



Continuing the Conversation:

Text Messaging and Video Stories to Support Hypertension Self-Management in Black Veterans A Randomized Clinical Trial

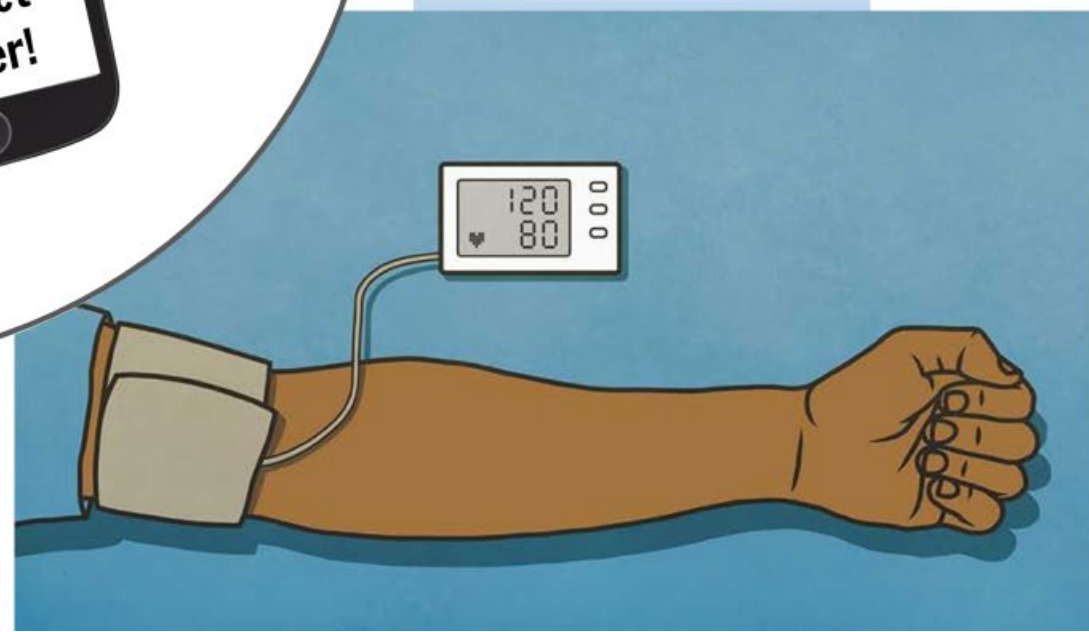
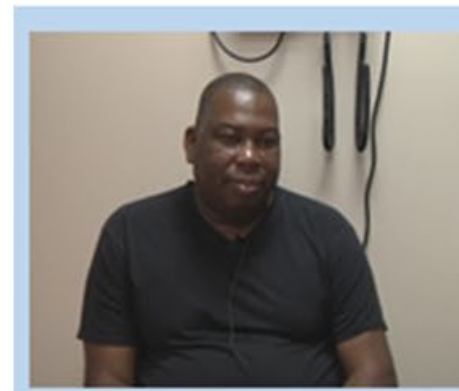
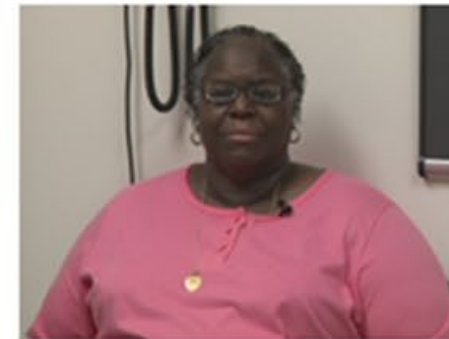
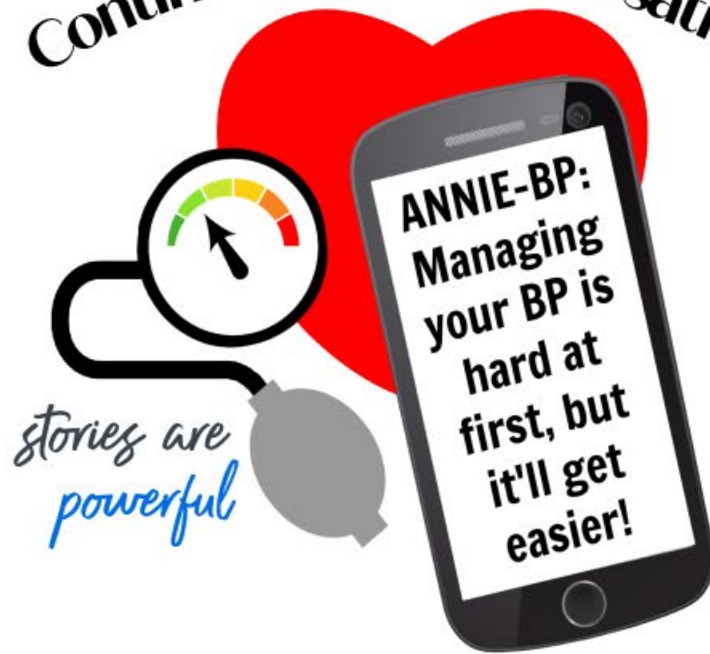
NIH Pragmatic Clinical Trials Collaboratory Grand Rounds

March 27, 2026

Sarah L Cutrona, MD MPH



Continuing the Conversation



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- **PM's:** Diana DeFelice; Ece Bal; Tanisha Dicks; Jessica Gardner; Jadisha Vargas-Correa; Gabriel Brown; Natalia Skorohod; Raphael Rivera
- **Veteran Storytellers:** Morris, Richard, Patricia, Danny, Willie
- ClinicalTrials.gov [NCT03970590](https://clinicaltrials.gov/ct2/show/study/NCT03970590)

Overview

- Background
- Basics: Objective, Participants, Study Design, Intervention, Outcomes
- Building: Designing Intervention with Veteran input
 - Randomized Controlled Trial
 - Results, Engagement/Fidelity
 - Lessons Learned



Hypertension in Black Americans

- **Higher morbidity and mortality**
- **Unique challenges to self-management**
 - Differential rates of diagnosis & treatment titration
 - Access to, trust in and engagement with the healthcare system in setting of personal/historical experiences of discrimination
 - Self-management challenges influenced by access, cost and physical environment - medication adherence, lifestyle changes, self-monitoring



Peer interventions & Storytelling

Self-management interventions should be accessible, engaging and personally relevant.

- Healthy lifestyle requires **numerous small, daily decisions**.
- These may be incompletely understood by clinical providers
- A **peer** can help generate and sustain motivation for lifestyle change.

Narratives (Peer Storytelling) can engage patients through personally relevant content.



Richard

- 66-year-old from Philadelphia. Marine in Vietnam, then worked for the City of Philadelphia out in the field every day.
- Diagnosed after he hurt his back and couldn't go back to work.
- He says that managing his BP, diabetes, arthritis and PTSD has been a journey.
- For exercise, he does little stuff that adds up to big stuff. He tells his doctor exactly what's going on. He handles stress by meditating in the bathroom.



Patricia

- 63-year-old from Chicago, Army
- BP wasn't controlled because side effects kept her from taking her meds. Her friend went on dialysis and then convinced Pat to take her meds.
- Reads labels for sodium in her food, and keeps a journal on her sodium and BP.
- She lines med bottles up on her dresser, and she says she doesn't miss even one day.



Morris

- 53-year-old from Charleston, grew up in SC. Was a gunner in Artillery. Now works in security.
- He struggled with alcohol, but after he lost his cousin, his father & friends he joined AA.
- He chooses fresh collard greens, not cans. His calls him 'food inspector.' At work his friends respect how he eats.
- He tries to walk each day and uses a step met

Text messaging for Hypertension management

- Text messages can support HTN management with modest but clinically meaningful reductions in BP and improved med adherence.
- The evidence supports text messaging as a **feasible, low-cost adjunct to standard hypertension care**, particularly for patients with uncontrolled blood pressure or limited healthcare access.
- Work best when integrated with other care components & sustained over several months.



Screenshot of Veteran Storyteller Videos from VA Office of Health Equity Website

In our team's previous work... Videos were created in which Black Veterans shared stories about challenges & successes in HTN self-management...



Journeys with High Blood Pressure

Did you know that some Veterans, including some racial and ethnic minorities, experience higher rates of high blood pressure? A [research team](#) created a series of videos of patients discussing their experiences with high blood pressure, medications, talk to their health care providers, and make other changes. According to the [2016 study](#), compared to those who did not watch the videos, reported greater intentions to:

- Become more physically active;
- Use salt substitutes;
- Talk openly with their doctor about hypertension; and
- Remember to take their hypertension medications.

The Office of Health Equity is pleased to be able to share these videos with Veterans and videos below feature stories from Veterans about high blood pressure and important resources.

Module 1 - Journeys with High Blood Pressure

Introduction	Danny	Morris
Richard	Willie	What is High Blood Pressure
Smoking and Alcohol	Taking Medications and Stress	Talking to Family, Friends and Doctors

In our team's previous work...
Videos were created in which
Black Veterans shared stories
about challenges & successes in
HTN self-management...

