

Development of Mobile Applications to Improve HIV Care Continuum for Adolescents and Young Adults

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Disclosures

Presenter has no financial interest to disclose.

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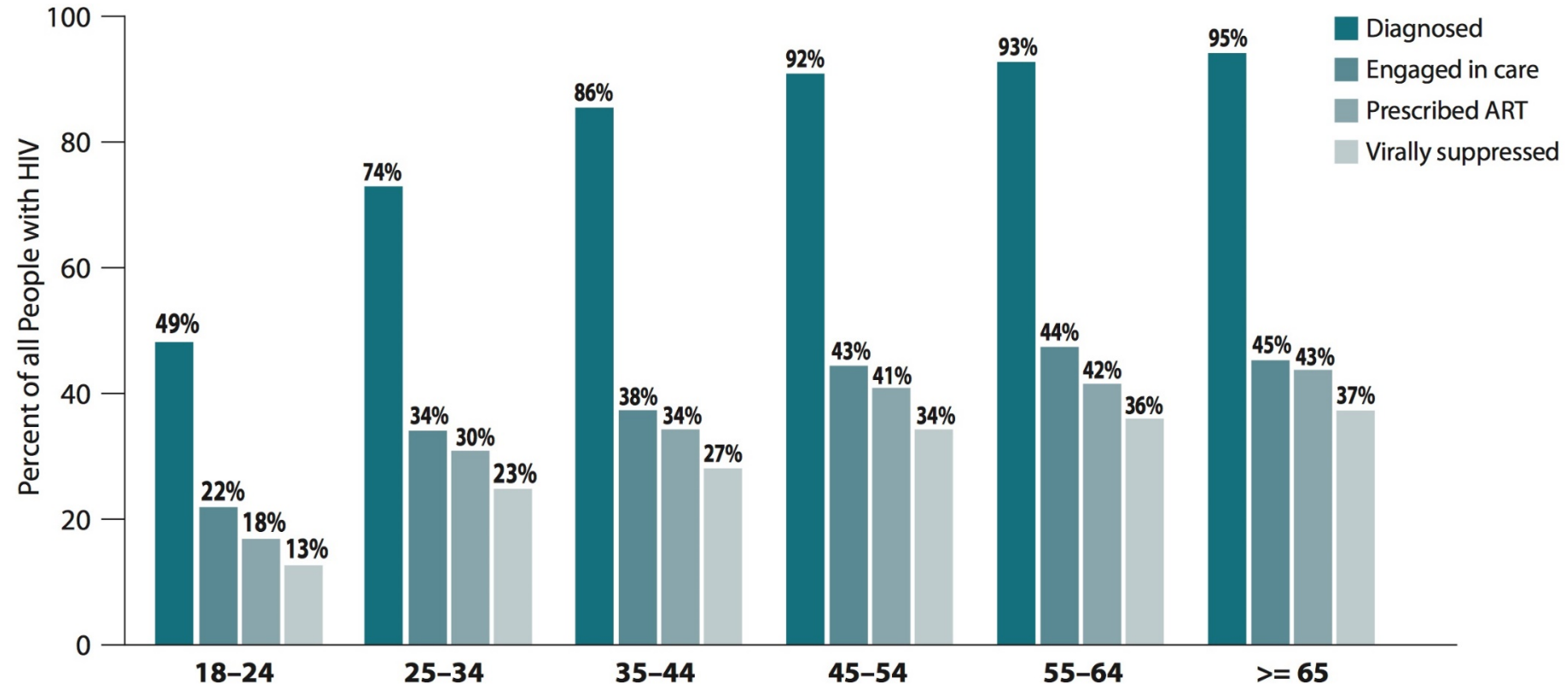
Learning Objectives

At the conclusion of this activity, the participant will be able to:

1. Understand what it takes to develop a mobile medical application.
2. Identify the mobile app features that are the most useful in keeping individuals engaged in the app.
3. Understand the privacy and HIPAA issues that need to be addressed in using mobile app technology.

Background – HIV Care Continuum

BY AGE: Younger Americans are least likely to have their virus in check.



