

# Evaluation of Implementing Text-Messaging Based Medication Reminders To Improve Adherence to Antiretrovirals in People Living with HIV

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Boston Medical Center  
HEALTH SYSTEM



**Key Findings: Text messaging-based medication reminders improved virologic suppression, supported adherence, and increased patient satisfaction.**

## Background

- Maintaining virologic suppression through antiretroviral treatment (ART) is essential for optimizing the health outcomes of people living with HIV (PLWH) and reducing transmission risk.<sup>1</sup>
- Virologic suppression (<200 copies/mL) requires strict adherence to ART regimens<sup>2</sup>, which can be challenging particularly for those who take other medications for comorbidities.
- Text reminders are a potential tool that can support adherence.<sup>3</sup>
- To determine if implementation of text reminders from healthcare providers supported adherence and viral suppression, we piloted and implemented a customizable SMS-based medication text reminder service for eligible participants receiving care at Boston Medical Center (BMC).

## Methods

- Patients (≥18 years, PWLH) were enrolled in the texting service by clinical staff at BMC from 02/19/22 to 03/08/24 (N=47).
- Participants could fully customize the timing, content, and language of their reminders. Texts could be coded to avoid disclosing specifics about ART medications or HIV status.
- Demographic and viral load (VL) data were extracted from the electronic medical record up until 09/30/24.
- McNemar's test was used to assess association between VL suppression and exposure to the texting service (N=37).
- Perceived adherence and satisfaction were assessed through optional text surveys among participants enrolled ≥30 days (N=21). Four patients elected to complete the survey and the optional follow-up phone interviews.