Annals of Internal Medicine®

Culturally Appropriate Storytelling to Improve Blood Pressure: A Randomized Trial FREE

Authors: Thomas K. Houston, MD, MPH , Jeroan J. Allison, MD, MSc, Marc Sussman, MHA,
Wendy Horn, PhD, Cheryl L. Holt, PhD, John Trobaugh, MFA, Maribel Salas, MD, PhD, ... [SHOW ALL ...](#),
and Sandra Hullett, MD, MPH | [AUTHOR, ARTICLE, & DISCLOSURE INFORMATION](#)

Publication: Annals of Internal Medicine • Volume 154, Number 2

Medical Care • Volume 55, Number 9 Suppl 2, September 2017

African American Veterans Storytelling A Multisite Randomized Trial to Improve Hypertension

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Can stories influence African-American patients' intentions to change hypertension management behaviors? A randomized control trial



Barbara G. Bokhour^{a,b,*}, Gemmae M. Fix^{a,b}, Howard S. Gordon^{c,d}, Judith A. Long^{e,f},
Kathryn DeLaughter^a, Michelle B. Orner^a, Charlene Pope^{g,h}, Thomas K. Houston^{a,i}

In our team's previous work...
Videos were created in which
Black Veterans shared stories
about challenges & successes in
HTN self-management...



...In this study we aimed to
'Continue the Conversation'
by adding longitudinal texting support
to the video stories.





Objective: Improve HTN control & self-management by adding longitudinal texting support to video stories

Participants/Eligibility: Black Veterans with hypertension from Philadelphia & Chicago

Develop & Pilot “Continuing the Conversation” Intervention: 20 Veterans (10/site); 1 month



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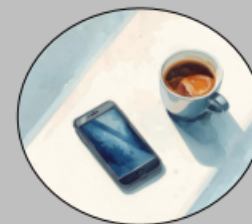
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Develop & Pilot “Continuing the Conversation” Intervention: 20 Veterans (10/site); 1 month

Conduct RCT: 600 Veterans (300/site); 6 months

Intervention:

View 5 Videos → **Select** preferred storyteller → **Get** texts supporting HTN self-management



**6 months of text messages:
Aligned with Selected Storyteller**

+ Educational & Interactive messages.

Control: → →

6 months of text messages:

Interactive messages only



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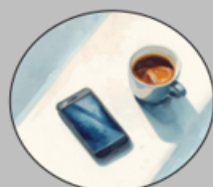
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Control:

6 months of text messages:

Interactive messages only

Primary Outcome: Change in Systolic & Diastolic BP, Baseline to 6-month follow-up (self-measured at home)

Secondary Outcomes: Change in self-reported HTN management activities (e.g. adherence to meds, diet, activity)

Intent-to-Treat design, **Difference-in-Differences (DID) regression**

Engagement (6-month response rates to interactive messages) and participant motivation also measured

- Approach informed by
 - Narrative communication theory
 - Social cognitive theory
- Hypothesis: Peer stories can promote participants' emotional engagement with the messages via *a parasocial relation** with the storyteller, enhancing self-efficacy, influencing health behaviors and ultimately improving blood pressure control.



*Parasocial: affective connection grounded in notions of friendship, similarity, and empathy



Developing the Text messages

- Designing Protocol structure
 - “ANNIE” (VA’s automated texting system)
- Developing Content
 - Key HTN Self-management concepts
 - Transcriptions from Veteran stories
 - Veteran consultant input
- Devising a support strategy for initial use & re-engagement
 - Learned from VA colleague’s experience
 - Modified after pilot findings



• JMIR Res Protoc. 2021 Dec 1;10(12):e29423. doi: [10.2196/29423](https://doi.org/10.2196/29423)

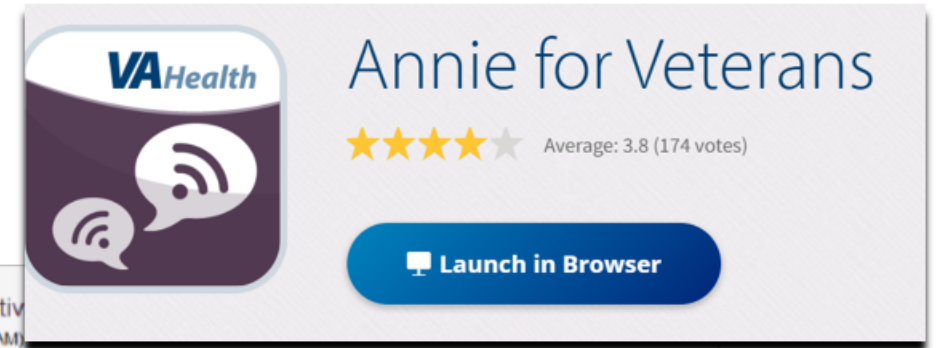
Incorporating African American Veterans’ Success Stories for Hypertension Management: Developing a Behavioral Support Texting Protocol

[Kathryn L DeLaughter](#)^{1,8,9}, [Gemmae M Fix](#)^{1,2}, [Sarah E McDannold](#)¹, [Charlene Pope](#)^{3,4}, [Barbara G Bokhour](#)^{1,5}, [Stephanie L Shimada](#)^{1,5,6}, [Rodney Calloway](#)¹, [Howard S Gordon](#)^{7,8,9}, [Judith A Long](#)^{10,11}, [Danielle A Miano](#)¹, [Sarah L Cutrona](#)^{1,5}

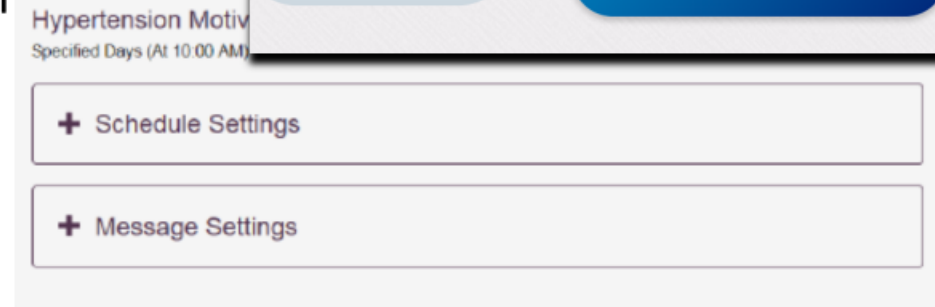
Designing Protocol Structure:

Programming in VA's ANNIE Texting System

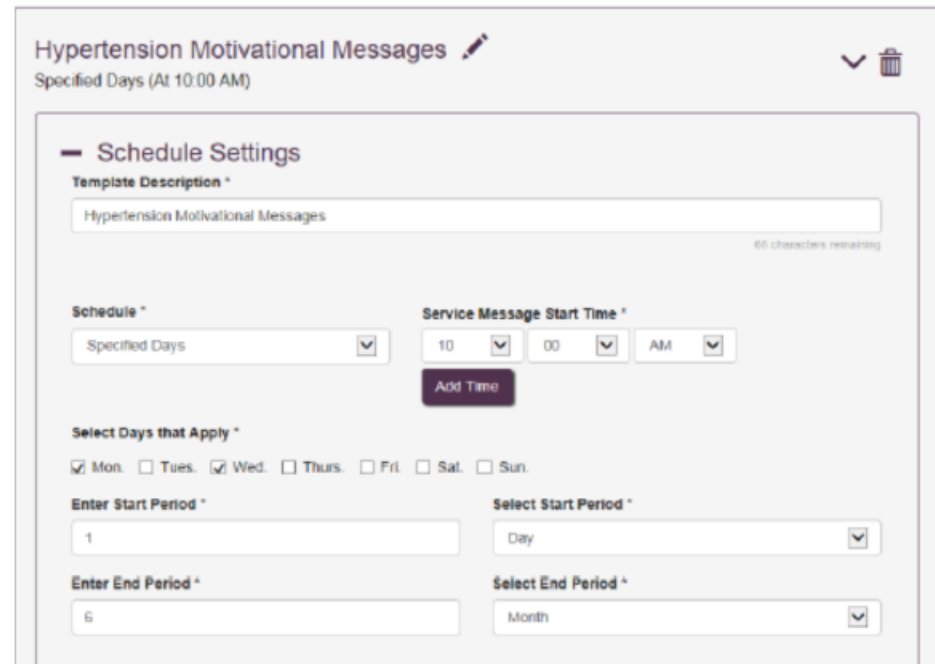
- 26 Week-long Protocol
- Key HTN Self-management Concepts
 - 2 weeks/topic
 - 1 week educational & 1 week narrative
- Interactive (bidirectional) texts as bookends
 - Start: Self-efficacy assessment
 - End: Behavior assessment
- Limitations of ANNIE System
 - Limits on character count, data export
 - Required highly structured response options
 - Unable to provide choice on time of day



The screenshot shows the top section of the VA Health app. On the left is the VA Health logo, which includes a speech bubble with a Wi-Fi symbol. To the right, the text 'Annie for Veterans' is displayed in a blue font. Below this text is a star rating of four and a half stars, followed by the text 'Average: 3.8 (174 votes)'. At the bottom right of this section is a blue button with a white browser icon and the text 'Launch in Browser'.



This screenshot shows a settings menu for 'Hypertension Motivational Messages'. The title is 'Hypertension Motivational Messages' with a subtitle 'Specified Days (At 10:00 AM)'. There are two main menu items, each with a plus sign icon: 'Schedule Settings' and 'Message Settings'.



