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Using a digital health system (eLABS) to improve patient literacy on the importance of HIV viral load (VL) testing and adherence to medication for those on Anti-Retroviral Therapy (ART) in South Africa

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What is eLABS?

- eLABS is an mHealth digital health system designed to strengthen the clinic, laboratory and patient interface.
- The overall objective of eLABS is to strengthen and improve HIV viral load (VL), Tuberculosis (TB) & COVID-19 monitoring through improved patient result delivery from National Health Laboratory Service (NHLS) laboratories to healthcare facilities in South Africa.

Visibility of pathology value chain

Data points per sample

- The eLABS system utilises mobile Information Communication Technology (ICT) devices that:
    i. electronically tracks HIV VL, TB & COVID-19 specimens,
    ii. records in-transit specimens,
    iii. monitors HIV VL & COVID-19 turnaround times,
    iv. delivers results electronically to healthcare facilities by sending alerts for Viral Load (rejected, invalid and unsuppressed results), TB and COVID-19 (positive, invalid or equivocal).
- eLABS is bi-directionally integrated with the existing Laboratory Information System (LIS)-TrakCare.

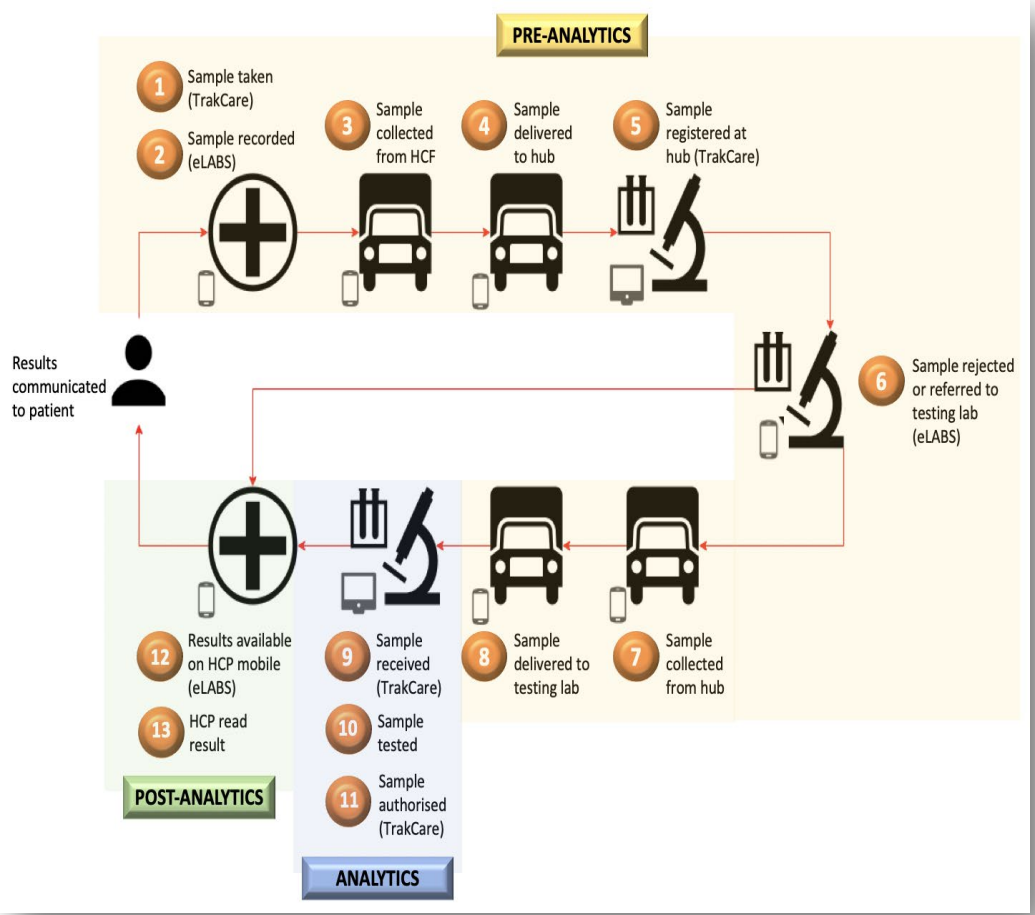


Figure 1: eLABS workflow

Digital Technology for Health Literacy

Empowering patients with knowledge

