Feasibility and acceptability of iThemba: a mobile health application to support engagement in HIV care and viral load suppression

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ICAP Columbia University Mailman School of Public Health

HIV LEARNING NETWORK
The CQUIN Project for Differentiated Service Delivery

Background

- In order to meet the global pledge to end the AIDS epidemic by 2030, innovative solutions are needed. In many countries poor medication adherence and low retention in care are the primary barriers

- The increasing availability and use of mobile technology can support positive clinical outcomes

- iThemba, a mobile health application (app) delivers HIV viral load results, education and clinical support directly to users smartphones, empowering people living with HIV to remain adherent to treatment and engaged in care

- The objective of the study was to evaluate the feasibility and acceptability of receiving viral load results through the app
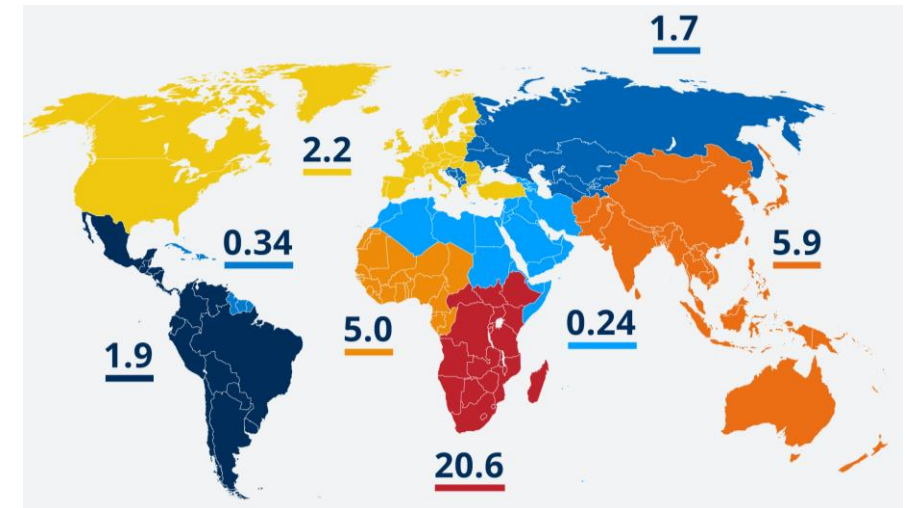
Source: UNAIDS | 2018

Figure 1: People Estimated to be Living with HIV (millions)

Methods

- Two sites in Johannesburg, South Africa: Yeoville and Hillbrow Health Centres

- Enrolled 500 HIV-positive adults, with Android smartphone, on antiretroviral therapy awaiting blood collection for an HIV viral load test

