**Mobile phone technologies improve adherence to antiretroviral treatment in a resource-limited setting: a randomized controlled trial of text message reminders**

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**Abstract**

Objective: There is limited evidence on whether growing mobile phone availability in sub-Saharan Africa can be used to promote high adherence to antiretroviral therapy (ART). This study tested the efficacy of short message service (SMS) reminders on adherence to ART among patients attending a rural clinic in Kenya.

Design: A randomized controlled trial of four SMS reminder interventions with 48 weeks of follow-up.

Methods: Four hundred and thirty-one adult patients who had initiated ART within 3 months were enrolled and randomly assigned to a control group or one of the four intervention groups. Participants in the intervention groups received SMS reminders that were either short or long and sent at a daily or weekly frequency. Adherence was measured using the medication event monitoring system. The primary outcome was whether adherence exceeded 90% during each 12-week period of analysis and the 48-week study period. The secondary outcome was whether there were treatment interruptions lasting at least 48 h.

Results: In intention-to-treat analysis, 53% of participants receiving weekly SMS reminders achieved adherence of at least 90% during the 48 weeks of the study, compared with 40% of participants in the control group (P=0.03). Participants in groups receiving weekly reminders were also significantly less likely to experience treatment interruptions exceeding 48 h during the 48-week follow-up period than participants in the control group (81 vs. 90%, P=0.03).

Conclusion: These results suggest that SMS reminders may be an important tool to achieve optimal treatment response in resource-limited settings.

**Gender Connection**

- Gender Focused Intervention

**Gender Outcomes**

- Use of healthcare services

**IE Design**

- Randomized Control Trial

**Intervention**

Participants were provided a Nokia mobile phone that they could use as desired. Participants were referred to a pharmacy where their antiretroviral medications were held in a bottle with medication event monitoring system (MEMS). The participants were randomly assigned to one of four intervention groups or one control group which received no text message. The interventions included short messages or long messages, and weekly or daily reminders.

**Intervention Period**

June 2007 - August 2008; messages were sent either daily or weekly

**Sample population**

The sample was comprised of 431 adult patients who had initiated Anti-Retroviral Treatment within 3 months of the intervention.

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There were four treatment arms and one control group. Each treatment arm received either short or long messages at a frequency of either daily or weekly. The control group received no text messages.

### Unit of analysis
Individual Level

### Evaluation Period
Participants were required to return to the clinic once per month; there was a 48 week follow up period.

### Results
In intention-to-treat analysis, 53% of participants receiving weekly SMS reminders achieved adherence of at least 90% during the 48 weeks of the study, compared with 40% of participants in the control group, the difference is significant. Participants in groups receiving weekly reminders were also significantly less likely to experience treatment interruptions exceeding 48 h during the 48-week follow-up period than participants in the control group.

69 participants lost their phones and 51 changed their number during the course of the study. The study cannot differentiate between increased usage of pills or increased usage of electronic medication monitor. The study also cannot measure the impact on viral suppression. Also, the study only measured adherence to one tablet and assumed that it reflects adherence to the entire regimen.

### Primary study limitations
69 participants lost their phones and 51 changed their number during the course of the study. The study cannot differentiate between increased usage of pills or increased usage of electronic medication monitor. The study also cannot measure the impact on viral suppression. Also, the study only measured adherence to one tablet and assumed that it reflects adherence to the entire regimen.

### Funding Source
The World Bank Research Group, Bank-Netherlands Partnership Program, USAID AMPATH Partnership, National Institute of Mental Health

### Reference(s)

### Link to Studies
[http://journals.lww.com/aidsonline/Citation/2011/05150/Mobile_phone_technologies_improve_adherence_to.18.aspx](http://journals.lww.com/aidsonline/Citation/2011/05150/Mobile_phone_technologies_improve_adherence_to.18.aspx)