

Creating a Platform for Self-Directed Antiretroviral Medication and Appointment Adherence via Text, Phone and Email Messages for HPTN 078

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BACKGROUND

- We needed a web-based communication platform to 1) send automated and customizable text messages, phone calls and email, 2) receive messages back from participants, and 3) have all messages captured for analysis.
- These automated messages were one component of a participant-driven case manager (CM) intervention being tested in HPTN 078 to increase medication adherence, and thus, viral suppression, in HIV-positive men who have sex with men.
- The system was custom built, as all desired features did not exist in a single platform.

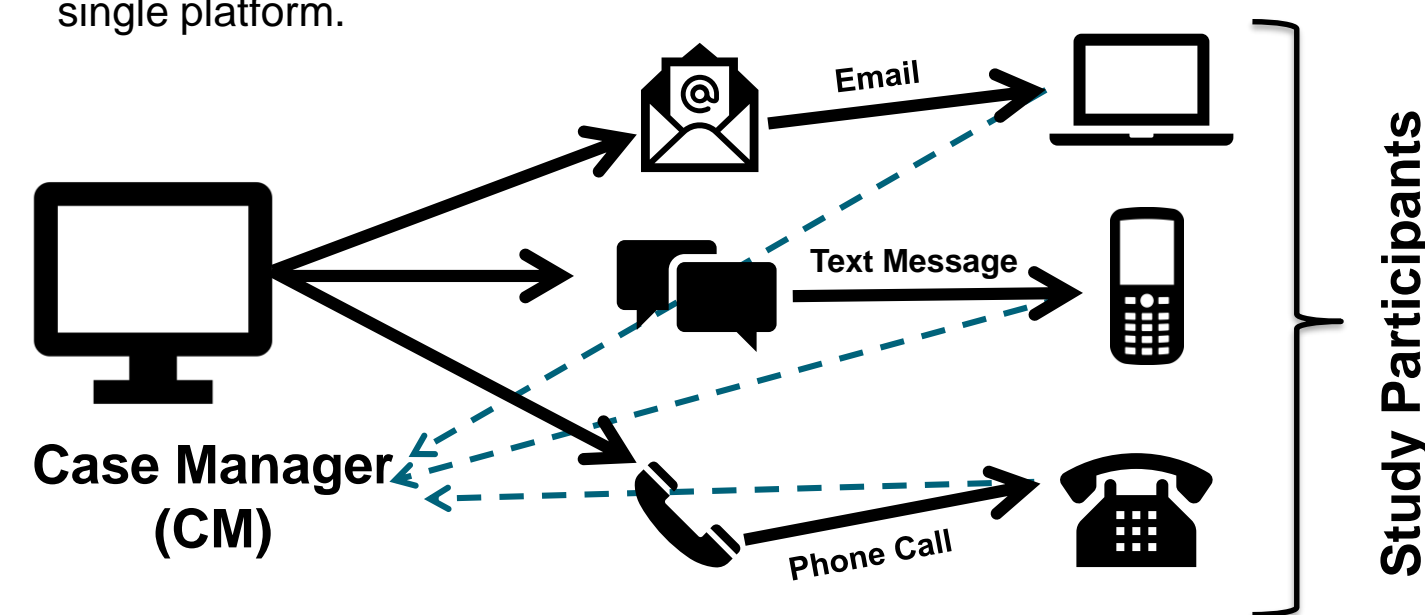


Figure 1: Diagram of the HPTN 078 Communication Platform (CP)

METHODS

The HPTN 078 protocol team partnered with a technology company (MEMOTEXT) that had experience in medication adherence and the capacity to build a web-based system with the following capacity:

- Messages could be sent via text, email and pre-recorded phone calls
- Message content, timing and frequency were determined by the users
- Message types included: 1) medication adherence reminders, 2) medication refill reminders, 3) motivational messages, and 4) appointment reminders for both study and non-study visits
- The content of messages was customizable; stock options were also available
- With every message, participants were reminded how to notify their CM for help. The CM would then respond outside of the CP
- The system captured each message that was sent to or received by study participants

Data captured by the CP were examined to determine use of the system, enumerating (count, mean, median, percentage) the number of participants, message type, mode of transmission and message content. Only messages sent between enrollment and the Month 12 study visit were included in this analysis.

