Utilizing text message technology in a pragmatic clinical trial: The experience of the Nudge Study

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THE NUDGE STUDY

Objective: To conduct a pragmatic patient-level randomized intervention across 3 HCS to improve adherence to chronic CV medications through the use of text message technology.

• 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
INTERVENTION ARMS

7 day gap between medication refills

Usual Care

Generic Texts
You are due for a refill on your meds

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

Optimized Texts + AI Chat Bot
[Name] What problems do you have getting refills? Text
1=transport 2=cost 3=time
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&DataRatesMayApp

View all
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**Temporary opt-out**
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2:00 PM

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Study opt-out
STEPS TO DELIVERING THE INTERVENTION
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Electronic Medical Records to identify patients

1. Clinic, co-morbidity, medication prescribed
2. Opt-out forms sent
3. Determine if cell versus landline number
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Monitor for 7 day gaps

1. Daily data pull: medication name, fill date, days supply, cancel date
2. Other clinical information: inpatient or mortality
3. Merge with patient text message reply data (DONE or STOP)
4. Calculate if there is gap in refills
STEPS TO DELIVERING THE INTERVENTION II
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Online platform to send text messages & chat bot

1. Spreadsheet created of new patients with gap and old patients who have not refilled and status
2. Patient name and number uploaded into Mobile Messenger
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Text message to patients

1. Respond to patient text messages
PATIENT RESPONSE TO TEXTS
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<table>
<thead>
<tr>
<th>Arm 1- Usual Care</th>
<th>Arm 2 - Generic</th>
<th>Arm 3- Optimized</th>
<th>Arm 4- Optimized + Chatbot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrolled</td>
<td>Done</td>
<td>Stop</td>
<td></td>
</tr>
<tr>
<td>670</td>
<td>196</td>
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CHANGES DUE TO STAKEHOLDER PANEL

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Other suggestions from the Stakeholder Panel

- Keep messages upbeat
- Avoid emojis or jokes
- Liked text messages more than IVR
- Did not feel comfortable collecting data from those who press STOP is intrusive
CHANGES DUE TO PATIENT RESPONSES
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  • Terms such as “hyperlipidemia” are uncommon, this level of information caused confusion with some patients.
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  • Weekly meetings to review patient needs and allow us to optimize approach as needed.
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  - Weekly meetings to review patient needs and allow us to optimize approach as needed.
- Identify common questions and create standard responses
  - What is the Nudge Study?
  - What medication do you mean?
  - What is the pharmacy number?
  - Can you just refill it for me?
CHANGES DUE TO COVID-19

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• Messages developed to raise awareness and discourage patients from going to pharmacy in-person and provide additional information on COVID-19
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Introduction to all text messages

You are considered at high risk for getting the Coronavirus (COVID-19). We suggest you have a family member or friend pick up your medications for you.

If you do not have a family member or friend who can do this, please use the mail order service available to you please call 303-389-1390 for more information.
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**After every text response**

CO-HELP is Colorado’s call line for the novel coronavirus (COVID-19). People with general questions about COVID-19 can call at **1-877-462-2911**. If you have concerns about your own health please call your doctor. If you are having a life threatening emergency call 911.
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• Disadvantages
  • Unable to confirm patient receipt and/or patient comprehension
  • Patients may switch numbers or loose service, particularly at the end of the month
LESSONS LEARNED

• Text message campaigns are easy-to-implement and inexpensive to send
• Mobile technologies are adaptable; able to optimize messages as needed in response to patient interactions and needs
• It is possible to utilize mobile health technologies in rapidly changing situations (e.g. COVID-19) as well as sending sustained messages
• Text messages are ubiquitous; patients require no training to receive the messages