- South Africa is currently implementing several strategies to reach UNAIDS 95-95-95 targets in HIV testing, treatment and viral suppression by 2030.
- Effective clinical management of patients within the HIV and TB programs is facing challenges such as delays in repeat viral load testing, lack of adherence to follow ups, and results turnaround times.
- For this reason, there is a need for more client-centred care through communication directly with the patient for appointment reminders, result outcomes and health education messages on the importance of laboratory testing and medication adherence.
- Using digital technology to promote health literacy among people on antiretroviral therapy (ART) improves their understanding of the disease, enhances self-care practices and encourages healthy behaviours.

- **Patient support module (PSM),** an expansion of the existing eLABS application was piloted for providing messages directly to patient's mobile phones. The application worked on all phone types as shown in Figure 2.

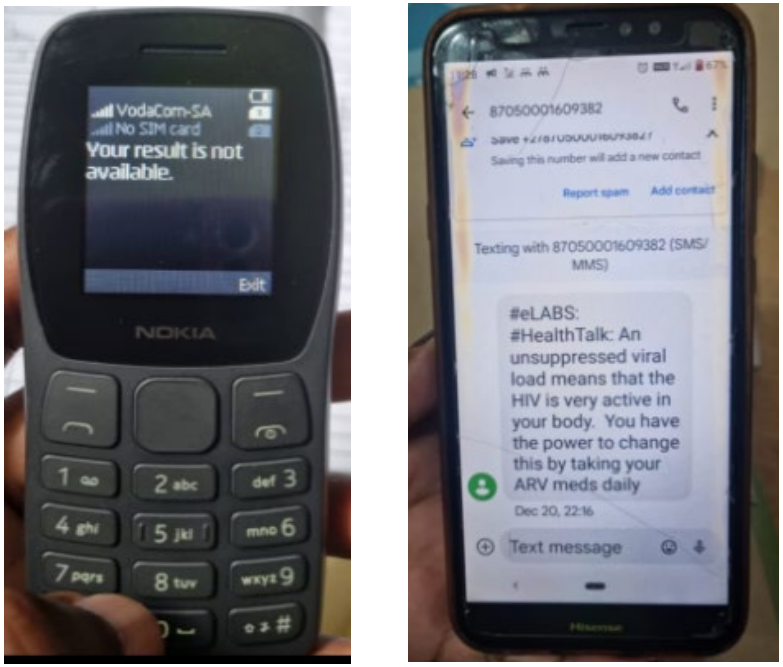


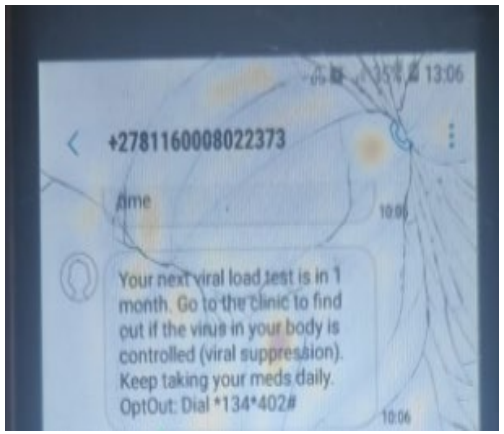
Figure 2: Example of mobile phones with PSM

Empowering patients with knowledge

The module supported the following patient messaging:

i. Appointment reminders.
ii. Result outcomes (actual test result values were not sent).
iii. Educational health messages highlighting the importance of laboratory testing and for medication adherence.

i.