LESSONS LEARNED

THE TECHNOLOGY AND INTERFACE WORKED WELL

- Almost 10,000 messages were successfully sent over 2.5 years
- All message types and modes of transmission were utilized
- The CMs found it easy to use the web-based interface
- Participants were able to use the system to ask for assistance

OPTIONS ALLOWED FOR MORE PARTICIPATION

- One participant chose phone messages because he was legally blind
- One participant asked for daily adherence reminders because he had self-recognized cognitive issues

PARTICIPANTS CHOSE STOCK MESSAGES

- Although participants were able to customize the content of their messages, users overwhelmingly chose to use the stock messages supplied via the CP

MIXED UNDERSTANDING OF HOW TO CONTACT CM

- Some participants did not understand how to respond to their messages correctly so that their CM would know they needed assistance

LACK OF CONTINUOUS PHONE ACCESS

- Many participants struggled with maintaining a working phone/number
 - Lack of minutes or fear that messages would use their minutes
 - Phones were stolen and lost
 - Sites had limited resources to provide phones and/or minutes

NOT ALL MESSAGES WERE RECEIVED

- Participants with phone access issues, who were out of cell service range or whose phones were turned off could not receive their messages. The CP system could not detect when this occurred.

FEAR THAT MESSAGES MIGHT REVEAL HIV STATUS

- Some participants feared that others would see adherence or appointment messages and learn that they were HIV-positive
- Some participants chose motivational messages to counter this fear

NOT EVERYONE WANTED OR NEEDED THIS SUPPORT

- Some participants felt that it wasn't necessary to receive messages in order to remain engaged in care and adherent to their medication
- Many participants were not interested in getting non-study appointment or refill reminders because they were already receiving these reminders from other sources (clinic, pharmacy)

RESULTS

Figure 2: CP Participation

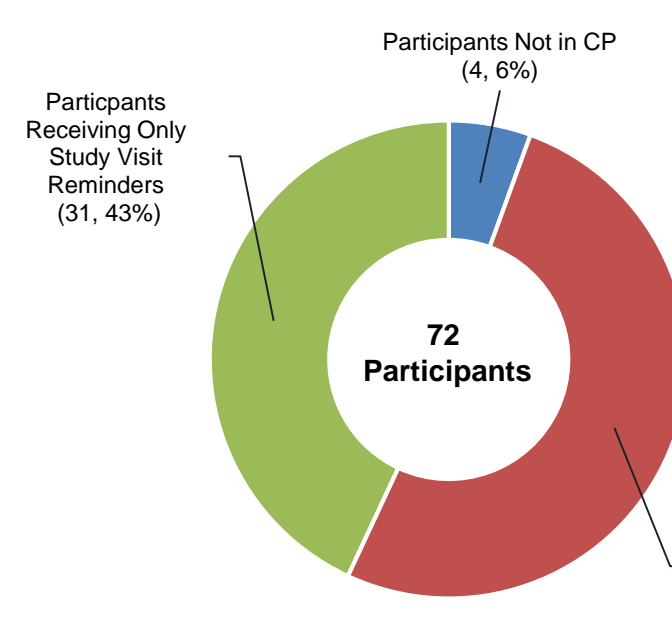
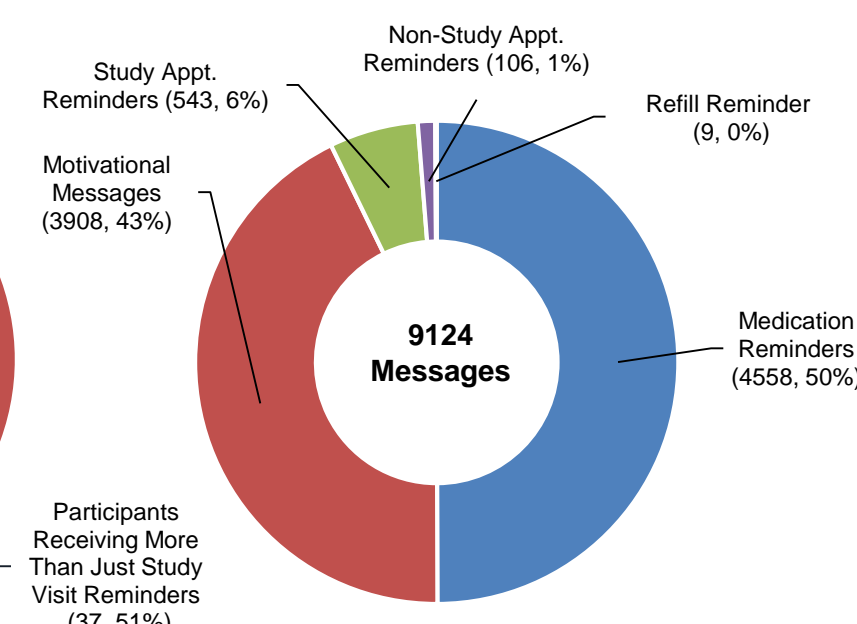