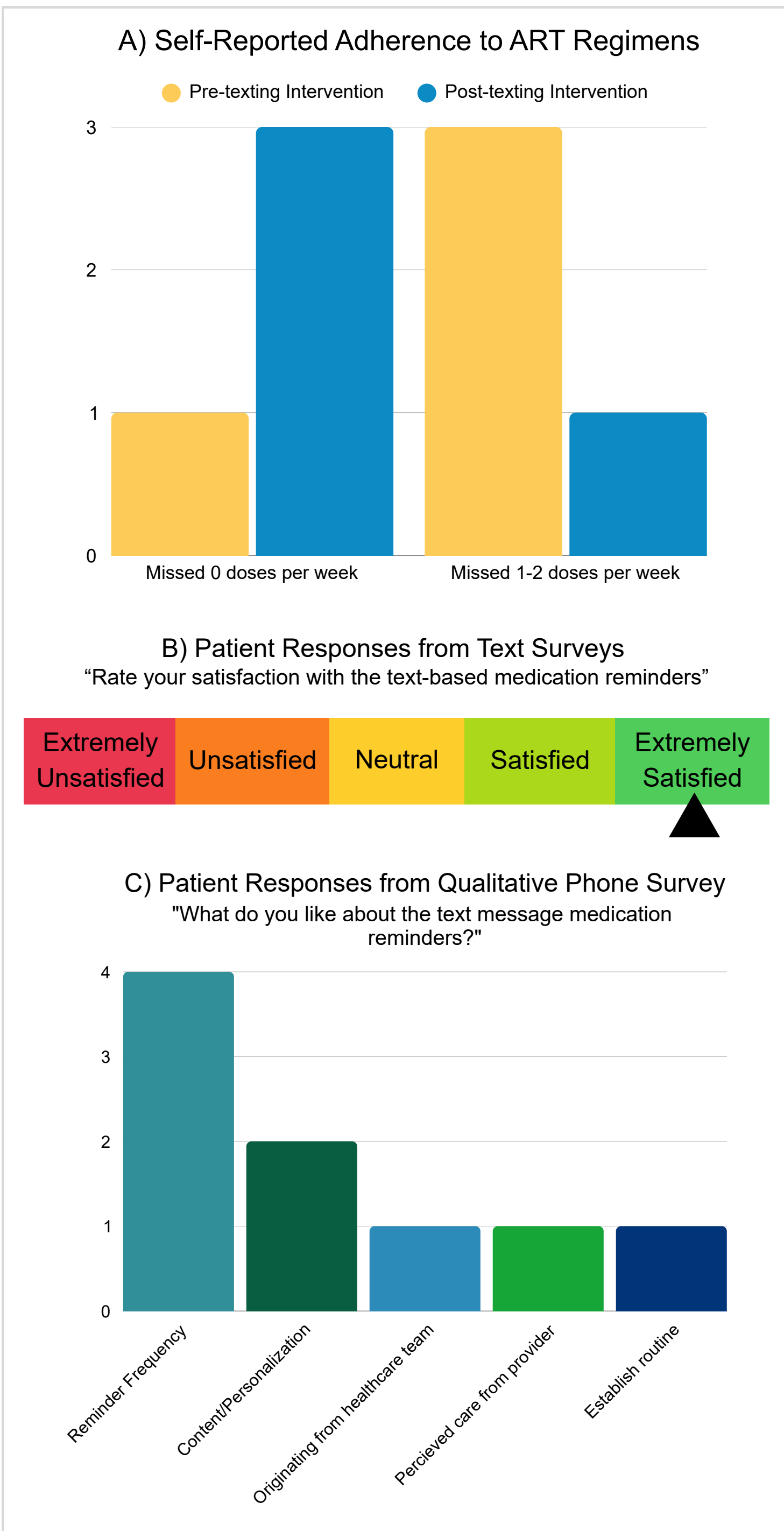
## Results

**Table 1. Demographic Characteristics of Texting Participants**

| Total patients, n              |            |
|--------------------------------|------------|
| Total patients enrolled        | 47         |
| Patients included for analysis | 37*        |
| Age, years                     |            |
| Median (range)                 | 38 (20-74) |
| Gender, n (%)                  |            |
| Cisgender women                | 21 (57)    |
| Race, n (%)                    |            |
| Black or African American      | 29 (78)    |
| Hispanic                       | 4 (11)     |
| Declined or unavailable        | 3 (8)      |
| White                          | 1 (3)      |
| Ethnicity, n (%)               |            |
| Hispanic or Latino             | 8 (22)     |
| Method of Enrollment, n (%)    |            |
| Pharmacist recommendation      | 29 (78)    |
| MD recommendation              | 5 (14)     |
| Patient requested              | 3 (8)      |
| Duration of enrollment, days   |            |
| Median (IQR)                   | 370 (274)  |
| Text message language, n (%)   |            |
| English                        | 26 (70)    |
| Spanish                        | 4 (11)     |
| Haitian Creole                 | 1 (3)      |
| Non-text only                  | 6 (16)     |

\*Ten patients of the original 47 enrolled were excluded from analysis due to excessive interruptions in service and were not able to receive 100% of messages.

