Making Medication Adherence Rewarding

ideas⁴²

Using behavioral design to improve outcomes in Tarrant County, Texas

Missing doses of prescribed medication can have long-term effects on a person's health. The first step to taking medication as prescribed is to fill and refill pre-scriptions on time. While it can be challenging for anybody to fill, pick up, and take their medications on time, it is particularly challenging in the context of poverty, which creates unique behavioral and structural barriers to following a medication regimen. We designed and piloted an intervention to better understand those obstacles and make it easier for low-income individuals with chronic diseases in Tarrant County, Texas to refill their medications on-time.

Summary

Many of us struggle to take our medications as prescribed. According to the CDC, out of the 50% of Americans who have at least one prescription[1], between one third and one half fail to refill them on time each year.[2] Not adhering to medication regimens costs our health care system an estimated $177 billion annually[3] and about 125,000 premature deaths each year.[4]

Medication adherence can be especially challenging for individuals with chronic conditions such as hypertension and diabetes that often require consistent attention and effort, and costly prescriptions. To help tackle this problem in one community, we partnered with Catholic Charities of Fort Worth (CCFW), which provides financial assistance and support to help families in Tarrant County, Texas move out of poverty.

Highlights

▸ Of the 50% of Americans who have one prescription, between 1/3 to 1/2 fail to refill them on time each year.

▸ Poverty creates unique challenges to following a medication regimen, including lack of health insurance coverage.

▸ Behavioral solutions like incentives show promise at helping people adhere to medications, but the financial burden must also be reduced.

Upon surveying CCFW's clients, we learned that over 70% had at least one chronic condition. Unfortunately, among all participants, nearly 38% reported not having any form of health insurance coverage.

Our aim was to uncover and reduce behavioral barriers to filling prescriptions, but we also recognized the steep financial deterrents preventing people from managing their health care. To help reduce the high costs of medication for those who are un- or underinsured, we also partnered with a prescription benefits management company, Luscinia Health, whose *RefillWise* card offers discounts on prescriptions of up to 80% that could be especially valuable for Catholic Charities' clients. We built our intervention around this card, designing and testing new ways to help people fill and refill their prescriptions—for a discounted price—on time.

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1 https://www.cdc.gov/nchs/data/hus/hus15.pdf#079

2 http://www.nejm.org/doi/full/10.1056/NEJMp1002305#t=article

3 http://www.talkaboutrx.org/documents/enhancing_prescription_medicine_adherence.pdf

4 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3234383/

Behavioral barriers to medication adherence

In order to better understand what contributes to poor medication adherence, we conducted survey and interviews with CCFW staff and clients, as well as observations at a local pharmacy. We identified five main behavioral barriers that make it difficult to take medication as prescribed for chronic conditions. Importantly, many of these behavioral factors were exacerbated by a significant structural barrier—many CCFW clients live in poverty and struggle to afford their prescriptions.

1. **A lack of feedback with chronic, asymptomatic conditions**: For clients with chronic conditions that don't have noticeable symptoms, the consequences of skipping medication are largely imperceptible in the short-term. Meanwhile, those who do adhere well may not receive any form of positive feedback such as relief from discomfort.

2. **Scarcity and focusing on the present moment**: Clients living in poverty experience chronic scarcity—they consistently lack the financial resources needed for their well-being. Scarcity alters the way people make decisions and act, leading them to focus on urgent needs in the present moment like paying bills and buying food for their families. This leaves people with little to no attention available to consider longer-term matters such as refilling and adhering to medications. Even if they do think about taking action for their health, they may be discouraged by the fact that refilling prescriptions is expensive and requires action in the moment, while the promise of better health can feel far off and uncertain.

3. **Justifying partial adherence**: Many individuals see "perfect" adherence as unnecessary or impossible, and let themselves skip refilling or taking certain medications as prescribed if they make efforts to keep up with others. For a low-income population that struggles to afford all their prescriptions, the choice of which medications to take is often influenced by what condition feels most urgent and important to treat.

4. **No social accountability**: Social support motivates, monitors, and reinforces positive health behaviors. Many clients reported not having any social support around them that could provide encouragement to keep up with their medications. Instead, the burden was on the individual to remember to take and refill their medications.

5. **Identity**: Many people simply dislike taking pills regularly, in part because it means accepting that they have a chronic disease and their identity has changed in an uncomfortable, permanent way.