This screenshot shows the 'Schedule Settings' configuration page for 'Hypertension Motivational Messages'. The page title is 'Hypertension Motivational Messages' with a subtitle 'Specified Days (At 10:00 AM)'. The 'Template Description' field contains 'Hypertension Motivational Messages' with a character count of '60 characters remaining'. The 'Schedule' is set to 'Specified Days'. The 'Service Message Start Time' is set to '10:00 AM'. There is an 'Add Time' button. The 'Select Days that Apply' section has checkboxes for 'Mon', 'Tues', 'Wed', 'Thurs', 'Fri', 'Sat', and 'Sun', with 'Wed' checked. The 'Enter Start Period' field contains '1' and the 'Select Start Period' dropdown is set to 'Day'. The 'Enter End Period' field contains '6' and the 'Select End Period' dropdown is set to 'Month'.

eTable 2. Example of the first 9 weeks of text message protocol for a single Veteran storyteller³⁰

	Title	Format	Day/ Time	Message*
Week 1: Salt Intake - Educational		Interactive (self-efficacy)	Day 1 11:00 AM	ANNIE-BP: How confident are you that you can make low salt choices shopping & eating? Text SAL 1 (not confident), SAL 2 (somewhat), or SAL 3 (very) to reply
		Educational	Day 2 3:00 PM	ANNIE-BP: To help control your blood pressure ('BP'), try to reduce the salt you eat. Diets high in salt can raise BP. Check nutrition labels for sodium (salt).
		Educational	Day 4 3:00 PM	ANNIE-BP: Processed foods, like frozen dinners, canned soup, and snacks, can have very high salt content. The DASH diet can help you make healthy choices.
		Educational	Day 6 3:00 PM	ANNIE-BP: You can also reduce salt by avoiding the saltshaker. Avoid sea salt & garlic salt too - try substitutes instead: Mrs. Dash or fresh herbs for flavor.
		Narrative	Day 8 3:00 PM	ANNIE-BP: Richard says: If you look at Campbell's soup, salt is one of its main ingredients. If you read labels, you can try to avoid foods with high salt
	Week 2: Salt Intake - Narrative		Narrative	Day 10 3:00 PM
		Narrative	Day 12 3:00 PM	ANNIE-BP: Richard noticed many foods have salt in them already: You can't get away from it so I decided not to add any more salt to my diet & I don't.
		Interactive (behavioral)	Day 13 1100	ANNIE-BP: How many DAYS this week did you make healthy salt choices in your diet? Text SALT 0, SALT 1, SALT 2 up to SALT 7 to reply.
Week 3: Exercise - Educational		Interactive (self-efficacy)	Day 15 11:00 AM	ANNIE-BP: How confident are you that you can make small daily changes to increase your activity? Text EX 1 (not at all), EX 2 (somewhat), or EX 3 (very) to reply.
		Educational	Day 16 3:00 PM	ANNIE-BP: Regular physical activity helps lower BP, & can help you reach or stay at a healthy weight. Talk to your care team about exercise that's right for you
		Educational	Day 18	ANNIE-BP: Exercise doesn't have to be boring. You can ask a friend or co-worker to join you. Being active can help lower your BP and make
		Educational		

2 Week Block

Interactive (2-way) messages as bookends:
Self-efficacy at start of 2 week block

Example Narrative text for Salt Intake, Veteran StoryTeller Richard:
“ANNIE-BP: Richard makes healthy choices to eat less salt. He says: I use Mrs. Dash’s instead of salt. I do a lot of little stuff that adds up to big stuff.”

Interactive (2-way) messages as bookends:
Behavioral at end



From: **Text Messaging and Video Stories to Support Hypertension Self-Management in Black Veterans: A Randomized Clinical Trial**
 JAMA Netw Open. 2025;8(11):e2541342.
 doi:10.1001/jamanetworkopen.2025.41342

Designing Protocol:

HTN self-management content areas addressed in videos were incorporated into messages

Concept	Content Description
Salt Intake	Veteran describes strategies and contextually situated stories of how they managed salt intake
Talking with your doctor	Veteran describes reasons why honest communication with providers is important
Take your medicine	Veteran describes strategies and motivational tools in taking their prescribed medicine
Exercise	Veteran talks about specific strategies to increase exercise
Stress Management	Veteran describes tools and tactics to manage stress
Monitor your BP	Veteran describes ways they monitored their blood pressure
Diet/Nutrition	Veteran describes how they improved their diet and/or learned more about the importance of nutrition
Faith/Church/Community	Veteran shares how their faith, church or community are a source of support or motivation for them and their health
Alcohol/Smoking/Challenges	Veteran shares their experiences with alcohol, smoking, etc. and how they addressed these challenges



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Designing Protocol: Anticipating user challenges based on prior work, lack of in-person

Strategies address different types of learners:

Quick Learner – Responds with wrong format x1, corrects with first feedback.

Learn then forget – Struggle early, receive extra instruction, correct for a while, then forget & struggle again.

Slower to Learn– Trouble responding with correct formatting even after automated instructions

Challenges may be based on

- **Inexperience with technology**
- **Misunderstanding of instruction**
- **Busy lifestyle/competing activities.**

Designing Protocol: Employ strategies to address anticipated user challenges

Staff & Veteran **Practice responding**, work together over phone on baseline call

- Included a sample question in all possible formats (How many of the past 7 days, not/somewhat/very, etc) as part of the start protocol

Developed support tools





Structured Check-ins:

- Intervene early: Check in after first 2 weeks (sometimes earlier)
- Set limits: A maximum of two boosters two weeks apart, then check-in midway

How To Text Annie

Your text messages **MUST** use this **EXACT** format:



 + [space] + 
KEYWORD NUMBER

Sample text from Annie:

ANNIE-BP: Text SAL 1 (not confident), SAL 2 (somewhat), or SAL 3 (very) to reply

What you would text back using the formula above:


SAL 2

 + [space] + 
KEYWORD NUMBER

The keywords will change every time. It won't always be "SAL"... it could be "ACT" or "MED" or "EX," for example.

Developing Narrative Content:

Narrative text messages incorporated quotes from Black Veterans sharing stories on HTN management



Approach to text message creation	Transcribed Content from Veteran Video Narrative, Directly quoted content highlighted	Text message
Transcribed quotation used without modification.	"You got to stop. I mean it's up to you. No, I mean the doctor's not in your house. He's not in your car. If you don't, in your head decide, I'm not gonna do this anymore. I'm gonna change. Nothings gonna change...and you know I hate to say it/but you gonna end up dying...Before you should.	Danny says: <i>'The doctor's not in your house, he's not in your car. If you don't in your head decide I'm gonna change...nothing's gonna change'</i>

Used **direct quotes** where possible.

When needed, modifications included:

- Add context to be interpretable as standalone text
- Shorten/Combine quoted segments to meet character limits

Veteran Consultant (Mr. R. Calloway) guided:

- Language Structure
- Word choice & Tone
- Fidelity to Storyteller Voice

Developing Narrative Content with Veteran input

Examples of narrative text messages (adapted from quotations from African American Veterans sharing stories about how they manage their hypertension).

Hypertension self-management key content area	Direct quotation from unedited video transcript ^a	Draft text message	Examples of ways that narrative content and Veteran input were used to modify texts	Final
Low sodium diet	<i>"Basically, I don't have any salt, plain salt in my house. S-salt substitute, seasoning, uh, a low salt, anything with, that's low salt in there, I use that, you know. It's not as strong as the salt that I usta take but still crave, you're given that, all, keep me from craving for regular salt, you know."</i>	<i>"Annie-BP: Willie says- basically I don't have any salt, plain salt in my house. Salt substitute, seasoning, anything that's low salt-I use that."</i>	<ul style="list-style-type: none"> • Informed by narrative content, we incorporated the concept of craving • The Veteran used this concept several times in the narrative to emphasize the role played by salt substitute 	<i>"Annie-BP: Willie says- basically I don't have any plain salt in my house. Salt substitute or seasoning keeps me from craving for regular salt."</i>

Developing Narrative Content with Veteran input

Hypertension self-management key content area	Direct quotation from unedited video transcript	Draft text message	Examples of ways that narrative content & Vet input were used to modify texts	Final text messages
Exercise	<p>"I began to see that it was affectin' a lotta things in my life so I decided to do somethin' about it, and that's why I call it a journey...That's what I do. <i>I do little stuff that adds up to big stuff...And I do it every day, cuz like I said, there's not, it's nothin' strenuous, you know what I mean?...I do a whole lotta little stuff that I think adds up to somethin' big, you know...I do, I do a lotta little stuff that adds up to big stuff, you know.</i>"</p>	<p><i>"Annie-BP: Richard talks about his BP: it was affectin' a lotta things in my life so I decided to do somethin' about it. I do a lotta little stuff that adds up to big stuff."</i></p>	<ul style="list-style-type: none"> • Informed by Veteran consultant feedback, we adopted standard spelling, while trying to keep the cadence of the Veteran voice. • Our consultant observed that professionally typed transcriptions can reflect the bias of the transcriber. Including nonstandard spelling may offend those who personally experienced stigmatization related to their speech patterns. 	<p><i>"Annie-BP: exercise doesn't have to mean a big lifestyle change. Richard says, I do little stuff that adds up to big stuff and I do it every day."</i></p>

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2 Week Block

Interactive (2-way) messages as bookends:
Self-efficacy at start of 2 week block

Example Narrative text for Salt Intake, Veteran StoryTeller Richard:
“ANNIE-BP: Richard makes healthy choices to eat less salt. He says: I use Mrs. Dash’s instead of salt. I do a lot of little stuff that adds up to big stuff.”