**Figure 1. Survey Results on Self-Reported Medication Adherence and Patient Satisfaction**



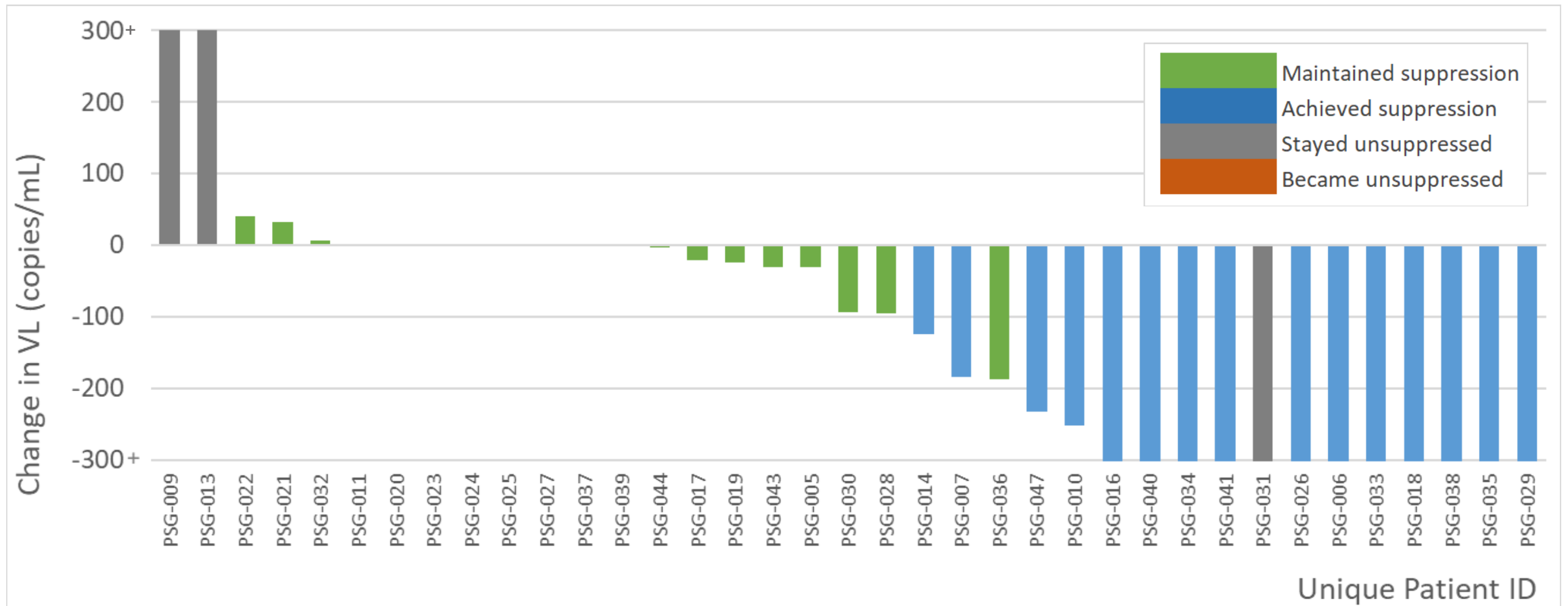
Caption: Optional text surveys completed (n=4) indicated that (A) patients reported a reduction in missed daily doses after the intervention and (B) a 100% rate of feeling extremely satisfied with the service. The same participants reported (C) positive feedback regarding the service during subsequent phone interviews.

## Results Continued

**Table 2. Viral Load Suppression Results**

| HIV Viral Load Suppression at <200 copies/mL |                 | Post-Intervention |                 | McNemar's Chi-squared | p-value |
|----------------------------------------------|-----------------|-------------------|-----------------|-----------------------|---------|
|                                              |                 | VL Suppressed     | VL Unsuppressed |                       |         |
| Pre-Intervention                             | VL Suppressed   | 19 (51.4%)        | 0 (0.0%)        | 13.064                | 0.0003  |
|                                              | VL Unsuppressed | 15 (40.5%)        | 3 (8.1%)        |                       |         |

**Figure 2. Individual Change in Viral Load for Patients Enrolled in Texting Reminder Service**



Caption: Each bar represents the individual-level changes in VL for participants. Approximately 86% of patients (n=32) had either decreased or unchanged VL counts after exposure to the texting service, equivalent to achieving or maintaining suppression at <200 copies/mL. No patient started suppressed and became unsuppressed after exposure to the intervention.

## Discussion

- Results suggest the implementation of customizable text medication reminders from the care-team can be used as an effective tool to achieve virologic suppression and ART adherence.
- Customizable reminders also support continued patient satisfaction, including perceived care from providers.

## References

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3. Dowshen N, Kuhns LM, Johnson A, Holyoya BJ, Garofalo R. Improving adherence to antiretroviral therapy for youth living with HIV/AIDS: a pilot study using personalized, interactive, daily text message reminders. J Med Internet Res. 2012;14(2):e51. doi:10.2196/jmir.2015