



# Recovery Text

**User Testing and Evaluation**

By Jacob Rader, Scott Gerlach and Bhavini Patel

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# Introduction

Over the last few months [Jacob Rader](#), [Bhavini Patel](#) and [Scott Gerlach](#) have been studying healthcare. [Our research](#) focused on the documents and records that patients interact with and how these artifacts affect their relationship with the medical industry as well as their understanding of their own health. Through contextual, qualitative research we had the opportunity to learn from a wide variety of people and identify [many opportunities for design to make an impact in the healthcare system](#).

## Supporting Patient Recovery

Our goal is to leverage interaction design to help extend more support and clarity to patients without demanding more time and energy from professionals that are already stretched to their limit. In our research the most pronounced need for this sort of good health communication is in the transition from inpatient hospital care to outpatient recovery.

From the moment a patient enters the hospital, the hospital staff must be preparing for that patient's departure. The high-volume nature of the hospital along with the reality that so many individuals in the hospital have a part to play in the care of each patient means that there must be very clear goals that create some alignment between all the professionals. Near the top of that list is ensuring that the patient can leave the hospital as soon as they are well enough to do so.

The consequence: as they are leaving a hospital's care, patients receive a condensed burst of information about their recovery.

Many of the doctors and nurses who participated in our research reported that the majority of patients who call during recovery are asking redundant questions that had been addressed with the patient through written or verbal instructions prior to them leaving care.

Clearly, patients are not processing the information they are being given in a way that is relevant to their recovery. This doesn't just lead to confusion and redundant phone calls, it also leads to complications in recovery. Patients don't understand or adhere to the treatment plans that doctors have in mind for them. They don't heal properly, aggravating weakened areas which often forces them to be readmitted to the hospital. This causes extra strain on an overloaded system. Readmittance is a problem area that many hospitals are actively trying to problem solve, in part because of new guidelines in the Affordable Care Act.

## Current System

1



Patients are admitted to care.

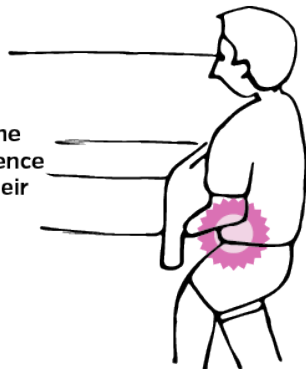
2



As they are leaving care, patients are given verbal instructions and paperwork.

3

Patients don't absorb the information and experience complications during their recoveries.



4

Patients reach back for support or require re-admittance because of poor understanding of their recovery process.





## Recovery Text

1



Patients are admitted to care.

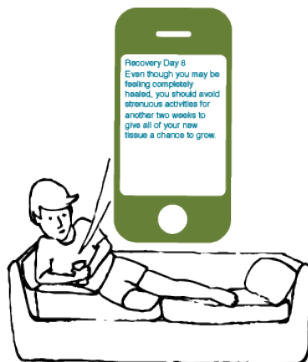
2



As they are leaving care, patients are given an additional sheet with high priority information and informed about a text message service that will help support them during recovery

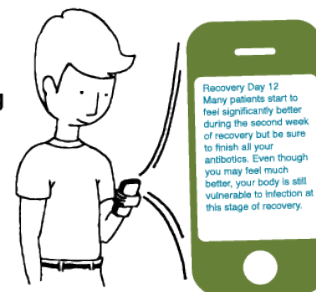
3

Patients are informed about the recovery process in small chunks, at times when it's much more relevant to them.



4

Patients experience fewer preventable complications during their recoveries, feel better supported, and have more opportunities for reflection.



## Impact

We believe that a system like this will help on a number of levels.

Firstly, it will connect patients with information at appropriate times in a format they are more likely to digest and act on. Secondly, it will reduce preventable complications and readmissions. Finally, systems like this will encourage patients to think about their health on a more continuous basis and will help them feel more connected to their own health and the healthcare system.

# Competitive Analysis

# Comparative Landscape Overview

## Why do we review the Competitive Landscape?

The purpose of looking at the competitive landscape is to gain a solid understanding of the challenges and opportunities presented by competitors in the industry. Included in this evaluation are products that compete directly with the client's product, share the same user base, are targeted at a comparable audience, and/or accomplish a similar task or goal.

