

## “Evaluating SMS to promote retention and adherence to ART programs”

– 3ie-GDN financed impact evaluation project in Burkina Faso –

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### Summary

The rapid uptake of mobile phones across the developing world in recent years has inspired a host of innovative concepts for how these devices can be harnessed to promote public health. In these contexts, the potential of mobile devices to promote healthy behaviors and facilitate health service delivery looms large. Yet, to date, few rigorous evaluations have been conducted demonstrating the impact of “mobile health” (mHealth) interventions.

In this study, we will evaluate whether a short message service (SMS) reminder system can be harnessed to support HIV/AIDS patients in Burkina Faso. In the midst of the country’s push to escalate access to antiretroviral therapy (ART), high rates of attrition from treatment programs have been identified as a concern. Plans for a two-year pilot project that employs SMS to follow-up on patients and encourage them to remain in care have been put in motion. We have designed an impact evaluation to be built into this intervention.

Patients starting an antiretroviral regimen will be enrolled in the study and randomly assigned to an SMS intervention or control group. For those participants enrolled in the intervention, SMS will be sent on a weekly basis, reminding them to take their antiretroviral medications. The evaluation will determine whether this form of consistent follow-up serves as a helpful tool for patients initiating ART. Specifically, the evaluation will identify whether patients who receive SMS are more likely to remain in care, adhere to their antiretroviral regimens, and experience the health benefits associated with treatment.

To this end, the impact of message type and frequency will be considered. That is, we suspect that due to low literacy rates ASCII images might be an alternative to text messages in reminding people to take their medication. Moreover, we expect that participants initially motivated by the text messages may experience message fatigue over the course of the two years. This study aims to detect the critical point up to which text messages can be efficiently employed. To that end, three follow-up surveys will be conducted over the two-year period.

In this current era of antiretroviral scale-up, this evaluation provides a timely investigation of the fundamental behavioral components of effective treatment. By examining the various factors underlying decisions to discontinue treatment, it strives to identify the most significant barriers to long-term success with ART.

### Intervention

In recent years, it has been observed that many patients who begin antiretroviral therapy do not continue beyond the first two years. This is despite the fact that ART is a lifelong treatment course and that stoppages or breaks in treatment will likely lead to a rapid deterioration in health. In Sub-Saharan Africa, rates of attrition from ART programs are particularly high. One systematic review found that 40% of patients are lost from after two years, 21% of these in just the first six months of treatment (Rosen and Fox, 2007).

The intervention to be evaluated takes aim at these high rates of patient attrition and employs an everyday technology, the mobile phone, to promote healthy behaviors. Specifically, the intervention is an SMS support system for patients beginning or in the early years of treatment. Randomly selected participants recruited from health centers across the country will receive weekly SMS reminders. These SMS will encourage patients to take their pills and remind them of the importance of ART for their health. The intent is to serve as an immediate and consistent means of patient follow-up. In regions where contact with health personnel is limited and distances to health centers may be considerable, this follow-up has high impact potential.

The immediate intended outcomes are enhanced retention and adherence (i.e. pill-taking) to antiretroviral therapy. Ultimately, improvements in patient health are also desired. The intervention will run for an initial period of two years.

This evaluation will address the following questions:

- 1) Do SMS reminders promote retention in HIV treatment programs and encourage adherence to antiretroviral regimens?
- 2) Are health outcomes improved as patients receive SMS reminders?
- 3) Are subjective health outcomes improved as patients receive SMS reminders?
- 4) Can message fatigue be observed in the medium to long-term?
- 5) Do the type (text versus picture) and the frequency (once a week versus twice a week) of the SMS have a differential impact?
- 6) Are patients receiving the SMS messages more likely to work?
- 7) Have patients receiving the messages a better nutritional status?

The primary outcomes of the study will thus be retention in care (measured as the proportion of patients who remain in treatment programs), adherence to treatment (measured as the proportion of pills taken of those prescribed), and patient health. Patient health will be monitored by two biomarkers—CD4 counts and the BMI—as well as by incidence of co-infection, mortality, and subjective health ratings.

### The experiment itself

Treatment arms will vary by message content. Formal versus informal messages and reminders framed in terms of health gains versus health risks will be evaluated. Participants will thus be randomly assigned to one of five groups:

- Group 0 will serve as the control and will not receive any SMS reminders
- Group 1 will receive SMS texts with varying content, low frequency, one message per week
- Group 2 will receive SMS texts with varying content, high frequency, two messages per week
- Group 3 will receive SMS texts with varying content and ASCII image, two messages per week
- Group 4 will receive ASCII images, low frequency, one message per week

All groups receive the standard of care. Along with periodic clinical check-ups and treatment counseling, this includes routine monitoring of patient CD4 cells and viral load as measures of disease progression. Adherence support and/or additional treatment counseling may also be provided at the community level. This is assessed during the follow-up surveys in collaboration with the local associations that support people living with HIV (PLHIV) in Burkina Faso.

For groups 1-4, messages will be sent on a weekly basis. A total of 4-8 monthly text messages will thus be sent to each participant assigned to groups 1-4. Messages will be monitored the local telecommunication company EVOLVE. EVOLVE enables us to send text

messages in bulk and keep a record of all communication sent. This allows us to verify that the text messages are sent and that the intervention is properly implemented. The messages are one-way (i.e. recipients are not prompted to respond).

The study started with the baseline survey in February 2015. Patients on antiretroviral regimen have been enrolled in from February to March 2015. More than 3,800 people living with HIV across Burkina Faso participate in the study. The participants were randomly assigned to various SMS interventions or a control group.

The study is officially registered as trial with ISRCTN. The trial reference N° is ISRCTN16558614.