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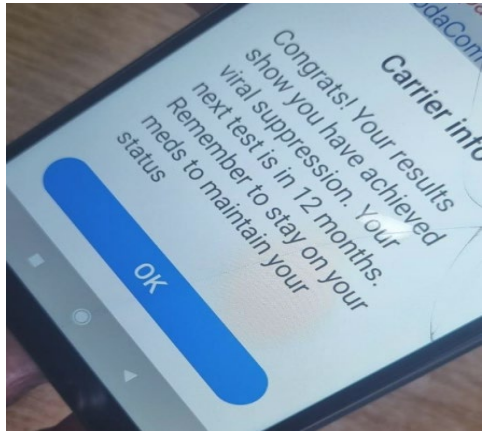

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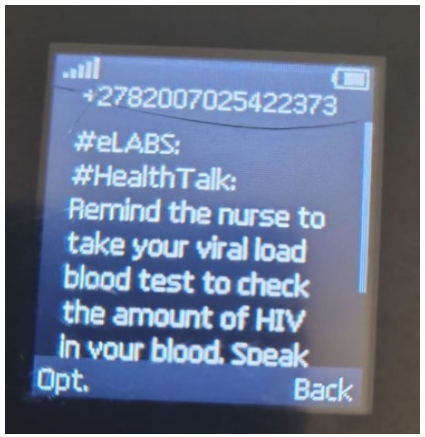


Figure 3: Examples of PSM messages

Patient Support Module for Health Literacy

Proof of concept overview

Objective

- To strengthen the HIV clinic-laboratory-patient interface in South Africa, feasibility and usability of a digital application was investigated for sending health educational text messages to people on ART that highlighted the importance of viral load (VL) testing and adherence to medication.

- The primary expected benefit was to increase knowledge of HIV through delivery of educational messages directly to patients.

Methodology

- A cross-sectional study was piloted in two healthcare facilities located in an urban and rural setting in South Africa, respectively.

- Healthcare workers enrolled eligible participants into the study and onto the application.
- Health educational messages were sent to patients bi-monthly.

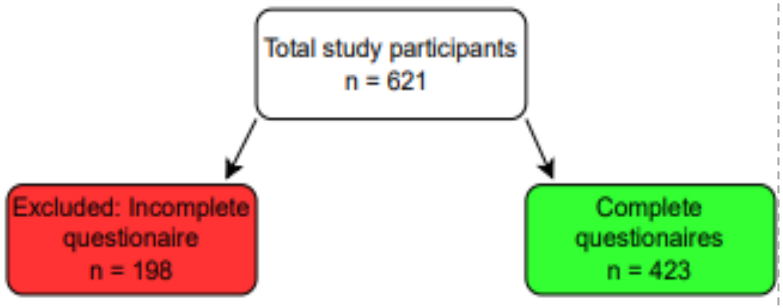
- A multiple-choice knowledge questionnaire relating to VL testing and adherence to medication was administered pre- and 12 months' post-sending educational messages to participants using the application.

- A paired t-test was conducted to establish the difference between participants' knowledge scores of pre- and post-health education messaging.

Patient Support Module for Health Literacy

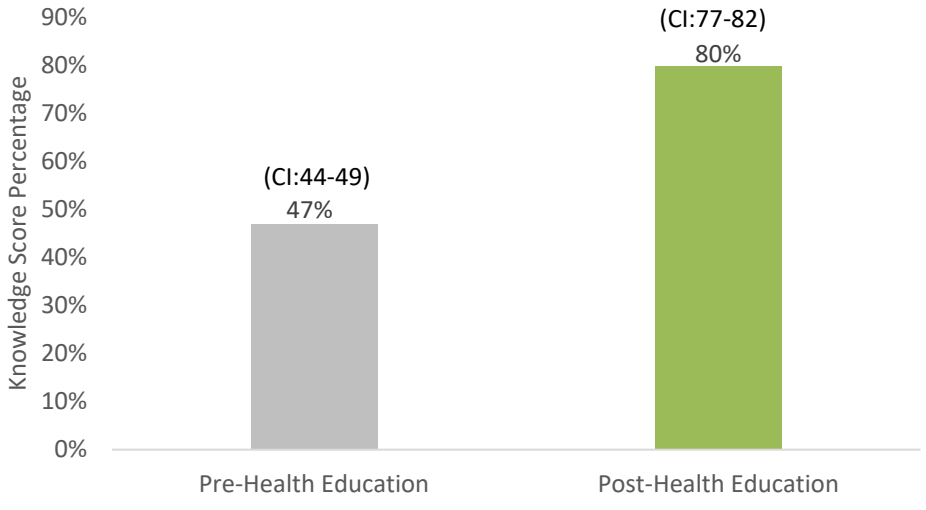
Results

- From the two facilities, **621 participants** were enrolled in the study of which 198 were excluded because they either did not complete both pre- and post-questionnaires or chose not to partake in the questionnaire.