A behavioral solution

In partnership with CCFW and Luscinia Health, ideas42 designed and piloted a behavioral rewards program linked to the RefillWise card to help CCFW clients refill their prescriptions on time. The program sought to provide participants with a more immediate, tangible benefit (as opposed to long-term and abstract health benefits), as well as reduce some of the burden of paying for expensive medications by providing the discount RefillWise card.[5] The program also offered feedback and created accountability for refilling prescriptions.

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[5] The potential savings from using the RefillWise card varied by the prescription.

The full intervention included the following three components:

1. **A micro-incentives reward program** that offers small financial rewards for fills and on-time refills using the RefillWise card. When participants completed their first fill with the card, regardless of timing, they received a $5 digital gift card to a pharmacy chain delivered via text message.[6] For all subsequent prescription refills, participants had the opportunity to earn points, but only if they refilled on time. Based on research suggesting that unpredictable rewards may be more motivating than fixed ones, we chose to randomly vary the exact amount of points earned upon each refill, ranging from 10 to 90 (in multiples of 10). Participants also earned 100 points for completing each of the interactive text message activities described below. Every 500 points could be redeemed for a $5 digital gift card.

2. **Reminder and feedback text messages** about filling prescriptions. Once participants filled their first prescription during the pilot, they received text message reminders three days before they had to pick up their following refill. They also received messages each time they earned or missed out on points, in order to provide encouragement and make the rewards (or lost rewards) more salient.

3. **A series of interactive text messages to prompt plan-making,** particularly around incorporating medications into existing routines and overcoming potential obstacles that could prevent people from taking or refilling medications. The series included:

   ▸ a *cue investigation activity* to encourage habit formation by identifying re-occurring tasks in a participant's daily routine during which they could take their medications.

   ▸ a *goal-setting and planning activity* in which participants set goals related to medication adherence, brainstormed potential obstacles that could affect their ability to achieve those goals, and created plans to overcome those obstacles.

Our Results

We piloted the rewards program by randomly assigning 95 CCFW clients to either a control or treatment group. Participants in both groups received the RefillWise discount pharmacy card to address high medication costs and low affordability. Clients in the control group received the existing RefillWise rewards program: a $5 digital gift card upon the first fill, and additional $5 digital gift card for every 10 fills. Clients in the treatment group received the full intervention described above.

Baseline Survey Insights

At the start of the pilot, we conducted a baseline survey measuring perceptions around health to understand whether the impact of the intervention varied for clients with differing attitudes and situations. We found that while many people reported prioritizing their health needs, they were often unable to follow through on them: over 91% of participants agreed or strongly agreed that their health and taking medication was

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[6] At least 70% of participants reported having an unlimited text message plan.

a personal priority, yet over 75% of respondents disagreed or strongly disagreed to a statement that they are able to afford all their prescriptions.

We also found a significant relationship between a combined measure of self-reported future-orientation, and a measure of placing health needs above other issues.[7] The more they reported thinking about the future and considering themselves as being patient, the more they agreed to a statement that they prioritized their health and taking medication as prescribed. It follows that respondents who reported being less future-oriented were less likely to report prioritizing their health, which hearkens back to our insight from interviews that living in poverty exacerbates the tendency to focus on urgent, short-term matters. Urgent financial challenges make it difficult to devote attention to longer-term health issues.

Survey Question	Control Group % Agreeing (n=53)	Treatment Group % Agreeing (n=42)
Future-orientation • I am a patient person. • I frequently think about the future.	35.9%	47.6%
Prioritizing Health • Taking my medication every day and refilling it is important me to me. • Compared to other things in life, my health is a priority.	88.7%	81%

We also surveyed participants about the barriers they have faced to adhering to their medication regimens. Over 88% of respondents said that at least one of the hassles listed in Figure A led them to skip taking their medication or take a smaller dose in the past six months, with affordability being the most common barrier.