Background – Apps and Social Media

Pew Research Poll 2014

- 74% of online adults used social media sites
 - Highest in age group 18-29 (89%); 30-49 (82%)
 - No difference by sex, education or earnings (< or > 30K annually)
- Cellphone penetration in 2018 (Pew)

	Any Cell Phone	Smart Phone
Total	95%	77%
Ages 18-29	100%	94%
Ages 30-49	98%	89%

Background – HIV in Central PA

HIV care model in southcentral PA

- Small urban centers: Harrisburg metro area, Lebanon, Carlisle
 - Dauphin County (Harrisburg) – ranks 5th in PA for cumulative AIDS cases
 - Relatively large AA population (Harrisburg) and Latinos (Harrisburg, Lebanon), both disproportionately affected
- Large rural population: 10+ counties
 - Largely Caucasian population
- Increasing proportion of MSM, young and youngish

Objectives

Link all Ryan White-funded providers in the greater Harrisburg area in a collaborative project

- Unmet need #1
 - Extend the existing OPT-In For Life brand (<http://optinforlife.org>) to include all individuals on our web and all social media sites
- Unmet need #2
 - Develop the OPT-In For Life app to target our new and existing patients, ages 18-34 for whom we have already demonstrated a high dropout rate

Collaborators

- PennState Health, Hershey Medical Center
 - Division of Infectious Diseases
 - Public Health Sciences
- UPMC Pinnacle
 - REACCH Program
- Hamilton Health Center
 - Hamilton HOPE Program
- Alder Health Services

Unmet Needs Addressed

Unmet Need #1.

- Any and all individuals, primarily focusing on individuals in the targeted age group, who are infected but not diagnosed, diagnosed but not in care.
 - Social media sites

Unmet Need #2.

- All patients in the targeted age group, enrolled or newly enrolling during the project period, receiving HIV care at any of our clinical sites.
 - Social media sites
 - Mobile app

Protocol Inclusion Criteria

- Age 18-34
 - Considered enrolling 13-17; too few
- Newly diagnosed HIV+ in the past 12 months
- At least one period of 6 months+ out of care in the past 24 months

Mobile App Development

Selecting an app developer

- Entertained three proposals at the start of the project
- Only one had experience in building healthcare-related apps
 - DuetHealth (now owned by MedData)
 - Previously worked with one of our collaborators
 - Initial cost of mobile app development: \$70K
 - Ongoing maintenance costs for the mobile app: ~\$30K/year

Data Storage Management

- Data are stored on NIST 800-171 compliant Duet servers
 - There is no such thing as “HIPPA compliant Servers”
- Backend is managed on a web-based system
 - Strong similarity to Content Management Systems (CMS) like Wordpress
 - Doesn't require knowledge of HTML or CSS, but tech savvy navigation

App Download and Activation

- An email is sent with a direct link for both iOS and Android devices
 - Account is tied to email, not phone number
 - Can be downloaded to a new phone and different mobile OS while still maintaining the same account information
- Ensure the patient has downloaded and logged in for the first time
 - In person activation is a manual security check
- Clinical team can now upload lab data
 - The in person activation ensures the right person owns the account before uploading any PHI
 - Clinical team can now initiate “ice breaker” messages

Multi-Site Capable

- Under the OPT-In Brand umbrella, multiple sites can be serviced.
 - Within the app a blend of features are controlled at the “Program Wide” level, or at the “Care Site” level.
- With confidentiality agreements one person can register patients for multiple sites.
- A small dedicated team can publish content directly to all patients “Program Wide”
 - App is multimedia capable
 - Images, videos, pdf files, text

Patient Profile

Program Utilization	
Application Opens	0
Opens / Week	0
IOS Devices	1
Android Devices	0

Journal Entries: 1		DOWNLOAD JOURNAL ENTRIES AS CSV
Meal	Entries: 0	Print CSV
Water	Entries: 0	Print CSV
Weight	Entries: 0	Print CSV
Reflection Journal	Entries: 1 Alert	Print CSV
Activity	Entries: 0	Print CSV
Sexual Partner Follow Up	Entries: 0	Print CSV

Goals In Process: 2		HISTORY
Lose weight	<div style="width: 20%; background-color: green;"></div>	
Exercise	<div style="width: 40%; background-color: green;"></div>	

Content Interaction: 2	
What is HIV/AIDS?	1
See below to view all content types	1
N/A	
N/A	
N/A	

Messages: 5		NEW FROM PATIENT	SEND NEW
New messaging looking	06/12/18 2:47 PM	06/12/18 2:47 PM	
testing it out	06/05/18 1:07 PM	06/12/18 2:47 PM	
Welcome	05/31/18 1:20 PM	06/12/18 2:47 PM	