- Results from the t-test showed mean knowledge score for pre- health education messaging was 47% (95% CI:44 – 49) and for post- was 80% (95% CI:77 – 82).
- There is sufficient evidence to conclude a significant increase in participants' knowledge ($p<0.001$) post health education messaging.

Effect of Health Education Messaging on Knowledge Scores
Mean Knowledge Scores Before and After Health Education Messaging with 95% Confidence Intervals



Patient Support Module for Health Literacy

Conclusion

- Direct patient messaging significantly improved health literacy for those on ART, which may eventually lead to improvement in retention to care.
- Digital health system tools are helping bridge the gap in delivering direct patient-centred communication to patients.

Acknowledgements

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All study participants

Local Courier services

Project Last Mile

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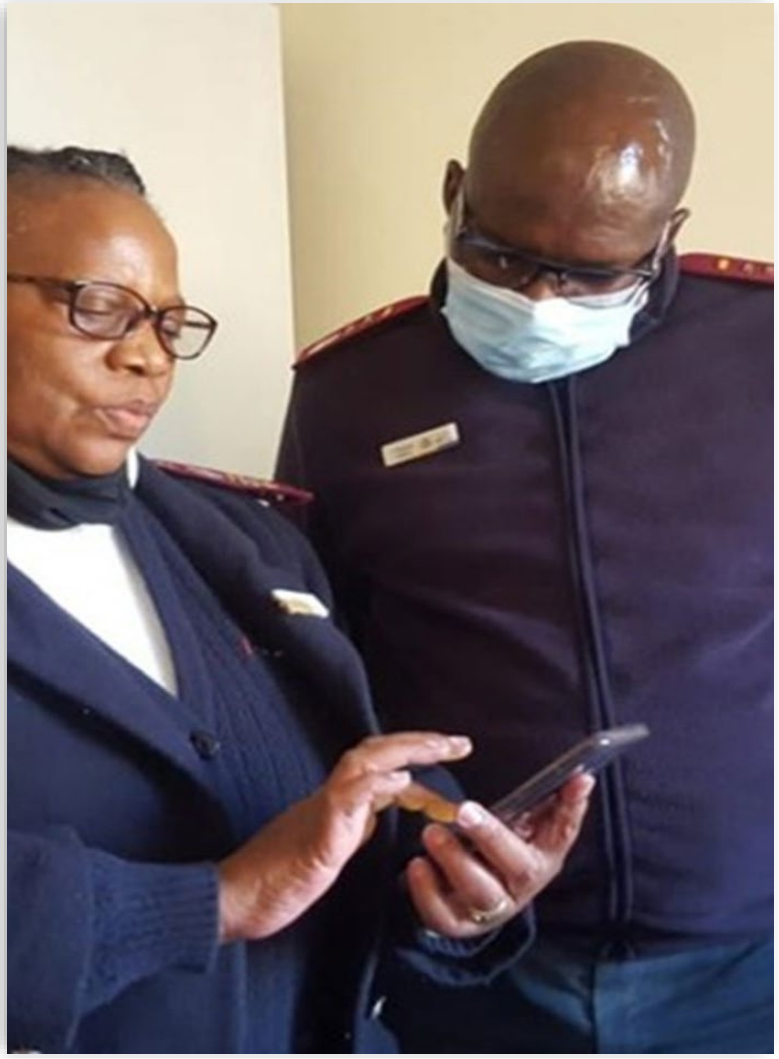

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Thank you