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[7] r = 0.41, *p*<.001

Figure A: Percentage of participants who reported skipping or taking smaller medication doses due to hassles

Reason for skipping medication or taking a smaller dose	% Participants responding yes (n=95)
Couldn't afford meds	59.0%
Wanted to make meds last longer	46.3%
Couldn't get to pharmacy	36.8%
Forgot to take the meds	32.6%
Forgot to refill meds	15.8%
Just didn't want to take it	14.7%
Didn't think it was helping	12.6%
Felt better without it	8.4%

Engagement with text message activities and points balances

While not uncommon in text message interventions, we found low response rates for both of the text message activities. Four (9.5%) CCFW clients in the treatment group completed the cue investigation activity, and just one (2.4%) client completed the goal-setting and planning activity. The difference in response rates may be driven by the fact that participants received an additional reminder to complete the first cue investigation activity, but not for the second goal-setting one.

Compiling the points participants earned from the activities and on-time refills, six clients earned between 100 and 300 points each.[8]

Refill Insights

To measure adherence, we collected pharmacy data on prescription fills and refills participants picked up using the RefillWise Card. Of the 42 participants in the treatment group, seven engaged with the card (e.g., they had a prescription called in, checked the price, etc.), and three of those participants followed through with picking up their medication. In the control group, 13 participants engaged with the card, and seven followed through. Despite a lower number of treatment participants using the card, descriptive data shows that they filled more prescriptions: 27 fills versus 18 in the control group, although this difference is not significant given the small sample size. Additionally, two out of the three treatment users filled their medications across three and four months, while no one in the control group filled beyond two months. While the small number of observations in the pilot prevents us from concluding whether the increased refill activity is due to the intervention, future research with larger samples could explore whether this is an early indication of true habit formation and improved adherence.

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[8] While the participants did not earn the 500 points needed to redeem their $5 reward during the intervention period, their points were converted and transferred to the standard rewards program at the end of the study.

Given that cost is a significant barrier for this population of CCFW clients, we analyzed the savings participants received by using the RefillWise card. On average across both groups, savings per fill averaged $13.40.[9] The potential savings varied widely by the type of medication, and was subject to additional changes over time and across locations. Within the control group, participants saved on average a total of $45 per person,[10] whereas the treatment saved a total of $96 per person.[11] For both groups, the total amount saved per person amounted to over 41% of the total cost they would have had to pay for their prescriptions, showing that discount programs like this can make a meaningful difference in the affordability of prescription medications.

Conclusion

Low medication adherence is a persistent problem that has detrimental effects on both health outcomes and costs to the health care system. This intervention piloted a new, behaviorally informed rewards program to help low-income individuals with chronic diseases refill their prescriptions on time, which is the first step to taking medication as prescribed. While we did not have enough participants to confirm whether or not the program improved on-time refill rates, there were promising signs of consistent refills over time among a small group of treatment participants that did use the RefillWise card.

Because the size of the RefillWise card discount varies by medication, pharmacy location, and time, it is possible that the uncertainty around the potential incentive limited the potential effectiveness of the rewards program by discouraging card usage. Anecdotally, we also heard that participants often had multiple pharmacy discount cards, and would use whichever one offered the greatest savings. Future interventions could evaluate whether sending personalized messages emphasizing how much people could save would increase card use, or test this program with a larger sample of participants that already uses the card on a regular basis.

Finally, while most participants who used the discount card saw meaningful savings, it may not have been sufficient to overcome the large structural barrier of affordability. In this context where the majority of participants are low-income, achieving significant impact will require more substantial financial interventions that reduce medication costs.

The promising results in this initial pilot suggest that further study of behavioral interventions, particularly those coupled with financial interventions, could lead to effective solutions for helping people get the medication they are prescribed. By combining techniques such as a behaviorally informed rewards program with financial support, we can get closer to helping countless people with chronic conditions living in poverty adhere to their medications and improve their long-term health.

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[9] N=49, SD=32.69

[10] N=7, SD=53.26

[11] N=3, SD=92.83

Appendix

Control group quarter card

RefillWise™

Prescription savings + cash rewards are only a text message away!

1. Text SAVECCFW to 555-555-5555.
2. Show the discount card to your pharmacist at any major pharmacy.
3. Instantly save up to 80% on each prescription.
4. Earn points each time you pick up your prescriptions on time and redeem them for cash rewards.

SPECIAL OFFER: EARN $5 WITH YOUR FIRST PRESCRIPTION

Text SAVECCFW to 555-555-5555.

Receive a free prescription discount card that's ready to use at your pharmacy.

See back for common questions.

Common Questions

CAN I USE THIS WITH INSURANCE?
RefillWise doesn't work with insurance, but you can ask your pharmacist to price-check both separately. You'd be surprised at how much you can save!

