Personalized Patient Data and Behavioral Nudges to Improve Adherence to Chronic Cardiovascular Medications (The Nudge Study) Updates

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University of Colorado Anschutz Medical Campus
NIH Collaboratory Grand Rounds
AGENDA

• BACKGROUND
• NUDGE STUDY OVERVIEW
• PILOT YEAR FINDINGS
• CURRENT STATUS OF PRAGMATIC STUDY
• QUESTIONS
WHAT IS A NUDGE?

• A small change in choice framing or choice architecture
  • Example: “Putting the fruit at eye level counts as a nudge. Banning junk food does not.”

• Strategic reminder that can potentially help people adopt healthy behaviors

• Nobel prize winning economists have shown this can work to improve nutrition, physical activity and other behaviors
TYPES OF NUDGES EMPLOYED IN THIS STUDY

• Social Norms: Others like you are performing this behavior
  • Examples—testimonials “People like Joseph have had success in remembering to pick up his meds by making it a habit to drive by his pharmacy on the way home from work”

• Behavioral Commitments: Making a stated intention to take action
  • Example--”Will you mention to a family member your intention to refill your medications today?”

• Narrative stories: Evoking emotional connection
  • Example—”Marta has committed to her daughter that she will stay on top of her refills so she’ll be around longer for her grandkids!”
CELLPHONE USE IS UBIQUITOUS

https://www.pewresearch.org/fact-tank/2013/06/06/cell-phone-ownership-hits-91-of-adults/
https://instantcensus.com/blog/almost-90-of-americans-have-unlimited-texting
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CELLPHONE USE IS UBIQUITOUS

88% of US cellphones have unlimited text messaging

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https://instantcensus.com/blog/almost-90-of-americans-have-unlimited-texting
MEDICATION NONADHERENCE

- Up to 50% of patients do not take their CV medications as prescribed
- Nonadherence associated with increased CV events
- Prior attempts to improve adherence are costly, time consuming and have inconsistent benefit
STUDY OBJECTIVES

• Conduct a pragmatic patient-level randomized intervention across 3 HCS to improve adherence to chronic CV medications.
  • Primary outcome: Medication adherence defined by the proportion of days covered (PDC) using pharmacy refill data.
  • Secondary outcomes:
    • Intermediate clinical measures (e.g., BP control)
    • CV clinical events (e.g., hospitalizations)
    • Healthcare utilization
    • Costs
STUDY SETTING

- Denver Health Clinics
- VA Eastern Colorado HCS Clinics
- UCHealth Clinics
## PATIENT POPULATION

- Adult patients diagnosed with ≥ 1 condition of interest and prescribed ≥ 1 medication of interest

<table>
<thead>
<tr>
<th>Condition</th>
<th>Classes of medications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>Beta-blockers (B-blockers), Calcium Channel Blocker (CCB), Angiotensin converting enzyme inhibitors (ACEi), Angiotensin Receptor Blockers (ARB), Thiazide diuretic</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>HMG CoA reductase inhibitor (Statins)</td>
</tr>
<tr>
<td>Diabetes</td>
<td>Alpha-glucosidase inhibitors, Biguanides, DPP-4 inhibitors, Sodium glucose transport inhibitor, Meglitinides, Sulfonylureas, Thiazolidinediones, and statins</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>PGY-2 inhibitor (Clopidogrel, Ticagrelor, Prasugrel, Ticlopidine), B-blockers, ACEi or ARB and statins</td>
</tr>
<tr>
<td>Atrial fibrillation</td>
<td>Direct oral anticoagulants, B-blockers, CCB</td>
</tr>
</tbody>
</table>

- English or Spanish-speaking
OPT-OUT STUDY DESIGN

1. Identify patients with CV disease and prescribed medication
2. Send opt-out packets to eligible patients
3. Patients who do not return opt-out form are eligible for enrollment
4. Monitor for gaps with medication refills
INTERVENTION ARMS

Usual Care

Generic Texts

You are due for a refill on your meds

[Name]
Congrats! You’ve filled meds on time at least 60% of the time. Make it 100%!