Figure 3: Message Type



MESSAGE VOLUME, TYPE AND MODE OF TRANSMISSION

- 9124 messages were sent to participants via the CP over the course of the study. Participants primarily chose medication reminders and motivational messages (Figure 3).
- The vast majority of the messages (90%) were sent via text message, with 9% being sent via phone and 1% via email (Figure 4).
- On average, participants who used the system for support received 241 message over the course of 1 year (~5 messages a week) (Figure 5).

PARTICIPATION IN THE COMMUNICATION PLATFORM

- 72 participants were randomized to receive messages via the CP.
- Messages were sent via the CP between June 2016 and December 2018 to participants at 4 sites (Atlanta, GA; Baltimore, MD; Birmingham, AL; Boston, MA).
- Slightly more than half of the participants used the system for support (requested more than just study visit reminders) (Figure 2).
- The reasons why four participants were not entered into the CP include: participant did not complete enrollment visit and never returned to site (2); participant was accidentally not entered into CP (1); participant had no access to phone or email (1).

Figure 4: Message Type by Mode of Transmission

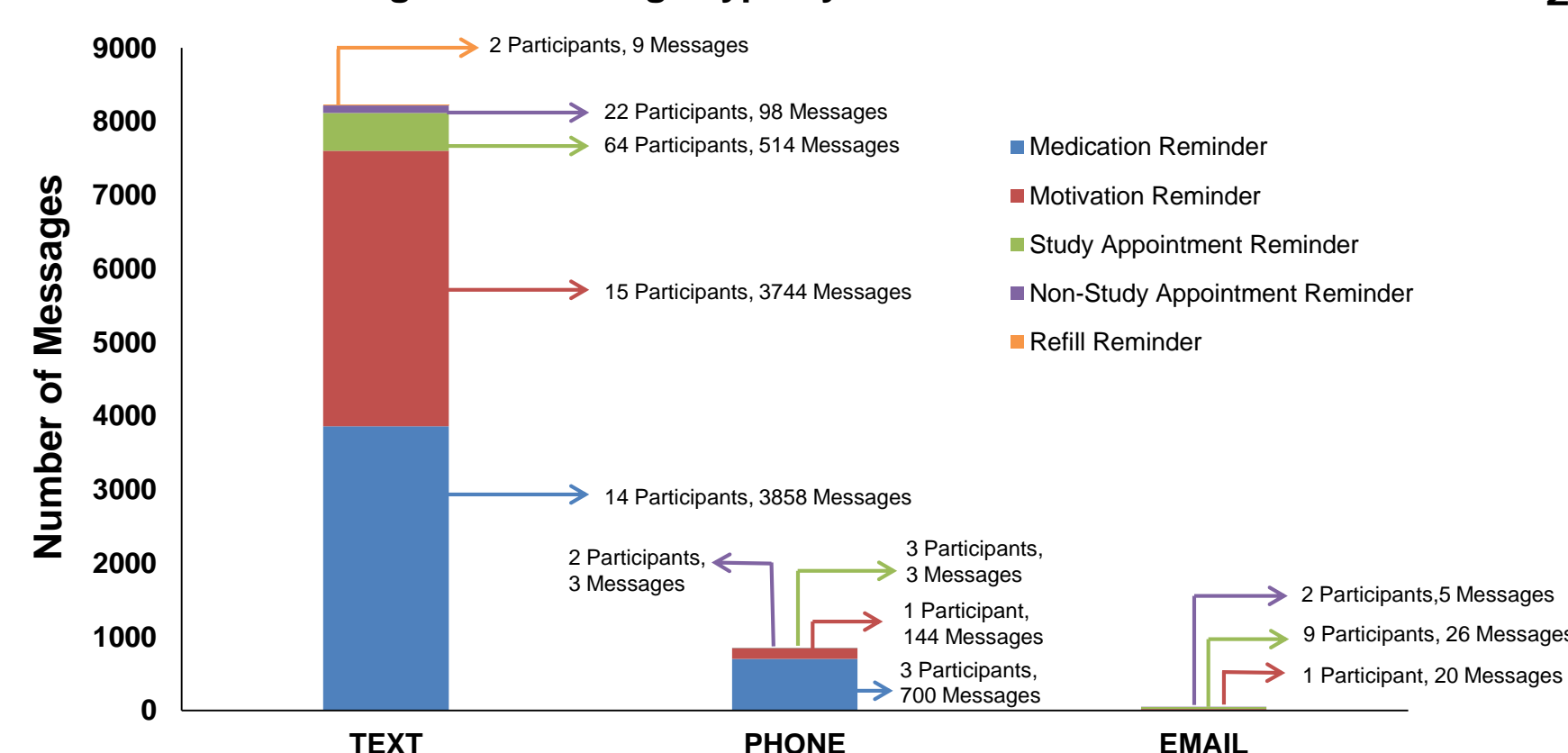
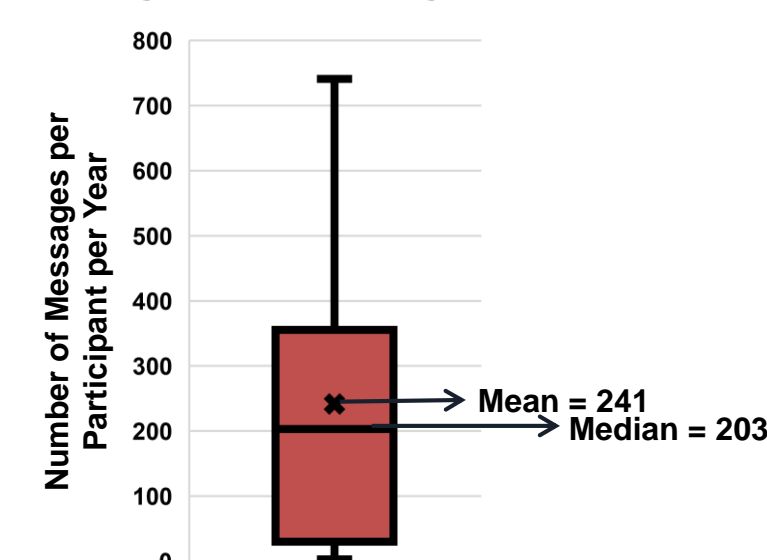


Figure 5: Message Volume



Participants Who Used the CP for Support (received more than just study reminders)

Table 1: Request for Assistance

	Number of Messages	Number of Unique Participants*
Successful	44	20
Text	37	18
Email	5	3
Phone	2	1
Unsuccessful	29	13
Text	29	13

*Some participants sent requests for assistance by more than one mode of transmission; therefore, the number of unique participants by mode of transmission does not sum to the overall total.

REQUEST FOR ASSISTANCE

- 20 participants were successful in using the CP to let their CM know that they needed assistance (Table 1).
- 13 participants tried to reach out to their CM via the CP, but the messages were never sent because the participants did not understand how to use the system correctly.

CONCLUSIONS

- We were successful in building a web-based system to create, deliver and capture text, phone and email messages to support and encourage engagement in care and ART adherence. **This system could easily be adapted for real-world implementation.**
- While some types of messages (motivational, medication reminder) and one mode of transmission (text message) were the most common, **some participants used other messaging options when given the choice.**
- For a variety of reasons (access, preference, real and perceived need, fear of HIV status exposure), a significant portion of participants (43%) chose not to use the system for adherence support. **This type of technological support may not be the best option to help all HIV-positive patients achieve and maintain viral suppression.**

ACKNOWLEDGMENTS

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