Interactive (2-way) messages as bookends:
Behavioral at end



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Week 5: Take Meds - Educational

Interactive (self-efficacy)	Day 29 11:00 AM	ANNIE-BP: How confident are you that you can take all your BP meds daily as prescribed? Text MED 1 (not at all), MED 2 (somewhat), or MED 3 (very) to reply.
Educational	Day 30 3:00 PM	ANNIE-BP: Are BP meds part of your daily routine? If not, think of things you do regularly (toothbrushing, eating meals). Can these help you remember your meds?
Educational	Day 32 3:00 PM	ANNIE-BP: Try reminder notes for meds - on the fridge, bathroom mirror, a pill box or a calendar (mark it after taking the meds), or set an alarm on your phone.
Educational	Day 34 3:00 PM	ANNIE -BP: Plan ahead for refill requests so you don't run out. Talk to your VA care team if you have trouble getting your meds refilled on time.

Week 6: Take Meds - Narrative

Narrative	Day 36 3:00 PM	ANNIE-BP: Prescribed medication can be an important tool to help control your BP. This week we'll share Richard's tips to stay on track!
Narrative	Day 38 3:00 PM	ANNIE-BP: Richard says, I take my med faithfully around the same time. You can't take it at 10 one day and then 2 the next. It doesn't get in your system right.
Narrative	Day 40 3:00 PM	ANNIE-BP: Richard says: I take BP medicine once a day in the morning & what has happened is, the doctor's been able to reduce it because my BP has done so well.

Week 7: Faith/Church Community - Educational

Interactive (behavioral)	Day 41 11:00 AM	ANNIE-BP: How many DAYS in the past week did you take your BP meds as prescribed? Text MEDS 0 through MEDS 7 to reply.
Interactive (self-efficacy)	Day 43 11:00 AM	ANNIE-BP: How confident are you that there are people to support you with your BP? Text SUP 1 (not at all), SUP 2 (somewhat), or SUP 3 (very) to reply.
Educational	Day 44 3:00 PM	ANNIE-BP: Managing BP is hard. Reaching out to friends, family & community can help. This week think about where you can find support for important life changes
Educational	Day 46 3:00 PM	ANNIE-BP: Sometimes, thinking of family & community can give you that spark of inspiration for making hard changes . Think about who inspires YOU to be healthy
Educational	Day 48 3:00 PM	ANNIE-BP: The VA is part of your support system. Reach out to your healthcare team for support resources or visit https://www.va.gov/ . We

Educational messages contained supportive messages and reinforced VA as resource



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Feasibility & Acceptability Pilot



Participants: 20 Black Veterans with HTN from Philadelphia & Chicago

COVID: Prior to pilot start, shifted from in-person to entirely virtual
Had to develop strategies for providing support remotely (BP checks, texting)

Home BP measurements

Arranged for delivery of home monitors
Coached Veterans through home BP checks

Remote enrollment in ANNIE (VA texting)

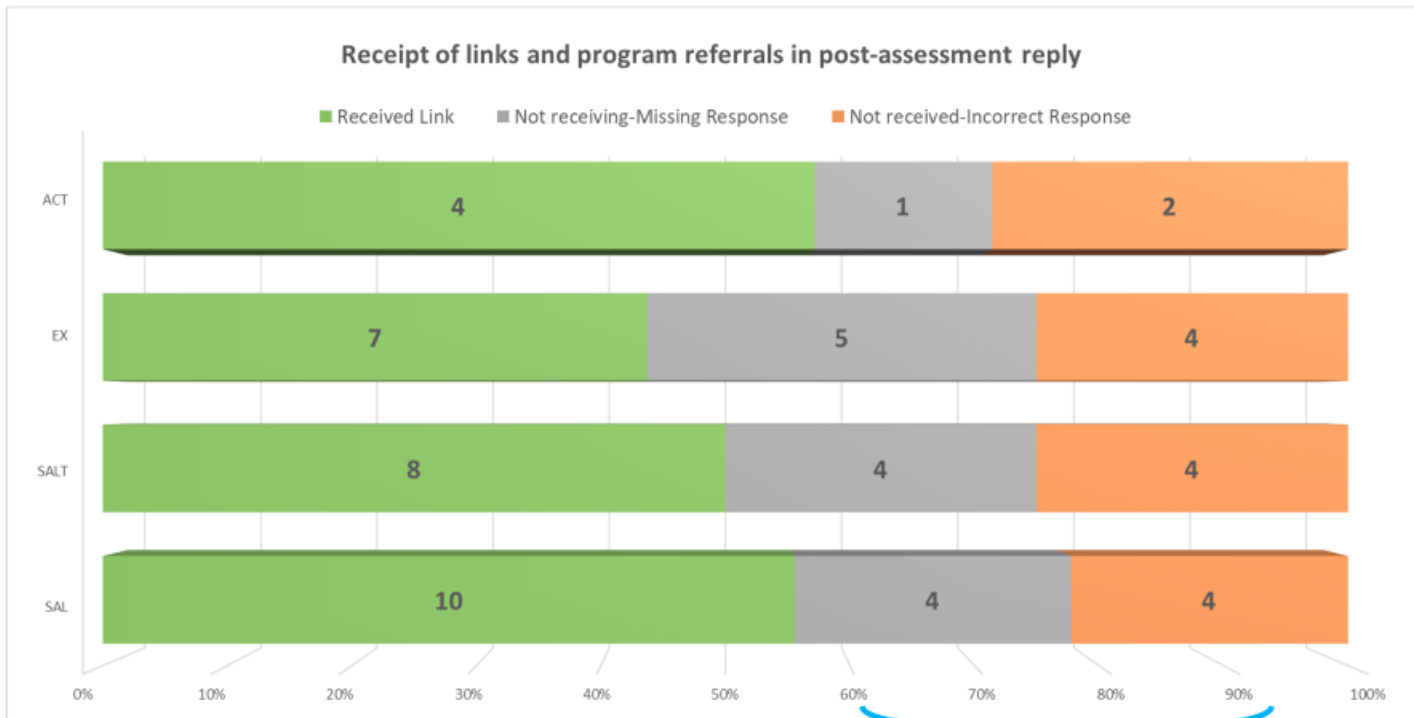
We improved support tools based on pilot findings
Modified structure of interactive texts to ensure content delivery



Feasibility & Acceptability Pilot



Participants: 20 Black Veterans with HTN from Philadelphia & Chicago



49% of the time participants aren't receiving our links or program suggestions.

25% of the time links aren't received due to incorrect formatting of participant assessment responses.

Feasibility & Acceptability Pilot



Was there anything you liked/disliked about participating in this study, including the Veteran videos and CTC texts?

Selected
Qualitative
responses
(collected from
19/20 pilot
participants)

Disliked	Particularly liked
Texts – too often. Once or twice a week would be better	Videos are informative
Responding to texts was not easy	The texts came right on time and was very very good with helping
No way to communicate with Annie	It makes you think a little about managing your BP
	It helped me to do every day things I need to do for BP
	I liked the study. It shows concern.

Randomized Controlled Trial



Objective: Improve HTN control & self-management by adding longitudinal texting support to video stories

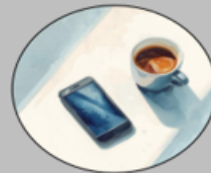
Participants/Eligibility: Black Veterans with hypertension from Philadelphia & Chicago

Develop & Pilot “Continuing the Conversation” Intervention: 20 Veterans (10/site); 1 month

Conduct RCT: 600 Veterans (300/site); 6 months

Intervention:

View 5 Videos → **Select** preferred storyteller → **Get** texts supporting HTN self-management



**6 months of text messages:
Aligned with Selected Storyteller**

+ Educational & Interactive messages.