Optimized Texts

[Name] What problems do you have getting refills?
Text
1=transport
2=cost
3=time

Optimized Texts + AI Chat Bot

2, 3
YEAR 1 OBJECTIVES

- **Aim 1:** Develop message library and chat bot content library
- **Aim 2:** Determine the potential population eligible for the intervention across the 3 HCS
- **Aim 3:** Conduct a pilot study of the intervention
This is a message from the Nudge Study at the VA.

Hi Steve, You are due to refill your metformin.

Para mensajes en Español por favor responda Español.

If you have already filled your prescription let us know by replying DONE.

Recurring Msgs. Reply STOP to quit, HELP for info. Msg&D ataRatesMayApp

View all
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View all
SAMPLE MESSAGES SENT

Introduction

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View all

2:00 PM
SAMPLE MESSAGES SENT

Introduction

Generic Nudge

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Temporary opt-out

View all 2:00 PM
SAMPLE MESSAGES SENT

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View all

2:00 PM

Generic Nudge

Temporary opt-out

Study opt-out
This is a message from the Nudge Study at Denver Health.

Hi Steve,

We noticed you haven’t refilled your Metformin. Reply 1= I’ll get them refilled in the next 2 days. Reply 2= I’m still working on a plan to get this done

This is the 1st of 5 messages you’ll receive until you can refill
This is a message from the Nudge Study at Denver Health.

Hi Steve,

We noticed you haven't refilled your Metformin. Reply 1= I'll get them refilled in the next 2 days. Reply 2= I'm still working on a plan to get this done

This is the 1st of 5 messages you'll receive until you can refill
This is a message from the Nudge Study at Denver Health.

Hi Steve,

We care about you. Your medications are important! Tell us which of these might affect you? (choose one)

a. If I feel better or worse I stop
b. Tough to remember
c. I don't understand what to take
d. Other

This is the 3rd of 5 messages you'll receive
This is a message from the Nudge Study at Denver Health.

Hi Steve,

We care about you. Your medications are important! Tell us which of these might affect you? (choose one)

a. If I feel better or worse I stop
b. Tough to remember
c. I don't understand what to take
d. Other

This is the 3rd of 5 messages you'll receive
PATIENT FEEDBACK ABOUT MESSAGES

• “I like that the messages put the ownership on self.”

• “I like the ones that relate to a hospital stay. I’ve been in the hospital and once you have done that you will want to avoid it in the future. It’s good motivation for me to stay out of the hospital.”

• “The message validates my feelings that it is hard to take meds. Realizing a break down in your body, the meds are the confirmation of that.”

• “This message makes me smile. It lightens it up and this can be a serious topic so it is nice to smile.”
• Retrospectively identified patients who would potentially be eligible to be enrolled at each HCS.
DETERMINE THE POTENTIAL POPULATION ELIGIBLE FOR THE INTERVENTION ACROSS THE 3 HCS

• Retrospectively identified patients who would potentially be eligible to be enrolled at each HCS

• Number of patients with at least 1 CV condition and 1 medication class prescribed
  • DH: 12,493
  • VA: 4,062
  • UCH: 1,082
DETERMINE THE POTENTIAL POPULATION ELIGIBLE FOR THE INTERVENTION ACROSS THE 3 HCS

- Retrospectively identified patients who would potentially be eligible to be enrolled at each HCS
- Number of patients with at least 1 CV condition and 1 medication class prescribed
  - DH: 12,493
  - VA: 4,062
  - UCH: 1,082
GAPS IN MEDICATION REFILLS
GAPS IN MEDICATION REFILLS

Number of patients with a 7-day refill gap:
DH: 10,284
VA: 2,859
UCH: 821
• **Opt-out packets** were sent to 400 total patients meeting inclusion criteria (200 patients per each HCS)

• Packet included an information sheet, opt-out sheet, self-addressed and stamped envelope
  • Two-week deadline to return opt-out form