- Study participants downloaded the password-protected app onto their personal Android smartphones, scanned their sample barcode with their phone to link the specimen and the app, the sample was tested in the central laboratory, user received a notification when result was ready to log into the app to view their results (Figure 2)
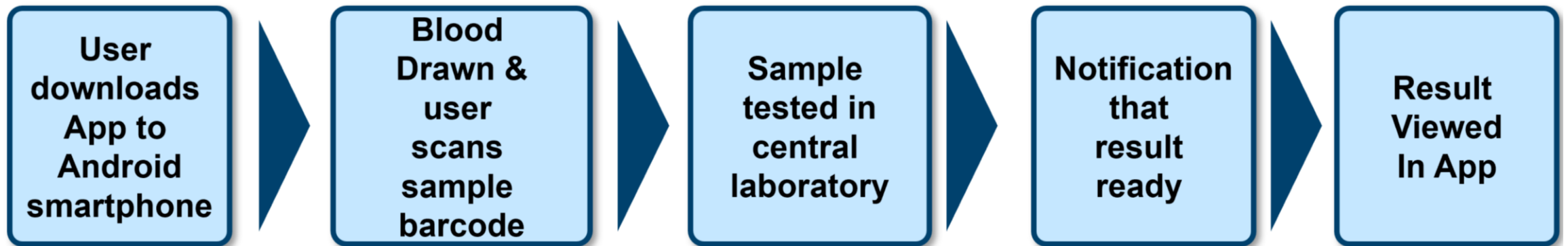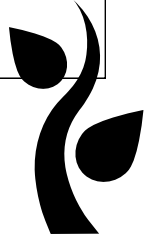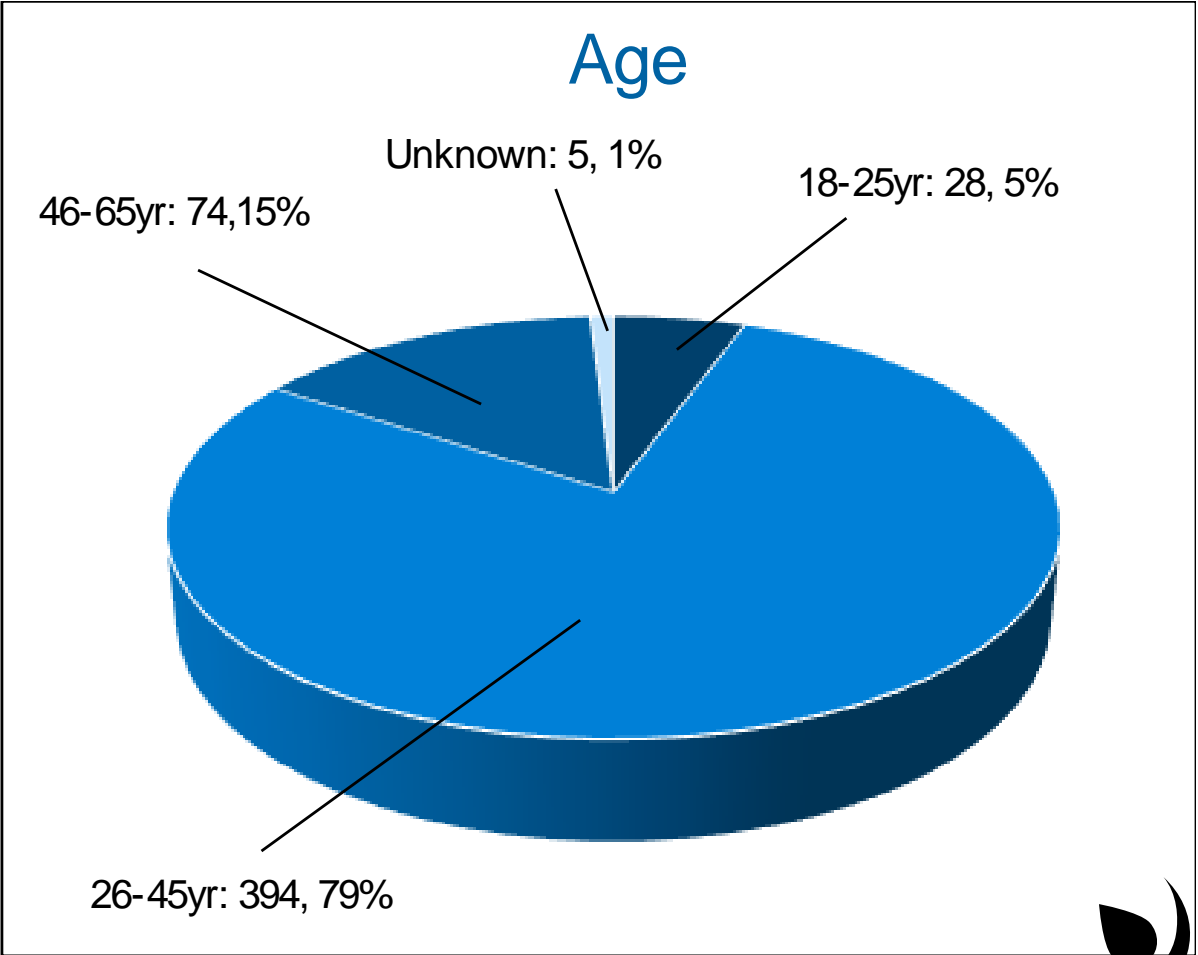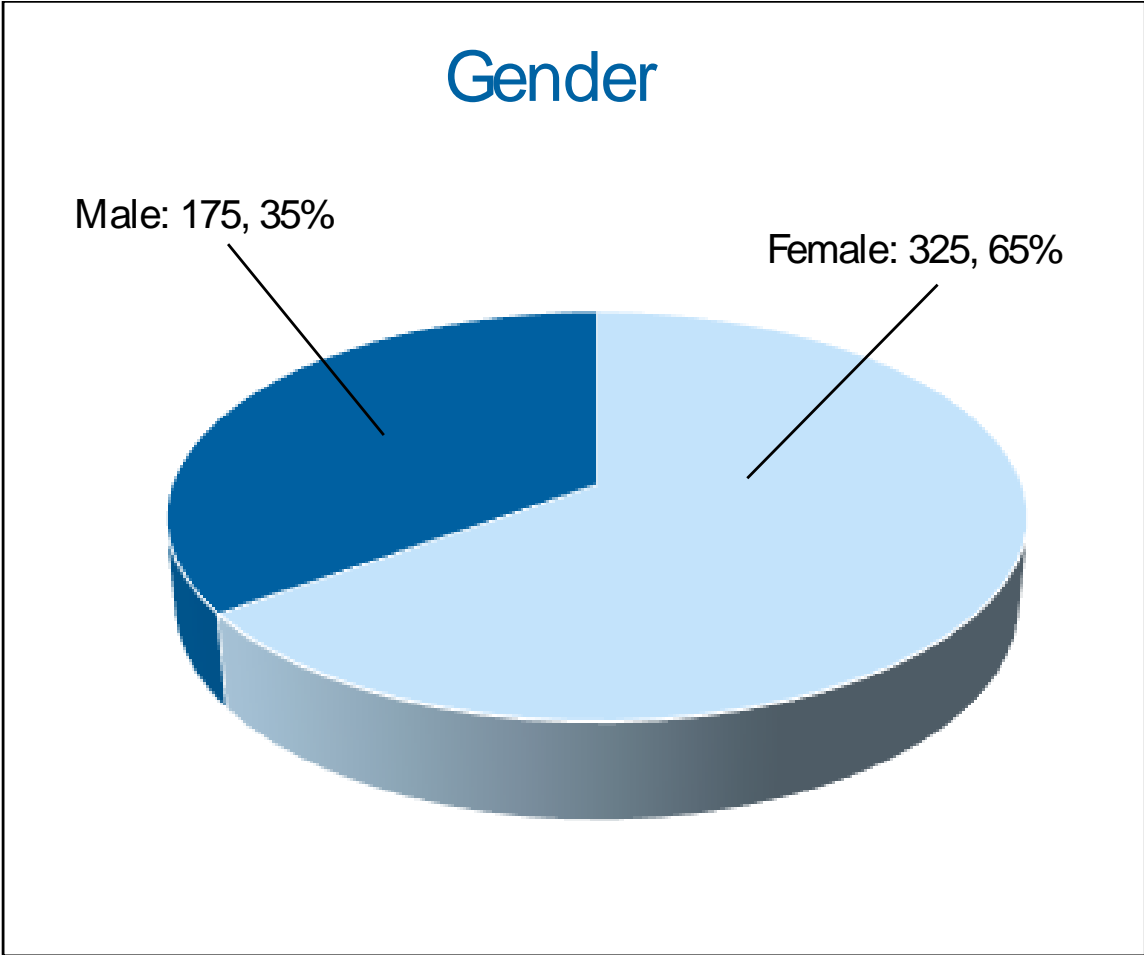