Control:

6 months of text messages:

Interactive messages only

Primary Outcome: Change in Systolic & Diastolic BP, Baseline to 6-month follow-up (self-measured at home)

Intent-to-Treat design, **Difference-in-Differences (DID) regression**

Engagement (6-month response rates to interactive messages) and participant motivation also measured

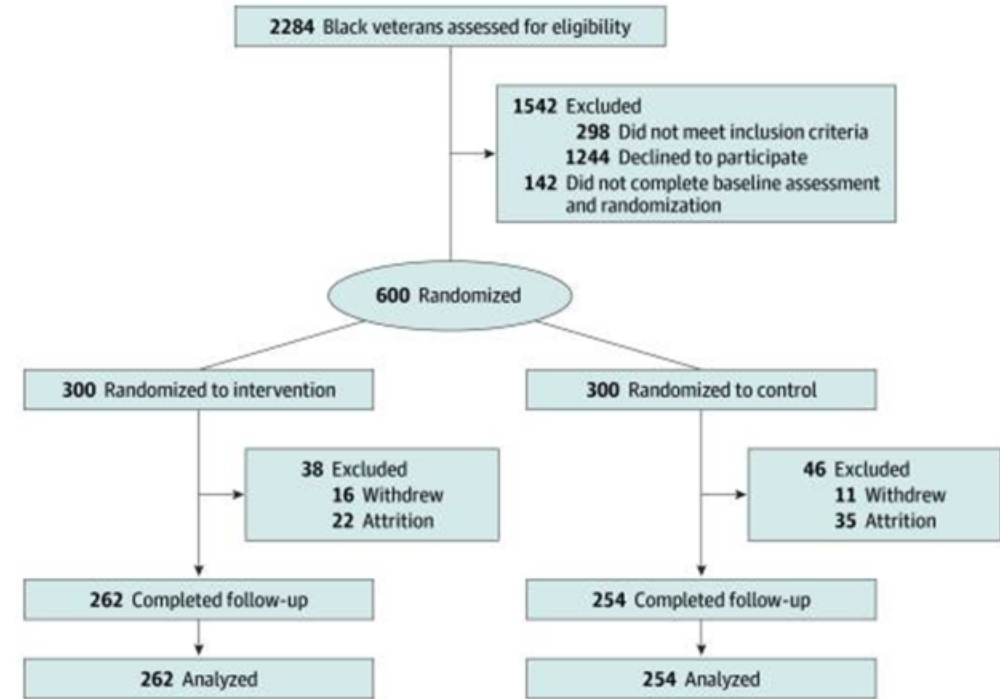
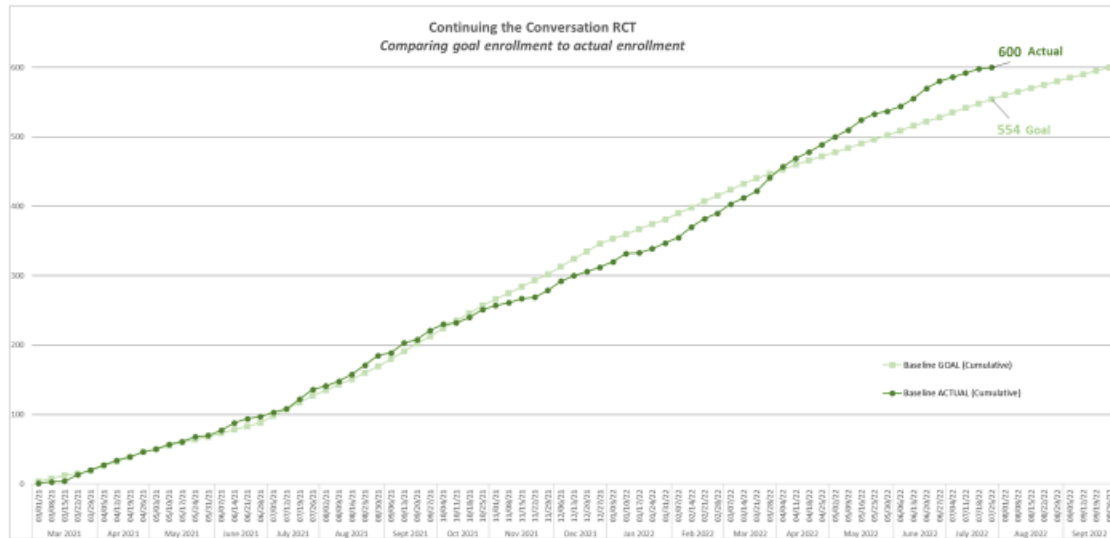
Components of Intervention & Control Arms

Component	Intervention arm	Control arm
Videos of Black veteran storytellers	Yes	NA
6-mo texting protocol		
Start text messages (3 total)	Yes	Yes
Narrative text messages based on favorite storyteller (3 per wk on alternating wks; 34 total) ^a	Yes	NA
Educational text messages (3 per wk on alternating wks; 34 total) ^a	Yes	NA
Bidirectional text messages with follow-up content, including hyperlinks to relevant resources (1-4 per wk; 35 total)	Yes	Yes
Total number of text messages planned	106	38

Abbreviation: NA, not applicable.

^a For the intervention, 1 week of narrative text messages alternated with 1 week of educational text messages.

Recruitment and Consort Diagram



From: **Text Messaging and Video Stories to Support Hypertension Self-Management in Black Veterans: A Randomized Clinical Trial**

JAMA Netw Open. 2025;8(11):e2541342.
doi:10.1001/jamanetworkopen.2025.41342

Participant Demographics

- Mean [SD] age, 64.0 [9.1] years),
- Over 20% of participants were Women Veterans (21.3%)

Population recruited has socioeconomic and educational vulnerabilities:

- 74% did not have college/post grad degrees
- More than half* (52.8%) reported combined family income \leq \$40K
- 43.8% reported it was at least somewhat hard to pay for basic necessities
- 28.6% reported at least somewhat hard to pay for medical care

* Of those providing information on family income, see Table

Table 1. Demographic Characteristics of Black Veterans in Study (N = 600)

Characteristic	Veterans, No. (%)		
	Intervention arm	Control arm	All
Age, y			
30-49	18 (6.3)	13 (4.3)	31 (5.3)
50-69	184 (64.1)	196 (65.6)	380 (64.8)
\geq 70	85 (29.6)	90 (30.1)	175 (29.9)
Total	287 (100)	299 (100)	586 (100)
Sex			
Female	69 (23.2)	58 (19.5)	127 (21.3)
Male	229 (76.8)	240 (80.5)	469 (78.7)
Total	298 (100)	298 (100)	596 (100)
Educational level			
Some high school	9 (3.1)	8 (2.7)	17 (2.9)
High school diploma	77 (26.4)	83 (27.7)	160 (27.0)
Some college or technical school	125 (42.8)	136 (45.3)	261 (44.1)
College degree	41 (14.0)	43 (14.3)	84 (14.2)
Postgraduate training	40 (13.7)	30 (10.0)	70 (11.8)
Total	292 (100)	300 (100)	592 (100)
Difficulty paying for basic necessities			
Very hard	12 (4.2)	17 (5.8)	29 (5.0)
Hard	21 (7.3)	28 (9.5)	49 (8.4)
Somewhat hard	97 (33.7)	80 (27.2)	177 (30.4)
Not very hard	158 (54.9)	169 (57.5)	327 (56.2)
Total	288 (100)	294 (100)	582 (100)
Difficulty paying for medical care			
Very hard	17 (5.9)	12 (4.1)	29 (5.0)
Hard	23 (8.0)	27 (9.2)	50 (8.6)
Somewhat hard	41 (14.3)	46 (15.8)	87 (15.0)
Not very hard	206 (71.8)	207 (70.9)	413 (71.3)
Total	287 (100)	292 (100)	579 (100)
Combined family income, \$			
\leq 15 000	43 (19.1)	32 (14.3)	75 (16.7)
15 001-20 000	26 (11.6)	26 (11.6)	52 (11.6)
20 001-40 000	52 (23.1)	58 (25.9)	110 (24.5)
40 001-60 000	47 (20.9)	45 (20.1)	92 (20.5)
60 001-80 000	29 (12.9)	29 (12.9)	58 (12.9)
\geq 80 001	28 (12.4)	34 (15.2)	62 (13.8)
Total	225 (100)	224 (100)	449 (100)

High completion rate...

86.0% (516/600) completed the 6-month follow-up.
(262 in intervention arm, 254 in control arm)

... but non-completers more likely to be from vulnerable population

Participants who withdrew or lost to follow-up more likely to report difficulty paying for basic necessities (63.8% [51 of 80] vs 40.6% [204 of 502]; $P < .001$) and difficulty paying for medical care (44.4% [36 of 81] vs 26.1% [130 of 498]; $P < .001$).

Primary Outcome: We did not demonstrate significant improvement in blood pressure for CTC participants.

Difference in Differences Analysis

There was **no significant difference between arms** in:

Mean change of Systolic BP

(DID, -0.8 mm Hg; 95% CI, -3.9 to 2.3 mm Hg; $P = .62$) or

Mean change in diastolic BP

(DID, 0.4 mm Hg; 95% CI, -1.6 to 2.4 mm Hg; $P = .70$)

or in **Secondary outcomes** (see next slide)