**CONDUCT A PILOT STUDY OF THE INTERVENTION**
- **Opt-out packets** were sent to 400 total patients meeting inclusion criteria (200 patients per each HCS)
- Packet included an information sheet, opt-out sheet, self-addressed and stamped envelope
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### CONDUCT A PILOT STUDY OF THE INTERVENTION

<table>
<thead>
<tr>
<th></th>
<th>Total packets sent</th>
<th>Signed &amp; returned an opt-out forms</th>
<th>Packets returned by USPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denver Health</td>
<td>200</td>
<td>13 (6.5%)</td>
<td>6 (3.0%)</td>
</tr>
<tr>
<td>VA</td>
<td>200</td>
<td>37 (18.5%)</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>400</td>
<td>50 (12.5%)</td>
<td>6 (2.6%)</td>
</tr>
</tbody>
</table>
### Characteristics of eligible patients in the pilot study

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Not Enrolled</th>
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<th>p</th>
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<tbody>
<tr>
<td><strong>Total N</strong></td>
<td>79</td>
<td>207</td>
<td></td>
</tr>
<tr>
<td><strong>DEMOGRAPHICS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age - Mean (SD)</td>
<td>62.1 (10.9)</td>
<td>61.7 (11.9)</td>
<td>0.810</td>
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<tr>
<td>Male</td>
<td>64.6% (51)</td>
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</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td>0.050</td>
</tr>
<tr>
<td>American Indian, Alaska Native</td>
<td>1.3% (1)</td>
<td>0% (0)</td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>0% (0)</td>
<td>0% (0)</td>
<td></td>
</tr>
<tr>
<td>Black, African American</td>
<td>24.0% (19)</td>
<td>19.3% (40)</td>
<td></td>
</tr>
<tr>
<td>Native Hawaiian, Pacific Islander</td>
<td>2.5% (2)</td>
<td>0% (0)</td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>63.3% (50)</td>
<td>72.5% (150)</td>
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<td><strong>QUALIFYING CONDITIONS</strong></td>
<td></td>
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<td></td>
</tr>
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<tr>
<td>CAD</td>
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<td>20.3% (42)</td>
<td>0.238</td>
</tr>
<tr>
<td>Diabetes</td>
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<td>58.0% (120)</td>
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</table>
### Message responses of patients assigned into intervention arms

<table>
<thead>
<tr>
<th></th>
<th>Arm 1</th>
<th>Arm 2</th>
<th>Arm 3</th>
<th>Arm 4</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N=</td>
<td>51</td>
<td>53</td>
<td>52</td>
<td>52</td>
<td>208</td>
</tr>
<tr>
<td>Responded Stop</td>
<td>-</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Responded Done</td>
<td>-</td>
<td>12</td>
<td>11</td>
<td>9</td>
<td>32</td>
</tr>
</tbody>
</table>

**DONE:** Filled medication

**STOP:** Opt out of study

**ARM 2:** GENERIC TEXT
**ARM 3:** NUDGE TEXT
**ARM 4:** NUDGE TEXT + AI CHATBOT
Text Messages from Patients

• Who is this?”
• “I thought my medications were up to date”
• “Can you tell me which medications I’m late on?”
• “Mas informacion no se cual medicamento” (I need more information because I do not know what medications [I need]”
• “No se ha cambiado los medicamentos siguen los mismos” (I haven’t changed medication—I’m still taking the same ones)
• Yano tengo el descuento por eso no e ido a pedir me medicina (I no longer have the medication discount and haven’t gone to get my medication)
## Medication Fills

<table>
<thead>
<tr>
<th></th>
<th>Arm 1</th>
<th>Arm 2</th>
<th>Arm 3</th>
<th>Arm 4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total N</strong></td>
<td>50</td>
<td>53</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td><strong>N Medications Gapping at Baseline - Median (IQR)</strong></td>
<td>2 (1, 3)</td>
<td>1 (1, 3)</td>
<td>1 (1, 2)</td>
<td>2 (1, 3)</td>
</tr>
<tr>
<td><strong>Filled at Least 1 Gapping Medication</strong></td>
<td>18.0% (9)</td>
<td>32.1% (17)</td>
<td>32.7% (17)</td>
<td>26.9% (14)</td>
</tr>
<tr>
<td><strong>Filled All Gapping Medications</strong></td>
<td>10.0% (5)</td>
<td>17.0% (9)</td>
<td>21.2% (11)</td>
<td>15.4% (8)</td>
</tr>
</tbody>
</table>