Figure 2: iThemba workflow

- Descriptive analysis of the quantitative data and coding of the qualitative data

Results

Demographic Characteristics

Results

User Characteristics

Duration on ART

Unknown: 31, 6%

<1 yr: 37, 8%

>5 yrs: 167, 33%

3-5 yrs: 155, 31%

1-2 yrs: 111, 22%

Concern About Disclosure

Not at All: 137, 27%

Very: 92, 18%

Not Concerned: 60, 12%

Concerned: 78, 16%

Somewhat: 134, 27%
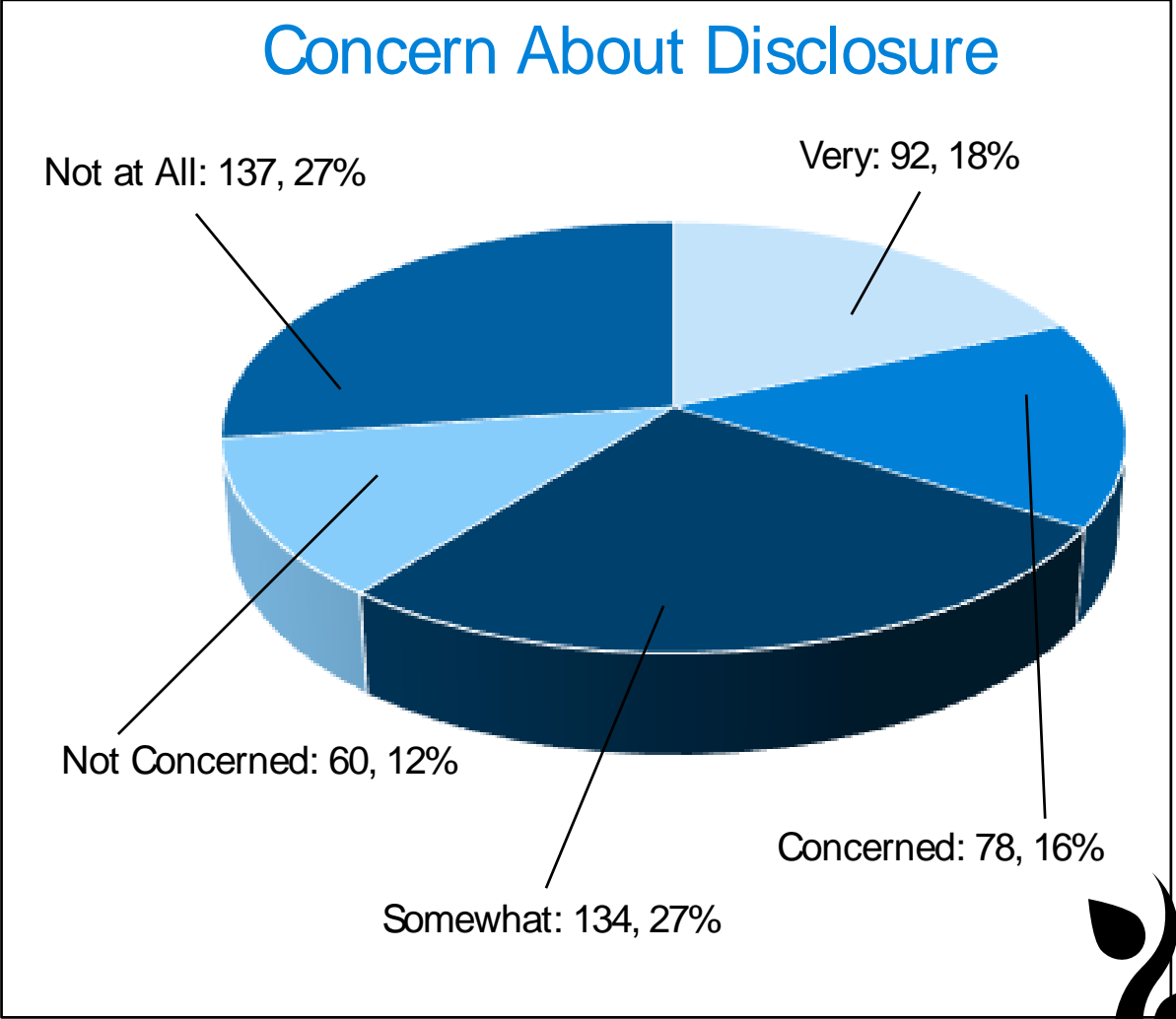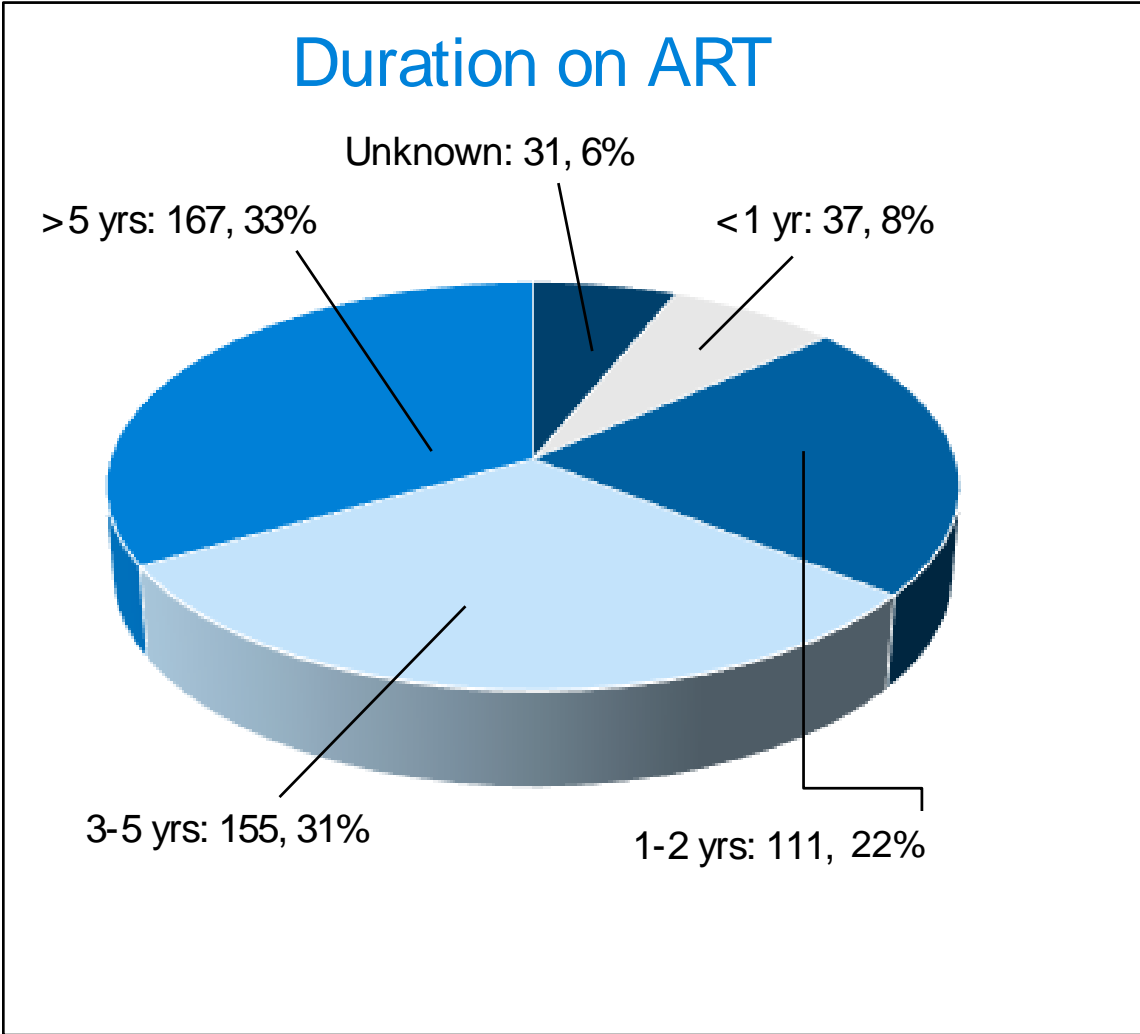
Results