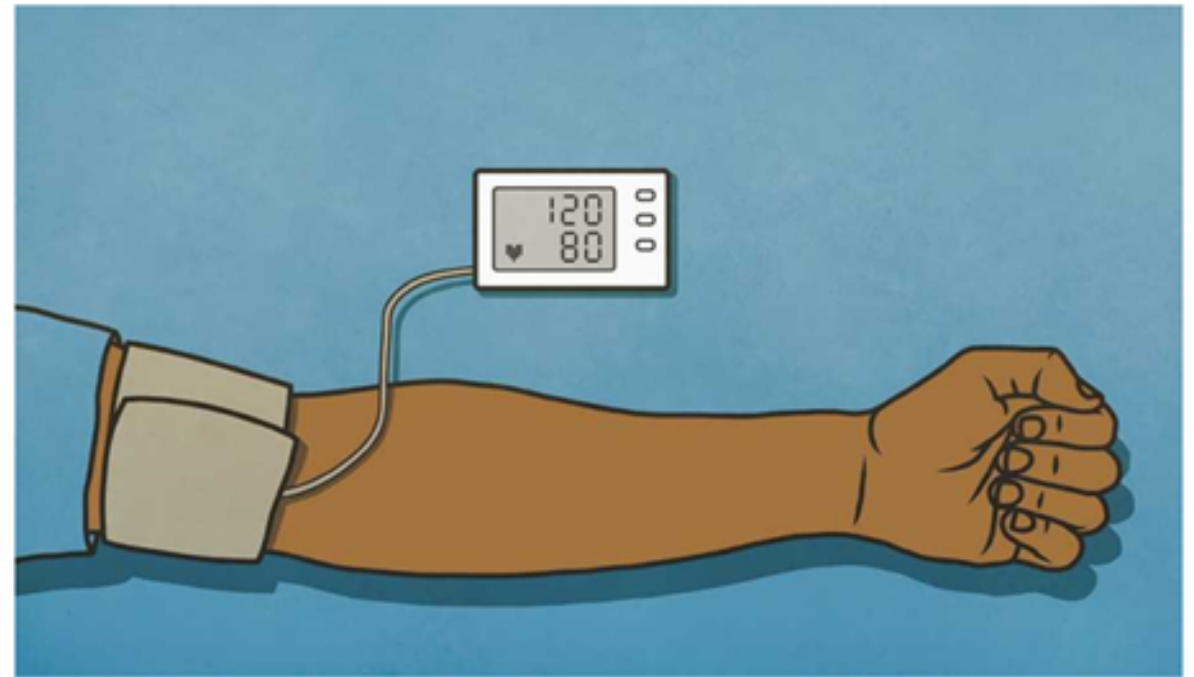


Table 3. Descriptive Statistics and Difference-in-Differences Analysis for Primary and Secondary Outcomes (N = 516)

Measure	Mean (SD) values				Adjusted DID between arms (95% CI) ^a
	Intervention arm		Control arm		
	Baseline	Follow-up	Baseline	Follow-up	
Systolic BP, mm Hg	135 (16)	132 (17)	135 (18)	133 (15)	-0.8 (-3.9 to 2.3)
Diastolic BP, mm Hg	82 (11)	80 (11)	80 (12)	78 (12)	0.4 (-1.6 to 2.4)
H-SCALE: Medication adherence score ^b	18 (4)	19 (4)	18 (4)	19 (4)	-0.2 (-1.0 to 0.6)
H-SCALE: Low-salt diet score ^b	5 (1)	6 (1)	5 (1)	5 (1)	0.1 (-0.1 to 0.2)
H-SCALE: Physical activity score ^b	6 (4)	7 (4)	6 (5)	7 (4)	0.4 (-0.5 to 1.3)
H-SCALE: Weight management score ^b	36 (8)	38 (7)	35 (8)	37 (8)	0.01 (-1.1 to 1.1)
MASES-R: Medication adherence self-efficacy score ^c	4 (0)	4 (0)	4 (0)	4 (0)	-0.01 (-0.1 to 0.1)
PEPPI: Self-efficacy score ^d	22 (4)	22 (4)	22 (4)	22 (4)	0.01 (-0.7 to 0.7)
Trust in physician score ^e	44 (8)	45 (8)	43 (9)	44 (9)	0.7 (-0.8 to 2.1)
Trust in VA score ^f	32 (8)	33 (8)	32 (8)	32 (8)	0.8 (-0.4 to 2.0)
H-SCALE: Days smoking cigarettes in past wk ^b	1 (3)	1 (2)	1 (3)	1 (2)	0.1 (-0.2 to 0.3)
H-SCALE: Days drinking alcohol in past wk ^b	1 (2)	1 (2)	1 (2)	1 (2)	0.1 (-0.1 to 0.3)

Descriptive Statistics and Difference-in-Differences Analysis for Primary and Secondary Outcomes (N = 516) Abbreviations: BP, blood pressure; DID, difference-in-difference; H-SCALE, Hypertension Self-Care Activity Level Effects; MASES-R, Medication Adherence Self-Efficacy Scale–Revised; PEPPI, Perceived Efficacy in Patient-Physician Interactions; VA, US Department of Veterans Affairs.

^a Adjusted for correlation within veterans.

^b H-SCALE score ranges: medication adherence: 0 to 21, with 21 indicating perfect adherence; low-salt diet: 0 to 7, with 6 or higher indicating low-salt diet on 6 of 7 days; physical activity: 0 to 14, with 8 or higher indicating adherence to physical activity recommendations; smoking: 0 to 7, with 0 indicating nonsmoker; weight management (5-point Likert scale: strongly disagree to strongly agree): 10 to 50, with 40 or higher indicating adherence to good weight management practices; and alcohol use: 0 to 7, with 0 indicating abstinence.

^c MASES-R score range: 1 to 4, with 4 indicating greater medication self-efficacy.

^d PEPPI score range: 5 to 25, with 25 indicating greater self-efficacy talking to physicians.

^e Trust in physician score range: 1 to 10, with higher values indicating higher trust.

Subgroup analysis for those with elevated baseline BP*

- Nonsignificant DID for SBP (DID 3.7 mm Hg; 95% CI -0.4 to 7.8 mm Hg)
- Greater decrease in DBP for control (DID, 3.7 mm Hg; 95% CI 0.8-6.6 mm Hg)

* SBP>140 and/or DBP>90; n=117
intervention; 103 control

...we did show significant decreases in BP for both arms.

Marginal improvements in systolic and diastolic BP were seen in both arms

- Intervention:

mean BP 135/82 (baseline)

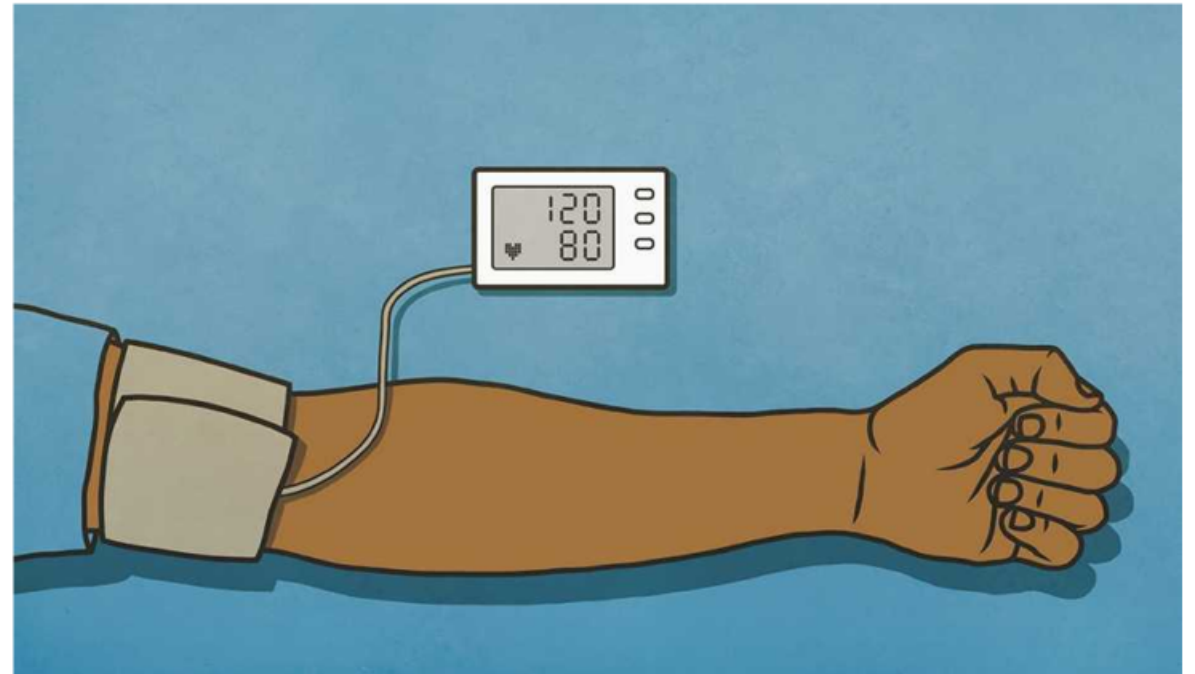
mean BP 132/80 (follow-up)

- Control:

Mean BP 135/80 (baseline)

Mean BP 133/78 (follow-up)

Mean systolic (-2.1 mm Hg; 95% CI, -3.7 to -0.6 mm Hg; $P = .006$) and diastolic (-1.8 mm Hg; 95% CI, -2.8 to -0.8 mm Hg; $P = .001$) blood pressure measurements decreased significantly for the entire cohort.



Fidelity

Fidelity: % of text messages delivered (# delivered/ # intended).