Test Results: 4		ADD NEW
06/15/2018	CD4 : 877	Viral Load : 4,121
01/02/2018	CD4 : 1,625	Viral Load : 20
08/16/2017	CD4 : 1,123	Viral Load : 20
01/04/2016	CD4 : 1,625	Viral Load : 570

Care Team	
John Zurlo, MD	

Medications	
Truvada	Refill in 90 days
Multi Vitamin and Mineral	

Patient Initiated Goals

Matthew Mahoney

Exercise

Start Date: 06/01/2018 Goal: 20

Goal Type: Activity Milestones

Reason:
Exercise 5 days a week

Matthew Mahoney

Lose weight

Start Date: 05/31/2018 Goal: 20

Goal Type: Health Milestones

Reason:
Get that beach bod Vacation to CA
Milestone Amount: 10


Matthew Mahoney

GOALS


2 IN-PROCESS 1 COMPLETED


Goal Name	Goal Start Date	Goal Type	Completion Type	Goal Progress
Exercise	06/01/2018	Activity	Goal Amount	<div style="width: 25%;"></div>
Lose weight	05/31/2018	Health	Goal Amount	<div style="width: 5%;"></div>


Clinical Portal


 [Controls](#) [Communications](#) [Content](#) [Journal Editor](#) [Patient Messages](#) [Patient Alerts](#) [Logout](#)

OPT-In FOR LIFE

Module: 

 **ENTERPRISE CONTROL CENTER**
overarching content management system

 **PATIENT INTELLIGENCE CENTER**
Track the useful periods of a patient's life

54 PATIENTS **17 TEST USERS** **0 DEACTIVATED** [+ INVITATIONS](#) 

Name	Module	Created On	Last Used	Activation Code
David Huber	Living with HIV	05-07-18	10-02-18	
Jeff Harper	Living with HIV	01-16-18	05-23-18	
Chen Chen	Living with HIV	12-12-17	05-10-18	
Chrome Tester889	Living with HIV	09-25-17	10-02-17	
Dr Shen	Living with HIV	09-15-17	10-09-17	
Test Person 776	Living with HIV	09-14-17	N/A	9b7d8720
Test Person775	Living with HIV	09-14-17	09-14-17	
Test Person774	Living with HIV	09-14-17	10-24-17	
Tester BOB669	Living with HIV	09-14-17	09-14-17	
Verbenia Collins	Living with HIV	03-31-17	06-20-18	
Elaine Davis	Living with HIV	01-10-17	N/A	a395ac3a
Djibril Ba	Living with HIV	01-09-17	05-15-17	
Ping Du	Living with HIV	10-07-16	10-01-18	
Rosalee Frederick	Living with HIV	10-05-16	07-10-17	
Ethan Canty	Living with HIV	06-02-16	07-27-16	
John Zurlo	Living with HIV	05-13-16	10-02-18	
HMC 999	Living with HIV	05-13-16	10-05-16	

Settings

- Locations
- Care Team
- Engagement Score
- Manage Goals
- Manage Checklist Items
- Care Sites