Feasibility of receiving a viral load result through the app

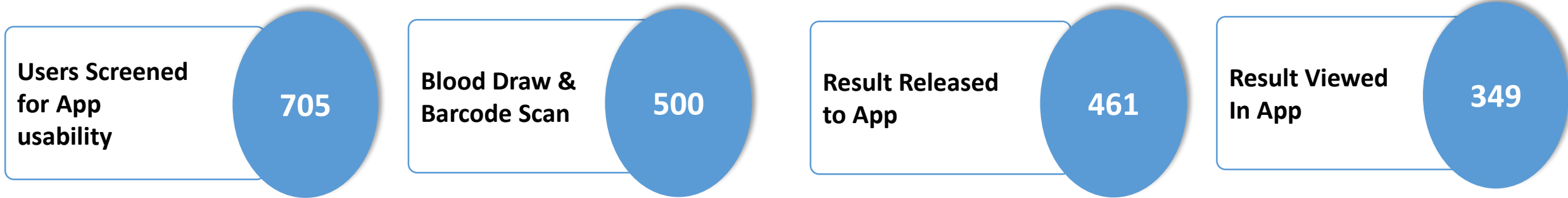| Users Screened for App usability	**705**	Blood Draw & Barcode Scan	**500**	Result Released to App	**461**	Result Viewed In App	**349**

71% (500/705) of barcodes scanned
- 26% didn't have an Android phone
- 39% were unable to download or register with app
- 14.8% were unable to scan barcode

