

# SIMpill® Medication Adherences Solution

## Brief Overview

Drug adherence is a growing concern to governments, healthcare systems, clinicians and other stakeholders (e.g., tax payers) because of mounting evidence that non-adherence is prevalent and associated with adverse health outcomes and higher costs of care. Rosen et al (2007) found that, on average, 40 percent of patients enrolled in sub-Saharan African antiretroviral therapy (ART) programs had discontinued their treatment after two years. Some examples of poor patient medication adherence include not taking the medication on time, in the correct doses, or at all. Reasons for not following the proper medication regimen include: lack of transportation, bad weather, a worsening condition that prevents them from leaving home, unpleasant side effects, confusion, forgetfulness, language barriers, and feeling “too good” to need medicine. Patients who neglect to take their medications as prescribed pay a price in poorer health, more frequent need for health services, and a higher risk of death.

A number of mobile technology products have been developed to counteract these challenges. One such product is SIMpill® a real time drug adherence solution, which uses SMS to send messages to patients if they forget to take their medication as prescribed and alerts care givers, family members and friends if patients continues to neglect to follow their prescription.



### ■ Geographic Coverage:

South Africa

### ■ Implementation Partners:

SIMpill, Tellumat

### ■ Funder:

SIMpill, Western Cape Provincial Department of Health

### ■ For More Information Contact:

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## About SIMpill

The SIMpill® Medication Adherence System is a medication management system that monitors the patient's medication intake and will remind the patient in real time if the patient forgets to take the medication as prescribed.

The system allows for:

- Real-Time data and analysis of the patients intake of medication;
- Reminders to the patient when a medication event is missed;
- Escalated reminder service available to approved key caregivers;
- Warnings when patients take their medication at incorrect times; and
- Real-time prescription management.

Using a proprietary web-based program, SIMpill's adherence monitoring system detects non-compliance in real time. Its unique system can escalate a timely, appropriate response to fit the needs of the patient and/or caregivers.



When the patient opens his bottle of medication, an automatic SMS message is sent from the bottle's SIM card to the patient's health facility, which records that the medication has been taken. In the event that the patient does not take the medication as scheduled, a reminder is sent to the patient's mobile phone via SMS. Another SMS message is sent to the mobile phone of a designated caregiver, family member, or friend advising that the medication has not been taken, if the patient still does not comply within a certain timeframe. Opening the bottle to take the medication outside of

the prescribed schedule will trigger an SMS message sent to the patient's phone to caution him that the medication should not be taken at the later time, and informing him when next to medicate. Data on levels of compliance and responses to reminders is reported to the health worker caring for the patient.

## Evaluation and Results

From July 2006 to April 2007, SIMpill conducted a pilot drug adherence study of 155 tuberculosis patients at three clinics in the Cape Town area in collaboration with the Western Cape Department of Health. After patients used the SIMpill for 10 months, drug adherence stabilized between 86 - 92 percent with a treatment success rate of 94 percent, according to the study, SIMpill:

- Increased the number of patients who keep appointments with the physician;
- Increased self-reported cases of adherence
- Improved health conditions; and
- Helped 90percent of patients comply with treatment compared to the typical 22- 60-percent compliance in the SIMpill intervention

## Lessons Learned

- In areas where internet connectivity is unavailable, the SIMpill system will have limited use given that the computer that stores the adherence information and sends out automated SMS is web-based.
- SIMpill's proprietary software might result in an unnecessarily high cost of development and increases the likelihood of software coding problems.

## Conclusion

Despite some of the limiting factors associated with the web-based proprietary software, the SIMpill pilot successfully demonstrated that SMS can be used to remind patients about taking their medication as prescribed.

### Information was excerpted from:

<http://www.simpill.com/howsimpillworks.html>

Use of Mobile Technology to Improve Family Planning and Reproductive Health Programming: A Synthesis of Evidence; Draft Report On Cue Compliance <http://healthmarketinnovations.org/program/on-cue-compliance>; Barclay, E. *Text messages could hasten tuberculosis drug compliance* The Lancet, Volume 373, Issue 9657, Pages 15 – 16, 3 January 2009

<http://download.thelancet.com/pdfs/journals/lancet/PIIS0140673608619388.pdf>

Unge C, Södergård B, Marrone G, Thorson A, Lukhwaro A, et al. (2010) Long-Term Adherence to Antiretroviral Treatment and Program Drop-Out in a High-Risk Urban Setting in Sub-Saharan Africa: A Prospective Cohort Study. PLoS ONE 5(10): e13613. doi:10.1371/journal.pone.0013613