**ARM 2: GENERIC TEXT**  
**ARM 3: NUDGE TEXT**  
**ARM 4: NUDGE TEXT + AI CHATBOT**
# Years 2-5: PROJECTED TIMELINE

<table>
<thead>
<tr>
<th>Event</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic site visits</td>
<td>7/10/19 – 9/19/19</td>
</tr>
<tr>
<td>Patient opt-out period</td>
<td>9/1/19 – 9/30/19</td>
</tr>
<tr>
<td>Intervention period</td>
<td>10/1/19 – 6/30/21</td>
</tr>
<tr>
<td>Patient follow-up</td>
<td>7/1/21 – 6/30/22</td>
</tr>
<tr>
<td>Analysis &amp; Dissemination</td>
<td>7/1/22 – 6/30/23</td>
</tr>
</tbody>
</table>

**Projected Timeline**

- **Project Start**: 7/1/19
- **First messages sent at VA**: 10/1/19
- **First messages sent at DH**: 11/1/19
- **Expansion to two additional clinics at DH**: 1/2/2020
- **Messaging complete; 5,000 pts enrolled**: 6/30/21
- **Enroll at UCH if data are suitable**: TBD 2020
- **Project ends**: 6/30/23
Study Findings

MILESTONES

PATIENT ENROLLMENT FLOW TO DATE

- Packets sent to eligible patients: (N=8349)
  -opt-out surveys returned (N=212, 31.22%)
    - Complete=153, partial=56, blank=3
  - Patients that opted out (N=679, 8.13%)
    - Packets returned by USPS (N=262, 3.13%)
  - Patients enrolled for gap monitoring (N=7408)
OPT-OUT PATIENTS: DEMOGRAPHICS

Age range

- 40 years or younger: 3
- 41-50: 14
- 51-60: 29
- 61-70: 75
- 71-80: 59
- Over 80 years old: 18
OPT-OUT PATIENTS: DEMOGRAPHICS

- **Gender**: M (113)  F (1)
- **Age range**:
  - 40 years or younger: 3
  - 41-50: 14
  - 51-60: 29
  - 61-70: 75
  - 71-80: 59
  - Over 80 years old: 18
OPT-OUT PATIENTS: DEMOGRAPHICS

**Age range**
- 40 years or younger: 3
- 41-50: 14
- 51-60: 29
- 61-70: 75
- 71-80: 59
- Over 80 years old: 18

**Gender**
- M: 113
- F: 80

**Race**
- American Indian/Alaska Native: 10
- Asian: 2
- Black/African American: 31
- Native Hawaiian/Other Pacific Islander: 1
- White/Caucasian: 92
- Hispanic or Latino: 76
- Other: 8
Have you participated in medical research before?

- a. Yes
- b. No
- c. Don’t know
Which of the following reasons contributed to your decision to opt-out of the Nudge Study? Please circle all that apply:

- a. I am worried that it will take too much time to participate
- b. I am worried that participating would be risky to my health
- c. I am worried about privacy
- d. I don’t trust the people doing this research
- e. I am worried that it will cost me money
- f. I am uncomfortable using technology
- g. Other (please specify)