WHERE CAN I USE REFILLWISE?
RefillWise is accepted at all major pharmacies across America, including CVS, Walgreens, Walmart, Rite Aid, Costco, Kmart, Kroger, Safeway, Sam's Club, Target, Tom Thumb, and many others.

WHO CAN USE REFILLWISE?
Anyone living in the United States or Puerto Rico — regardless of documentation status.

HOW DO REWARDS WORK?
You'll earn a $5 reward for your first prescription fill, and up to 100 points for every prescription picked up on time after that. If you pick up your prescription late, you'll miss out on earning points. Every 500 points, earn another $5 reward.

WHAT REWARDS ARE OFFERED?
You can earn gift cards to retailers such as Walmart and others. Use them for anything in store — not just medication!

Please note that in accordance with our Catholic beliefs, this card does not cover pain medicine or any contraceptive-related medications.

For more information, contact us at (855) 279-9027 or support@refillwise.com.

Treatment group quarter card

RefillWise™

Prescription savings + cash rewards are only a text message away!

1. Text SAVECCFW to 22822.
2. Show the discount card to your pharmacist at any major pharmacy.
3. Instantly save up to 80% on each prescription and earn cash rewards.

SPECIAL OFFER: EARN $5 WITH YOUR FIRST PRESCRIPTION

Text SAVECCFW to 22822.

Receive a free prescription discount card that's ready to use at your pharmacy.

See back for common questions.

Common Questions

CAN I USE THIS WITH INSURANCE?
RefillWise doesn't work with insurance, but you can ask your pharmacist to price-check both separately. You'd be surprised at how much you can save!

WHERE CAN I USE REFILLWISE?
RefillWise is accepted at all major pharmacies across America, including CVS, Walgreens, Walmart, Rite Aid, Costco, Kmart, Kroger, Safeway, Sam's Club, Target, Tom Thumb, and many others.

WHO CAN USE REFILLWISE?
Anyone living in the United States or Puerto Rico — regardless of documentation status.

HOW DO REWARDS WORK?
You'll earn a $5 reward on your first prescription and then every 10 prescriptions after that.

WHAT REWARDS ARE OFFERED?
You can earn gift cards to retailers such as Walmart and others. Use them for anything in store — not just medication!

Please note that in accordance with our Catholic beliefs, this card does not cover pain medicine or any contraceptive-related medications.

For more information, contact us at (855) 279-9027 or support@refillwise.com.

Text messages: welcome messages, reminders, and feedback

Type of Message	Message content
intro #1/3	Welcome to RefillWise! You'll get your card soon. As a special thanks, you'll get a $5 gift card after making your first fill with your card at any pharmacy.
intro #2/3	For your next prescription refills, you could earn up to 100 points each time you pick up your meds on time. Every 500 pts=$5 gift card
intro #3/3	Text "balance" to check your points at any time or "stop" to stop receiving messages. Text "menu" for more info.
Pick up reminder	Hi [FirstName]. You are due for a prescription refill and have pts waiting. Pick up your meds by [date] with your RefillWise card & see how many you'll get
When earning pts	Hi [FirstName]. Thanks for using RefillWise to pick up your meds on time. You earned [XX] points and have [XYZ] in total. Just [XYZ] more for your $5 gift card!
When earning pts	Hi [FirstName]. Thanks for using RefillWise to pick up your meds on time. You earned [XX] pts and reached 500! Text "redeem" for your $5 or "wait" to get later
When earning pts (if redeem)	Great. To choose your gift card, text back one store: "walmart", "target", or "CVS"
When miss a pick up	Hi [FirstName]. We see you didn't get your meds with your RefillWise card on time & didn't earn pts. Your total is still [XYZ]. Reminder to get your meds today!
If we see a price check only	Hi [FirstName]. It looks like you tried to use your RefillWise card, but didn't get your meds. We're here to help. Why didn't the card work for you?
When using the card for the first time	Hi [FirstName]. Thanks for using RefillWise to pick up your meds. You earned your 1st $5 gift card! Text "redeem". Make sure to refill on time to earn pts.
When filling a new prescription	Hi [FirstName]. Thanks for using RefillWise to fill a new med. You earned 10 points and have [XYZ] in total. Make sure to refill on time to earn more pts.