92% (461/500) of results released
- Operational and technical issues identified and resolved
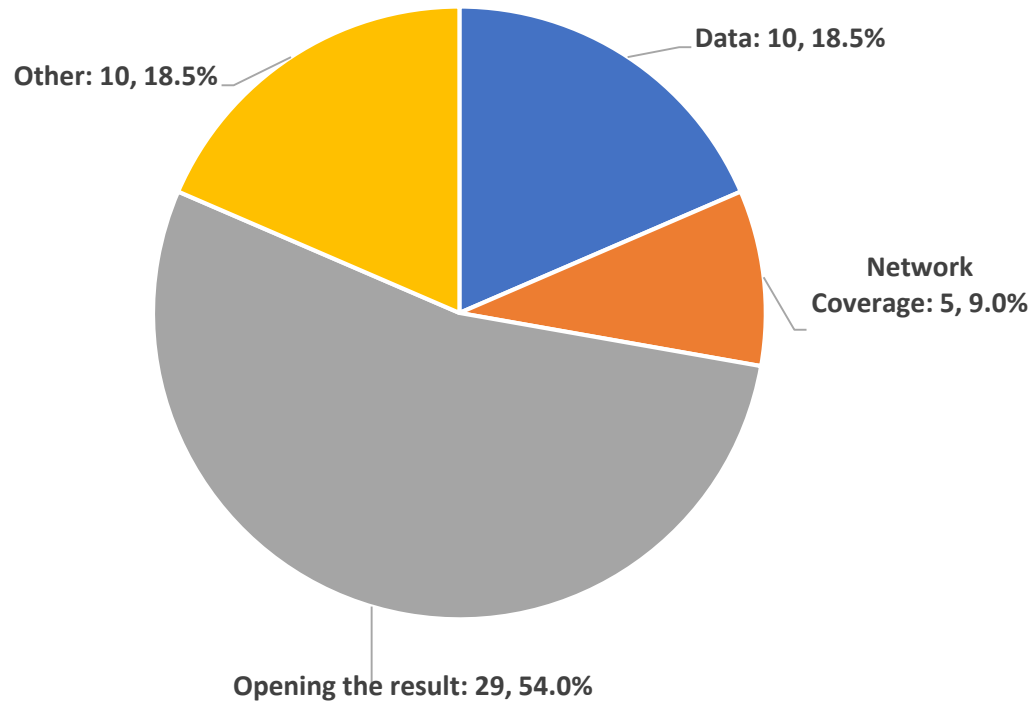
76% (349/461) of results viewed
- Challenges identified during exit interviews

Results

User reported challenges viewing the viral load result

Challenges In Viewing VL Result*

Data: 10, 18.5%

Other: 10, 18.5%

Network Coverage: 5, 9.0%

Opening the result: 29, 54.0%

*242 survey respondents

- 22% of users surveyed experienced challenges viewing their VL result (54/242*)
- 59% (32) of users reported that they overcame the challenges
- Most challenges were due to limited technical skills and these were overcome by getting technical assistance from friends, family, clinic staff
- Challenges that could not be resolved were due to factors beyond the user's control (e.g. lost phone)
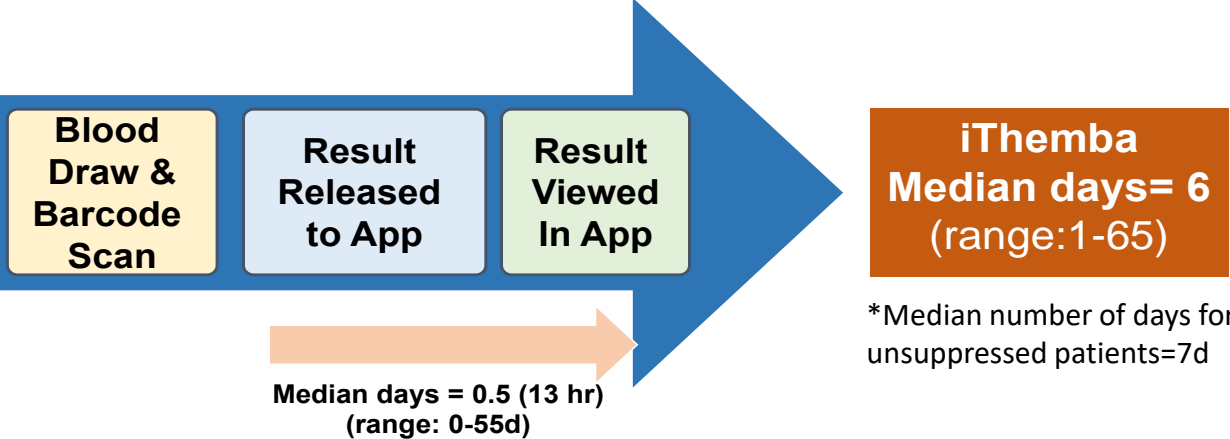
Results