Common “other” responses: "Don’t need reminders" "Don’t have a phone" "I do not need medications" "Don’t trust people behind computers" "Don’t want to participate"
<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The VA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The VA does its best to make patients’ health better.</td>
<td>23</td>
<td>31</td>
<td>5</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Patients receive high quality medical care from the VA.</td>
<td>24</td>
<td>26</td>
<td>8</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>The VA gives excellent medical care.</td>
<td>23</td>
<td>24</td>
<td>11</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>The VA experiments on patients without them knowing.</td>
<td>0</td>
<td>5</td>
<td>18</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>2. Research</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctors who do medical research care only about what is best for each patient.</td>
<td>13</td>
<td>15</td>
<td>21</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Doctors tell their patients everything they need to know about being in a research study.</td>
<td>8</td>
<td>16</td>
<td>27</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Medical researchers treat people like “guinea pigs.”</td>
<td>3</td>
<td>4</td>
<td>26</td>
<td>12</td>
<td>7</td>
</tr>
<tr>
<td>I completely trust doctors who do medical research.</td>
<td>9</td>
<td>11</td>
<td>25</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>3. Doctors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sometimes doctors care more about what is convenient for them than about their patients' medical needs.</td>
<td>4</td>
<td>11</td>
<td>15</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Doctors are extremely thorough and careful.</td>
<td>14</td>
<td>21</td>
<td>20</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>I completely trust doctors' decisions about which medical treatments are best.</td>
<td>11</td>
<td>17</td>
<td>22</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>A doctor would never mislead me about anything.</td>
<td>14</td>
<td>11</td>
<td>23</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>All in all, I trust doctors completely</td>
<td>13</td>
<td>18</td>
<td>21</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>
**TRUST IN HEALTH CARE-DHHA (N=144, COMPLETE = 99, PARTIAL 45, BLANK = 0)**

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. DHHA</td>
<td>DH does its best to make patients’ health better.</td>
<td>63</td>
<td>43</td>
<td>13</td>
<td>2</td>
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<tr>
<td></td>
<td>Patients receive high quality medical care from DH.</td>
<td>62</td>
<td>41</td>
<td>17</td>
<td>1</td>
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<tr>
<td></td>
<td>DH gives excellent medical care.</td>
<td>59</td>
<td>41</td>
<td>19</td>
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<tr>
<td></td>
<td>DH experiments on patients without them knowing.</td>
<td>8</td>
<td>8</td>
<td>28</td>
<td>30</td>
</tr>
<tr>
<td>2. Research</td>
<td>Doctors who do medical research care only about what is best for each patient.</td>
<td>34</td>
<td>30</td>
<td>43</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Doctors tell their patients everything they need to know about being in a research study.</td>
<td>29</td>
<td>25</td>
<td>38</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Medical researchers treat people like “guinea pigs.”</td>
<td>5</td>
<td>9</td>
<td>36</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td>I completely trust doctors who do medical research.</td>
<td>26</td>
<td>20</td>
<td>46</td>
<td>11</td>
</tr>
<tr>
<td>3. Doctors</td>
<td>Sometimes doctors care more about what is convenient for them than about their patients’ medical needs.</td>
<td>7</td>
<td>16</td>
<td>42</td>
<td>22</td>
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<tr>
<td></td>
<td>Doctors are extremely thorough and careful.</td>
<td>40</td>
<td>38</td>
<td>28</td>
<td>8</td>
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<tr>
<td></td>
<td>I completely trust doctors’ decisions about which medical treatments are best.</td>
<td>36</td>
<td>37</td>
<td>32</td>
<td>7</td>
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<tr>
<td></td>
<td>A doctor would never mislead me about anything.</td>
<td>33</td>
<td>24</td>
<td>35</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>All in all, I trust doctors completely</td>
<td>36</td>
<td>35</td>
<td>35</td>
<td>9</td>
</tr>
</tbody>
</table>
ENROLLMENT BY WEEK UH3