Fidelity, Overall: Treatment fidelity across both arms was 92.0%

Across all 600 Veterans, mean # of texts delivered over 6 months:

- Intervention: 97.3* (SD 27.2)
- Control: 35.1** (SD 5.1)

*106 messages intended for delivery in Intervention arm

**38 intended in the control arm

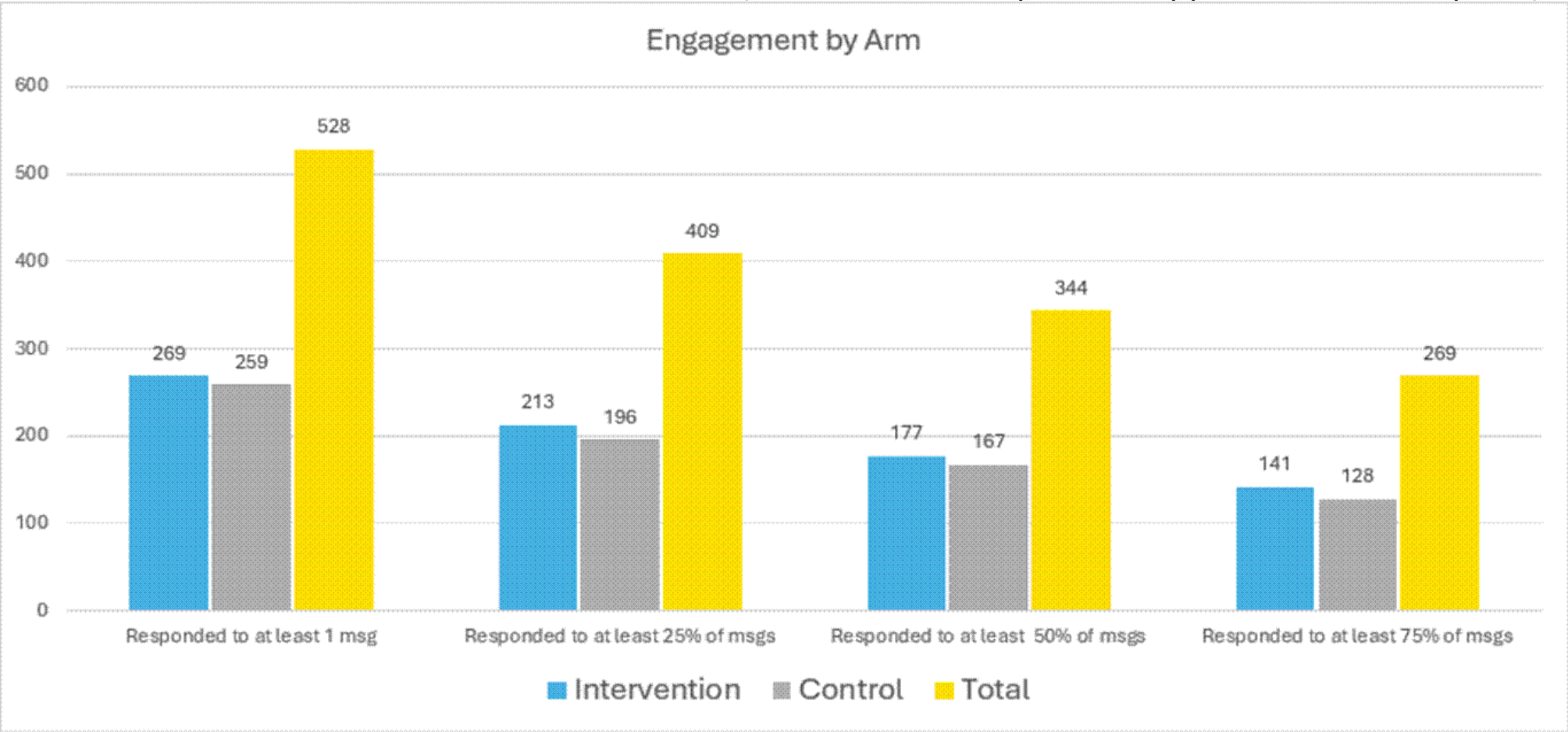
Engagement

Engagement (Overall): % of completed responses compared with all possible opportunities to respond.

Engagement (Sustained): % replying to at least one message/week

Engagement

Overall rate of response to interactive text messages: 57.5% (11,427 of 19,875 possible opportunities to respond).
Among those who completed follow-up, the response rate was 60.7% (10,564 of 17,407 possible opportunities to respond).

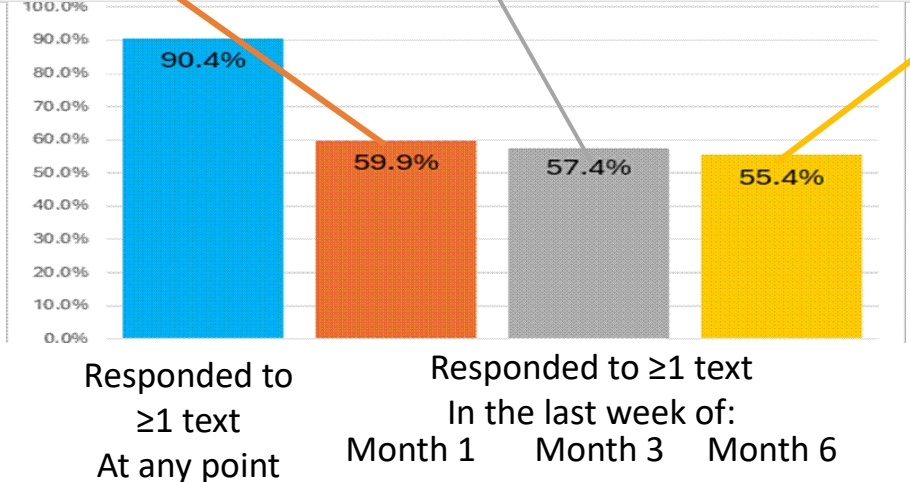
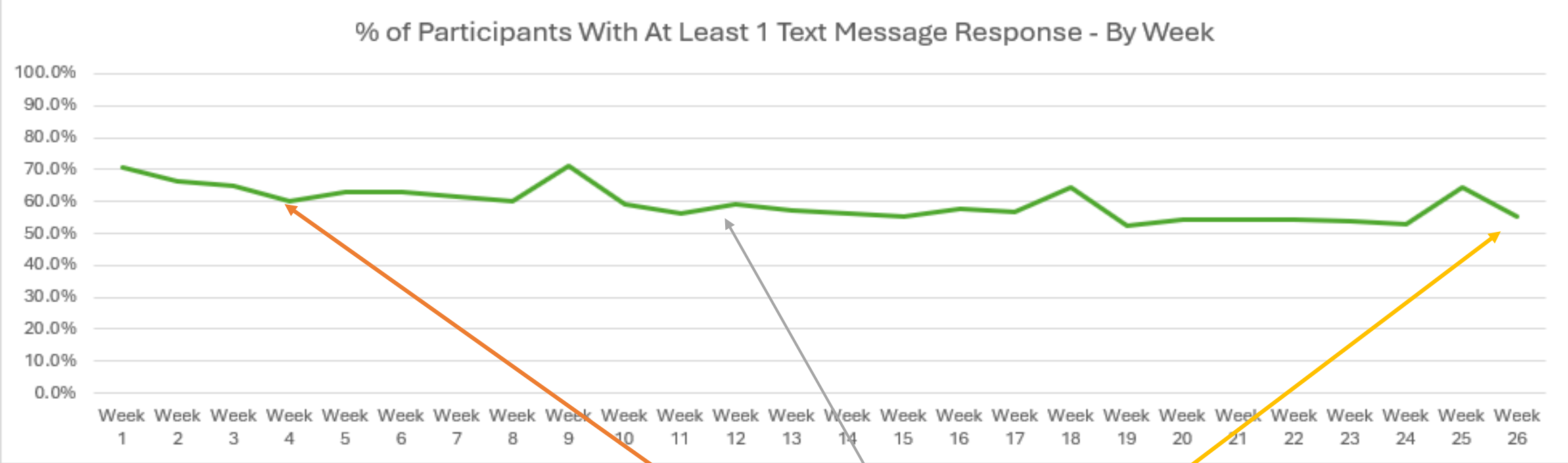


35 interactive text messages/arm

Overall: 600 participants* 35 = 21,000; Denominator is lower due to some who withdrew partway through and some undelivered messages