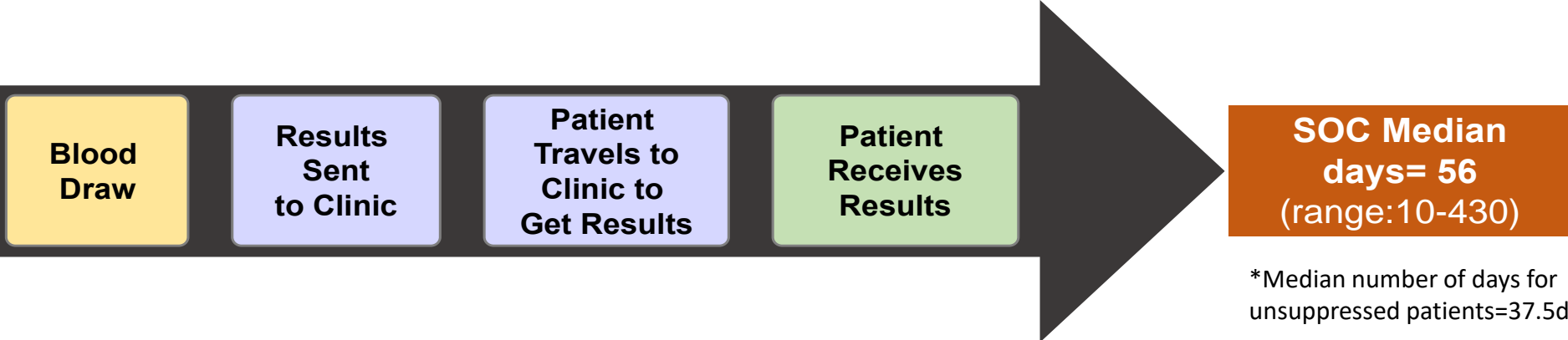*HIV viral load turnaround time analysis*

iThemba Workflow

| Blood Draw & Barcode Scan | Result Released to App | Result Viewed In App | → | iThemba Median days= 6 (range:1-65) |

Median days = 0.5 (13 hr)
(range: 0-55d)

*Median number of days for unsuppressed patients=7d

Standard of Care Workflow (SOC)

| Blood Draw | Results Sent to Clinic | Patient Travels to Clinic to Get Results | Patient Receives Results | → | SOC Median days= 56 (range:10-430) |

*Median number of days for unsuppressed patients=37.5d

Results

User opinions

"It was nice to get results within 3 days, waiting causes anxiety"

"The app makes it easy for us to access our results, even when my file is lost for whatever reason the app has my results"

iThemba Users

"Most of the time when I get results no one explains them to me but with iThemba I managed to get an explanation"
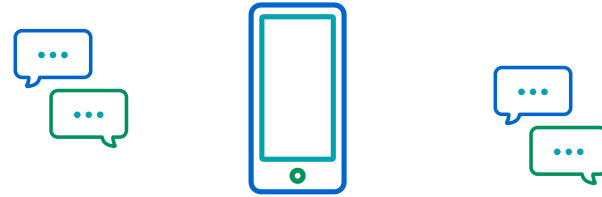
"I could see from the app that I was not taking my treatment properly"

Results

Healthcare worker opinions

"I have seen patients showing the result with excitement. Before iThemba they never discussed their viral load. "

"It will be useful, instead of sending the patient to obtain their result they will have access to it."

Clinic Staff

"It cuts the time when I need to contact the patient. There will be time saved."

"Two patients came with high viral load and they were referred to the clinic and switched their treatment."

Summary

- **iThemba can deliver HIV VL results with users smartphones**
  - 71% (500) of users successfully downloaded and scanned their barcode
  - 29% (205) unable to enroll (no android phone, challenges downloading app or scanning barcode)

- **iThemba can provide HIV VL results to users faster than standard of care**
  - HIV VL result delivery to user 6 days with iThemba and 56 days for previous VL

- **Users are eager to use iThemba to receive their HIV VL results**
  - 76% (349/461) of results received were viewed by users
  - Median time to viewing results was 13hrs after notification of result availability
  - 98% of users surveyed at the end of the pilot wanted to continue using iThemba
  - 95% reported they were likely to recommend the app to others

Conclusion

- Proven **robust** frontend and backend solution

- Users are **eager** to receive their HIV VL results with the app

- iThemba can **provide** HIV VL results to users **faster than standard of care**

- iThemba can increase the speed of HIV VL result return to accelerate clinical decision making and empower patients to remain adherent to treatment and engaged in care