### Enrollment by Week

<table>
<thead>
<tr>
<th>Week</th>
<th>VA</th>
<th>DH</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>136</td>
<td>136</td>
<td>136</td>
</tr>
<tr>
<td>Week 2</td>
<td>162</td>
<td>162</td>
<td>162</td>
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<tr>
<td>Week 3</td>
<td>176</td>
<td>176</td>
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<tr>
<td>Week 4</td>
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<td>188</td>
<td>188</td>
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<tr>
<td>Week 5</td>
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<td>1108</td>
<td>1308</td>
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<td>Week 6</td>
<td>210</td>
<td>1229</td>
<td>1439</td>
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<td>Week 7</td>
<td>223</td>
<td>1355</td>
<td>1578</td>
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<tr>
<td>Week 8</td>
<td>235</td>
<td>1462</td>
<td>1697</td>
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<tr>
<td>Week 9</td>
<td>269</td>
<td>1795</td>
<td>2064</td>
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<tr>
<td>Week 10</td>
<td>300</td>
<td>1968</td>
<td>2268</td>
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<tr>
<td>Week 11</td>
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<td>2118</td>
<td>2439</td>
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<td>2193</td>
<td>2541</td>
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<td>Week 13</td>
<td>360</td>
<td>2260</td>
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<tr>
<td>Week 14</td>
<td>372</td>
<td>2318</td>
<td>2690</td>
</tr>
</tbody>
</table>

### Cumulative Enrollment
CURRENT ENROLLMENT: DEMOGRAPHICS

### Race
- Hispanic: 1454
- Unknown: 256
- Multiple: 18
- White: 1710
- Native Hawaiian, Pacific Islander: 5
- Black, African American: 666
- Asian: 15
- American Indian, Alaska Native: 20

### Gender
- Male: 1307
- Female: 1378
### CURRENT ENROLLMENT BY STUDY ARM

<table>
<thead>
<tr>
<th>Enrolled</th>
<th>Arm 1 (Usual Care)</th>
<th>Arm 2 (Generic)</th>
<th>Arm 3 (Optimized)</th>
<th>Arm 4 (Optimized + Chatbot)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MM</td>
<td>0</td>
<td>578</td>
<td>593</td>
<td>602</td>
<td>1773</td>
</tr>
<tr>
<td>IVR</td>
<td>0</td>
<td>95</td>
<td>80</td>
<td>72</td>
<td>247</td>
</tr>
<tr>
<td>N/A</td>
<td>670</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>670</td>
</tr>
<tr>
<td>Total</td>
<td>670</td>
<td>673</td>
<td>673</td>
<td>674</td>
<td>2690</td>
</tr>
</tbody>
</table>

MM: Mobile messenger (text messaging platform)
IVR: Interactive voice response (automated telephone calls)
PATIENT RESPONSE TO TEXTS

- Enrolled: 2690
- Done: 467
- Stop: 107

Total Enrolled, Dones, and Stops
PATIENT RESPONSE TO TEXTS

Total Enrolled, Dones, and Stops

- Arm 1 - Usual Care: 2690 Enrolled, 467 Done, 107 Stop
- Arm 2 - Generic: 670 Enrolled, 0 Done, 0 Stop
- Arm 3 - Optimized: 673 Enrolled, 196 Done, 31 Stop
- Arm 4 - Optimized + Chatbot: 673 Enrolled, 126 Done, 38 Stop

Total Enrolled, Done, and Stop

- Arm 1 - Usual Care: 670
- Arm 2 - Generic: 673
- Arm 3 - Optimized: 673
- Arm 4 - Optimized + Chatbot: 674

Legend:
- Enrolled
- Done
- Stop
NUDGE STAFF

NIH/NIHLBI
Project Officer/Project Scientist/Ex-officio members
Lawrence Fine MD
Nicole Redmond MD PhD, MPH, FACP
James Troendle PhD

NIH Collaboratory

Data Safety Monitoring Board
DSMB Chair:
William Vollmer PhD
DSMB members:
Bruce Bender PhD; Zindel Segal PhD

Administrative WG Leads
Pamela Peterson, MD, MPH, MSPH
Lisa Sandy MA

Steering Committee
CO PIs, Clinical Site Leads
Michael Ho MD, PhD & Sheana Bull PhD

Data and Statistics WG Leads
David Magid MD, MPH/MSPH
Gary Grunwald PhD

Clinical Site Leads
UCH: Larry Allen, MD / Amber Khanna, MD
DHHA: Pamela Peterson, MD, MPH, MSPH
VA: Michael Ho MD, PhD

Mobile Health WG Lead
Sheana Bull PhD

Implementation & Dissemination WG Leads
Russell Glasgow MS, PhD
Christopher Knoepke PhD