Text messages: cue investigation activity

Type of Message	Message content (once per day)
intro for cue	Hi [FirstName], Research shows linking meds to daily routines builds good habits. Text "go" to make your routine with RefillWise in 4 msgs and earn 100 pts!
If go	Think of 1 med you should be taking daily. Are there rules for when you need to take that med? Text "1" for after eating "2" empty stomach "3" other "4" none
flow #1	
	Ok, what is 1 meal you typically eat around the same time each day? Text: "1" for breakfast, "2" for lunch, "3" for dinner, or "4" for snack
	Thanks! Last question: Where do you typically eat [breakfast/lunch/dinner/snack]? Text "1" home "2" work "3" school "4" on the go "5" restaurant
	Done, you earned 100 points! Here is your recommended routine: I will take my med each day at [place] after [meal]. To make another text "more"
flow #2	
	Ok, what is 1 thing you typically do around the same time each day on an empty stomach? Text "1" make breakfast, "2" brush teeth, "3" get dressed "4" other
if 4	Ok, text back another activity you do each day on an empty stomach
	Thanks! Last question: Where do you typically [make breakfast/brush teeth/get dressed/other]? Text "1" home "2" work "3" school "4" on the go
	Done, you earned 100 points! Here is your recommended routine: I will take my med each day at [place] when I [activity]. To make another text "more"
flow #3	
	Ok, text us what the rule is
	Great. Keep that rule in mind and txt back 1 thing you normally do each day that you can pair to taking your meds. EX" brush teeth" or "make breakfast"
	Thanks! Last question: Where do you typically do that activity? Text "1" home "2" work "3" school "4" on the go
	Done, you earned 100 points! Here is your recommended routine: I will take my med each day at [place] when I [activity]. To make another text "more"

flow #4	
	Great. Now txt back 1 thing you normally do each day that you can pair to taking your meds. EX" brush teeth" or "make breakfast"
	Thanks! Last question: Where do you typically do that activity? Text "1" home "2" work "3" school "4" on the go
	Done, you earned 100 points! Here is your recommended routine: I will take my med each day at [place] when I [activity]. To make another text "more"

Text messages: goal-setting and planning activity

Type of Message	Message content	
intro for plans	Hi [FirstName], we have a new RefillWise tool for you to earn 100 pts! Research shows making plans helps us reach our health goals. Txt "go" to make yours!	
If go	Let's start! Many people face obstacles to taking their meds regularly. What obstacle might you face? Text: "1" high cost "2" forget "3" side effects "4" other	
flow #1		
	This is really common. Setting aside a little $ each week can help. How much $ could you set aside each week for meds? Text: $amount.	
	Thanks! Last question: Where will you set it aside? Text "1" savings account, "2" piggy bank "3" envelope.	
	Done, you earned 100 points! Your plan: If my med costs are too high, I will set aside [$XX] every week in a [place]. To make another plan text "more"	
flow #2		
	This is really common. Setting a daily reminder on your phone or putting a post-it note in a clear place helps. Choose 1 by texting "phone" or "post-it"	
if phone	Ok. What time do you want to take your meds each day? Text back time(s): ex "9am" or "9am and 9pm"	

if post-it	Ok. Text back where you will place the reminder post-it (ex "fridge" or "bathroom mirror")	
	Done, you earned 100 points! Your plan: If I forget to take my meds, I will set a daily phone alarm for [times]. To make another plan text "more"	Done, you earned 100 points! Your plan: If I forget to take my meds, I will put a post-it reminder on [place]. To make another plan text "more"
flow #3		
	This is really common. Reminding yourself why your meds are important or calling your doc for other options helps. Choose 1 by texting "importance" or "doc"	
if importance	Ok. Text us why taking meds is important to you (ex. "to stay healthy for my family" or "to take care of myself")	
	Done, you earned 100 points! Your plan: If I have side effects, I will tell myself I want to [reason]. To make another plan text "more"	
if doc	Done, you earned 100 points! Your plan: If I have side effects, I will call my doc to talk about them and ask about my options. To make another plan text "more"	
flow #4		
	Ok, text us what else might get in the way of your taking your meds like "no transportation to pharmacy"	
	Thanks! Now text us what you can do to face that problem. Ex "ask a friend to drive me"	
	Done, you earned 100 points! Your plan: if [obstacle], then I will [solution]. To make another plan text "more"	