User Management

- Users
- Audit Logs

Privacy, HIPAA, IRB

- Privacy and HIPAA
- IRB-related Issues



Reflection



Content



Test Results



Care Team

183



Inbox



Medications

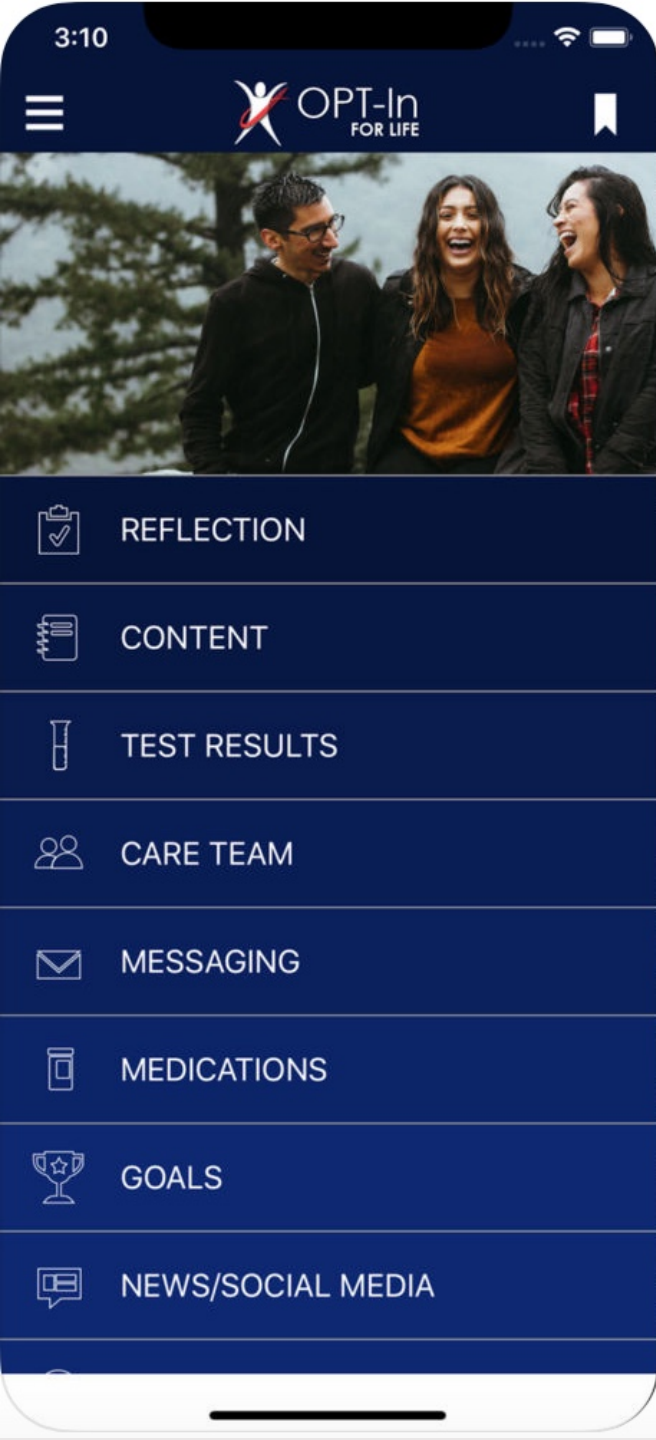


Goals



News/Social Media

APP: ORIGINAL FUNCTIONS AND FEATURES



APP: *CURRENT* FUNCTIONS AND FEATURES



Any worries or concerns?

Are you feeling more in control of your health care since using the OPT-In For Life App?

Yes, I find certain things about the app help me.

Yes, but not because of the app

No, and I don't use the app

No, I just don't find benefit from the app

Cancel

Next

APP: *Reflections*

All Messages ▾



Opt-In For Life 7/13/18 3:22 PM
Appointment Reminder
Quick Appointment Reminder- (if you have not scheduled an appointment in the last... >

Opt-In For Life 6/29/18 9:24 AM
New Look, Different App! >

Hey there!

● **Opt-In For Life** 5/09/18 10:01 AM
New Content: Medical Marijuana >
Hi Everyone-...

● **Opt-In For Life** 11/14/17 11:34 AM
New Reflection questions >
Hi all,...

Opt-In For Life 9/08/17 12:09 PM
SUBJECT TEST >
message message message

● **Opt-In For Life** 9/08/17 11:58 AM



APP: *Messaging*



From: Opt-In For Life

To: John Zurlo

7/13/18 3:22 PM

Read On: 7/23/2018 at 1:27 PM

Quick Appointment Reminder- (if you have not scheduled an appointment in the last 3 months)

Taking care of your health is your #1 priority and you are the star player on your health care team. Give your team a call at **717-531-8881 option #5** to schedule a follow up appointment.

Take Care of You,
Ve'

APP: *Messaging*

New App Features

- Question/Answer (You ask/we answer)
- Telehealth

Advantages/Disadvantages Mobile App Development, Established Company

- Advantages
 - Off-the-shelf technology
 - Rapid development
 - Platform updates benefit all users
 - Cheaper
 - Privacy/HIPAA
 - Immediate bug-reporting response
 - Will more dependably stay in business?
- Disadvantages
 - Not as customizable
 - Contractual complexities
 - HIV is unique

Challenges to Mobile App Use

- Must be kept fresh (UI/UX: user interface/user experience)
- Falloff in usage over time
- Does content influence usage? Does usage result in better outcomes?
- Maintaining a warm connection with clients
 - We cannot always be available

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