



Jasmine Buttolph, NYU

The use of ICT tools in this field-based approach to HIV prevention for at-risk youth in Kenya has been critical to success of efficient service delivery and data collection both at mobile events and during the follow-up period.

## MP3YOUTH

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### *Implementing a smartphone-based biometric system for participant identification and tracking*

Sub-Saharan Africa remains the region most heavily affected by HIV with nearly 70 percent of the 34 million people living with the disease globally residing in the region nearly three decades into the epidemic.<sup>1,2</sup> Youth aged 15 to 24 bear the highest burden of new infections and account for 80 percent of the 1.9 million new infections in sub-Saharan Africa each year.<sup>3</sup> HIV is a major crisis in Nyanza, Kenya, with HIV prevalence of 15.1 percent among those aged 15 to 49 compared to national prevalence of 5.6 percent.<sup>4</sup> Few Ministry of Health facilities are tailored specifically to the needs of youth in this region. MP3-Youth is a pilot study to evaluate the feasibility and acceptability of a gender-specific combination HIV-prevention package in high-burden settings. MP3-Youth aims to pilot the combination package in a mobile health delivery format using an integrated HIV combination/HIV prevention services approach in Kenya. Feasibility and acceptability will be determined by examining uptake and coverage of the intervention package among youth.

### About MP3 Youth

The MP3-Youth package for all youth includes HIV counseling and testing (HTC) and linkage-to-care for the HIV infected. For males it also includes condoms and medical male circumcision (MMC). For females it also includes contraception (male/female condoms) and family planning. HIV-uninfected females who meet high-risk criteria and are out of school can access pre-exposure prophylaxis (PrEP) or, for eligible girls in-school, conditional cash transfer (CCT) to continue with classes. Youth subcohorts are followed up for 12

months to document behaviors/adherence related to selected interventions via unstructured supplementary service data (USSD) and short message service (SMS).<sup>5</sup>

Study procedures (combination HIV-prevention package) are offered in a mobile event in tents erected for two weeks. At enrollment, each participant's biometrics are collected using Mobiotrics, a smartphone-based system for identification and follow-up at the different service delivery points.<sup>6</sup> Mobiotrics is an offline/field-settings biometric system

running on Android devices. A fingerprint reader attached to the device captures participant fingerprints. Mobiotrics converts the fingerprint image to an alphanumeric identifier; the image is not stored. Once registered, fingerprint scans identify MP3-Youth participants at different service delivery points. Biometric information is stored locally on the tablet and synchronized across devices in different tents via a secure Wi-Fi direct connection; this guards against double enrollment and enhances tracking of participants' access to multiple intervention components.<sup>7</sup> Via the secure wireless local area network, the biometric data are available in real time as participants move from tent to tent. Study staff use the software to collect data in each tent, ensuring all staff know what services the participant has accessed, the results of tests (HIV, pregnancy, etc.), and key responses to behavioral questions collected in other tents. Tablets are used to collect data via Open Data Kit (ODK). ODK is an Android application used on smartphones/tablets for electronic data collection. In our study, ODK is used for behavioral and clinical data collection.<sup>8</sup>

## Evaluation and Results

The mobile events will be completed in 2015, and evaluation will include feasibility, acceptability, and impact measures. The aim is to reach n=1,000 youth through 10 to 15 mobile events. In the first five events, 466 youth were screened and 364 were successfully enrolled in the study using biometrics and electronic data capture. Of those enrolled, 58 percent (212) were female. All but one participant was able to be successfully identified at all service points.

All participants were tested for HIV. A total of 37 participants were HIV positive (10-percent HIV prevalence) and all received a facilitated referral. Most eligible participants enrolled in the HIV-positive cohort (33/37). Of those eligible, n=195 women were tested for pregnancy. Of the 36 eligible males, three consented for and received MMC. CCT uptake was high, 56 were screened and 37 were verified eligible. PrEP reach may be somewhat limited based on our extensive eligibility criteria; approximately 15 percent of women in our sample are potentially eligible for and willing to take PrEP.

Cohort enrollment recently began and follow-up data is not yet available. Medication adherence for the HIV-infected youth on antiretroviral therapy and HIV-uninfected youth in the PrEP cohort will be measured. The feasibility of CCT to keep girls in school based on school attendance and cohort retention will also be evaluated.

The use of technology in the field has been successful. The research assistants have reported no major challenges. By using portable backup batteries, the devices are powered, even when there is no electricity. Youth have not opposed having their biometrics taken as part of registration and they are comfortable answering questions entered into a tablet.

Consistent with other studies, participants have no objections to follow-up data being collected via mobile phone text message survey.<sup>5</sup>

## Lessons Learned

- **Plan for adequate training** and troubleshooting of new technology.
- **Use portable backup-batteries** that can charge devices in the field without disrupting use.
- **Sensitize investigators** and ethical review committees on new forms of data safety; mistrust around new digital platforms exists, including around SMS security, hosting data in the cloud, and data sharing across devices, etc.
- **Plan for potentially lengthy biometric registration** because many finger images need to be taken to facilitate re-identification, which is fast.
- **Establish a secure Wi-Fi network.** All fingerprints and data need to be synced and available in real time at all service points. Using Bluetooth for the data synchronization was tested, but was not as efficient as the Wi-Fi network. The network does not require airtime or cellular reception as it is a local network.

## Conclusion

The use of ICT tools in this field-based approach to HIV prevention for at-risk youth in Kenya has been critical to success of efficient service delivery and data collection both at mobile events and during the follow-up period. Study staff has readily used tablets and participants have used phones. Similar to other studies, our biometric system has allowed efficient enrollment in the study and unique identification of participants once enrolled.<sup>7</sup> Participants can be identified at all service delivery points during the event as well as off-site during follow-up. The use of biometrics in the registration and identification of participants is accurate, feasible, and acceptable for use in field settings. Training on the use of new technologies, troubleshooting issues immediately, and maintaining open communication about the system are essential for the success of an information and communication technology system in field settings. ■

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**Contact Information:** Dr. Ann Kurth, Professor, NYUC Global; Dr. Irene Inwani, Pediatrician, KNH-UoN; Dr. Kawango Agot, Director, IRDO; Paul Macharia, Data Manager, UoN; Jasmine Buttolph, Project Director NYU jb3436@nyu.edu