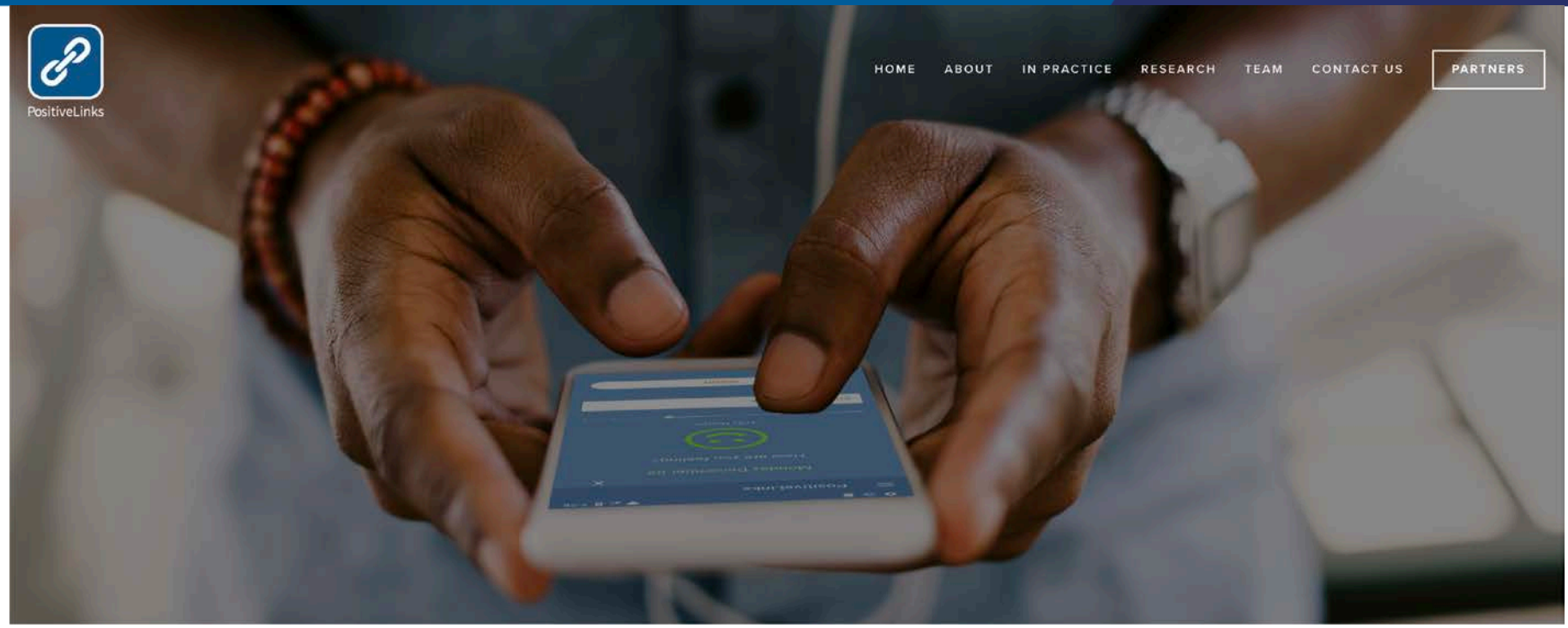
- Rapid assessment findings presented to PL implementation team as new sites adopt and implement PL
- Purpose is to facilitate iterative review and revision of implementation resources for new PL adoptees



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



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