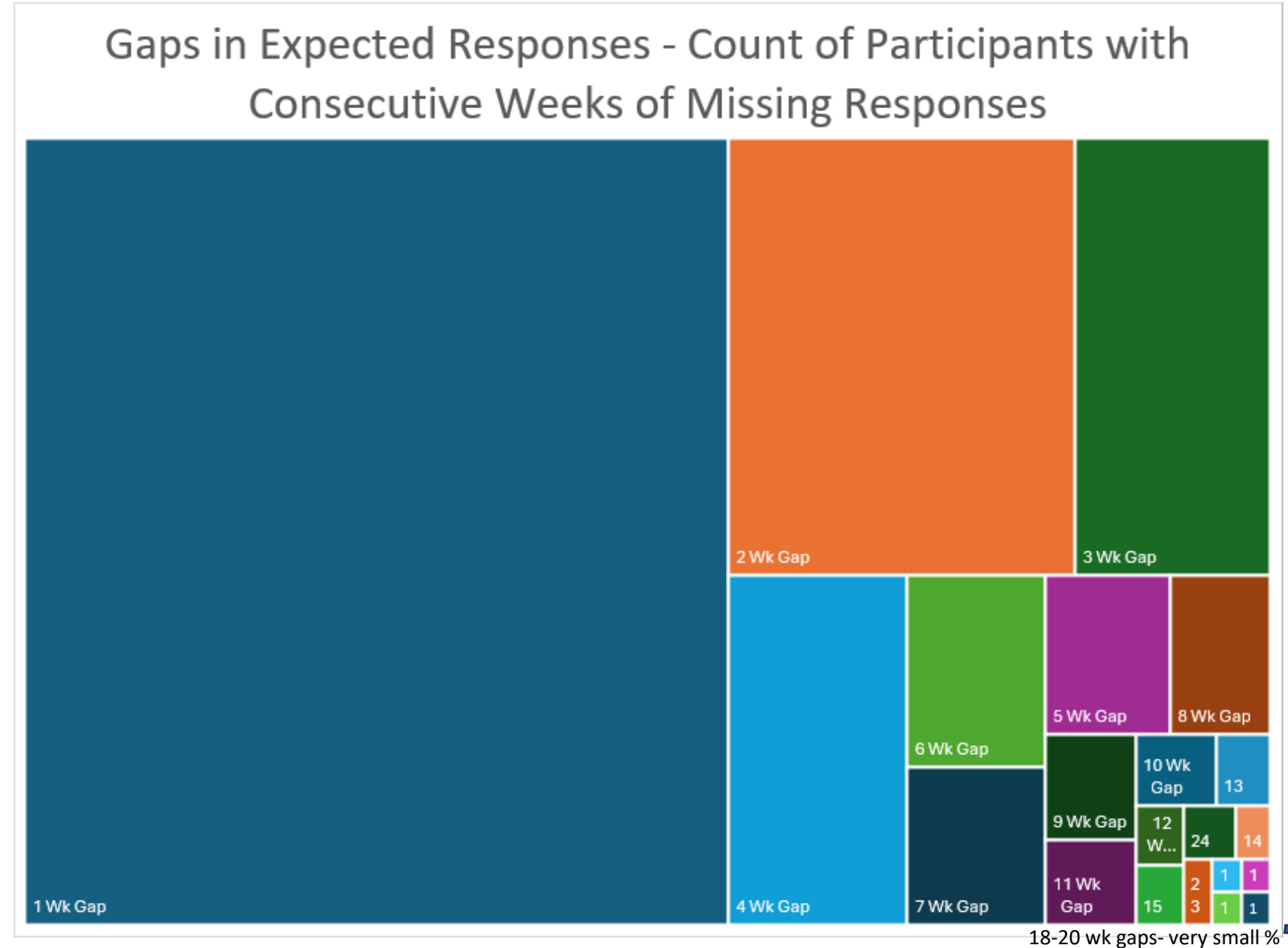
Completed follow-up: 516*35 = 18,060; Denominator is lower due some undelivered messages

Measuring sustained engagement



Note:
 Weeks 9, 18, and 25 were 'reflect/re-engage' periods where we asked 4 assessment questions (instead of 1) and provided no new content

What it means to integrate outreach into daily life... understanding the ebb & flow of engagement.



eTable 7. Experiences and Reactions to Watching Video-taped Veteran Stories about Hypertension Self-Management^a

N (%)	Not at all				Very Much																
While I was watching the video, activity going on in the room around me 242(100.0%)	203 (83.9%)	8 (3.3%)	8 (3.3%)	7 (2.9%)	4 (1.7%)	2 (.8%)	10 (4.1%)														
I was mentally involved in the video while watching it. 241(100.0%)	8 (3.3%)	3 (1.2%)	4 (1.7%)	15 (6.2%)	14 (5.8%)	28 (11.6%)	169 (70.1%)														
The video affected me emotionally. 242(100.0%)	56 (23.1%)	26 (10.7%)	20 (8.3%)	32 (13.2%)	33 (13.6%)	23 (9.5%)	52 (21.5%)														
I found my mind wandering while watching the video. 242(100.0%)	175 (72.3%)	21 (8.7%)	11 (4.6%)	11 (4.6%)	7 (2.9%)	9 (3.7%)	8 (3.3%)														
The events in the video are relevant to my everyday life. 237(100.0%)	17 (7.2%)	3 (1.3%)	6 (2.5%)	17 (7.2%)	37 (15.6%)	37 (15.6%)	120 (50.6%)														
The Veteran in this video...	Strongly Disagree				Disagree				Neither				Agree				Strongly Agree				
Thinks like me. 240(100.0%)	7(2.9%)				17(7.1%)				25(10.4%)				128(53.3%)				63(26.3%)				79.6%
Comes from a background like mine. 237(100.0%)	14(5.9%)				34(14.4%)				31(13.1%)				110(46.4%)				48(20.3%)				66.7%
Has an education like mine. 227(100.0%)	18(7.9%)				44(19.4%)				63(27.8%)				79(34.8%)				23(10.1%)				
Has values like mine. 235(100.0%)	3(1.3%)				11(4.7%)				28(11.9%)				133(56.6%)				60(25.5%)				82.1%
Is a lot like me 234(100.0%)	8(3.4%)				26(11.1%)				38(16.2%)				120(51.3%)				42(18.0%)				69.2%

High rates of engagement and follow-up for all participants who received text messages

- 86% completed 6-month follow-up.
- Response rates: 60.7% among those completing follow-up; 57% among all participants across 6 months.
- > 55% of participants responded to ≥ 1 text in the last week of months 1, 3 & 6.
- 79.5% (410/56) described texts as helpful motivators for improving health.
- Among intervention participants, 92.5% agreed with the statement: "I could identify with the Veteran in the video."

Participants described intervention as one that conveyed empathy:

"I liked this study. It showed concern."

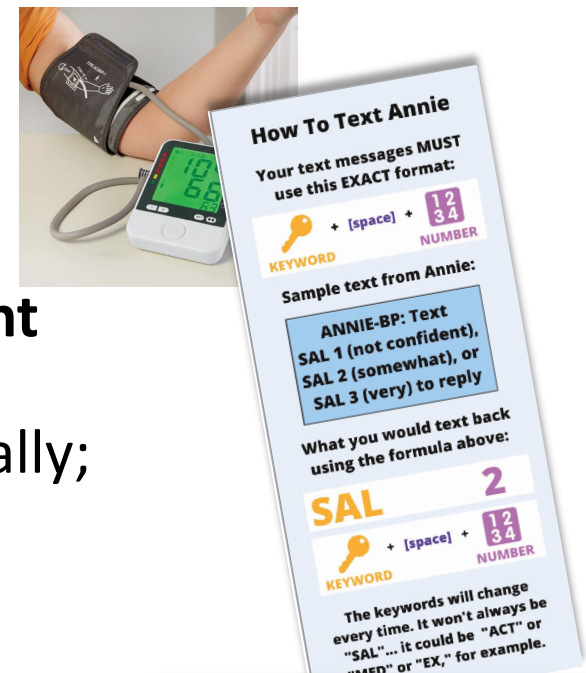


Limitations & Reflections on findings

- Active comparator arm may have minimized differences
 - 1-4 interactive texts/week with follow-up messages containing links to resources)
- May have selected already-motivated group
 - Engaged in VA care over prior year
- Home BPs met criteria for Stage 1 HTN but not markedly elevated
- Home BP checks could have decreased accuracy
- SDOH-related barriers may have limited access to some healthful strategies (healthier food, exercise/lifestyle choices)

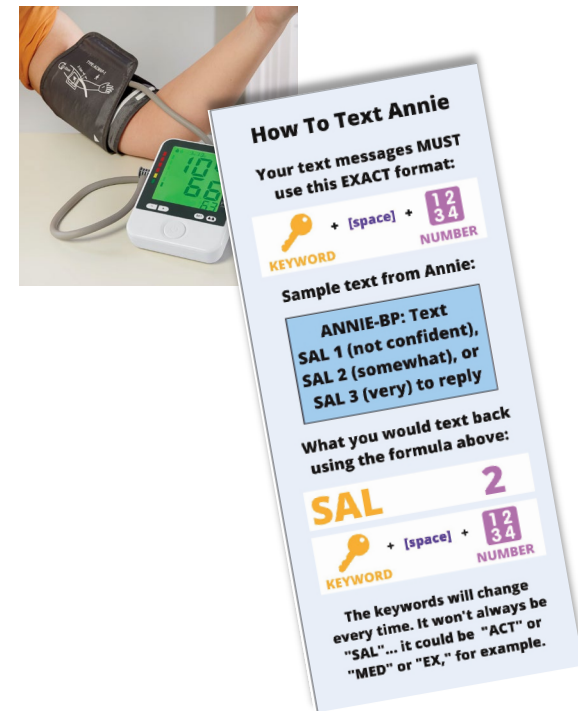
Lessons Learned and Future Implications

- **We were able to use an entirely remote model to support enrollment and independent navigation after enrollment**
 - Phone support for texting enrollment; videos provided electronically; BP cuffs mailed.
 - Only 5% (26/516) reported needing to contact study staff for assistance
- **Effective Engagement Strategy**
 - Interactive text messages (both arms) were an effective way to **maintain engagement in a multi-month study** and may serve as a useful engagement strategy for future longitudinal interventions supporting Black Veterans and other study participants.





Between March 2021 and July 2022,
our program provided
over 35,000 unique moments of outreach,
extending regular, brief check-ins
to our Veterans,
each a reminder that the VA cares and wants to support them
in their hypertension self-management journey



A memorable story stays with the listener,
as an inspiration and a guide.
CTC texts aim to bring the storyteller back into the
Veteran's everyday life,
reminding and reinforcing as our study participants
engage in the numerous daily decisions that will
impact their blood pressure and their lives.



VA



U.S. Department of Veterans Affairs

Veterans Health Administration
Bedford Healthcare System

Thank you.
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