By reviewing the competitive landscape, the team gains deeper understanding of the context in which the product exists, determines how well it measures up to similar offerings, and also learns from the successes and mistakes realized by others in similar situations.

## Analysis Criteria

We use a common set of criteria when looking at each competitor's product to determine what features or functions set them apart, how well their interface complies with standard usability principles, and how they distinguish themselves from a visual and brand perspective. As follows, we describe the criteria used during our review of competitor products.

## 1. Distinguishing Features and Functions

A common misconception when looking at a particular software product and its competitors, is that the greater the number of features and functions available, the greater the gap between offerings. When looking at competitor products, we prefer to look at the appropriateness of any unique features and functions to the intended audience, their usability, as well as the potential value they add. In addition, we pay attention to common features and functions that are executed particularly well.

We look across the competitive landscape to determine what sets the product apart, what a particular competitor is doing really well and what makes them worth paying attention to.

## 2. Ease of Use

Within the realm of software design, finding a balance between functionality and usability is often challenging. An application can be very well designed from a visual perspective, but if it doesn't allow users to accomplish their tasks, it won't be adopted. On the other hand, if an application offers a very beneficial tool or piece of functionality that aids in task completion, it will be tolerated by users, even if it is not immediately approachable or completely user-friendly. Applications that strike the right balance between desired functionality and an effective interface will establish a reputation for being efficient, and providing a pleasant experience, which will encourage user satisfaction and adoption.

Using a subset of our standard 10 heuristics, we looked at the competitors' ease of navigation, intuitiveness, efficiency, consistency, enjoyment, and adherence to general usability principles.

## Comparative Landscape Overview (con't)

### 3. Visual Distinction/Brand Characteristics

In an industry with many players, it is important for software products to distinguish themselves. Presenting an exciting, appealing visual style creates a good first impression that can set products apart, which is especially important when demos are the primary sales tool.

Furthermore, applying a consistent visual look-and-feel, along with a pervasive branding scheme, will help the company to build recognition and equity within the product and the industry. Companies with good brand equity benefit in terms of name recognition, easy qualification during the consideration stage, positive sales bias and enhanced customer and user confidence - all elements that contribute to sustainable market advantage. For many technology companies, the software product is the most visible brand vehicle and therefore it is in the client's best interest to ensure that it consistently reinforces and projects the right message.

Across the applications investigated, we looked for the prominence and consistency of branding elements like logos, corporate colors and font choices as well as distinctive color palettes, control design, icons, and other graphical elements.

## Scorecard

The following pages contain the results from our competitive landscape review along with supporting screenshots, and a score for each of the select criteria. An A-F grading scale is used, where F indicates critical deficiency in meeting user experience expectations, and A indicates that all expectations of the user experience are successfully met.

### Color coding/letter grade representations:

- |          |  |
|----------|--|
| <b>A</b> | Meets usability requirements and performs well |
| <b>B</b> | Baseline is good, needs some cleanup work      |
| <b>C</b> | Critical problems need to be addressed         |
| <b>D</b> | Thorough scrub required                        |
| <b>F</b> | Fails to meet requirements                     |

Analysis Criteria	Mosio	doc Beat	Medic Mobile	Healthy TXT
Distinguishing Features & Functions	<b>B</b>	<b>C</b>	<b>A*</b>	<b>NA</b>
Ease of Use	<b>C+</b>	<b>D</b>	<b>NA</b>	<b>NA</b>
Visual Distinction/Brand Characteristics	<b>B-</b>	<b>C+</b>	<b>NA</b>	<b>B-</b>
Overall UX	<b>B-</b>	<b>C-</b>	<b>B-</b>	<b>NA</b>

## Key Observations

The top observations are listed below in order of importance.

1. None of the services on the market yet offer robust, templated options for the disclosure of information during out-patient recovery. There is one direct competitor (Healthy TXT) that is attempting to develop technology in this vein.
2. Although there are many ways that SMS based services are being developed for impoverished, underserved areas of the world to improve access to medical services, there is a significant opportunity in this field in the U.S.
3. Several broad spectrum systems are in the market but they suffer from their lack of specificity and ready-to-go content. The medical field needs tools with clear purposes that are easily adapted case by case and require a minimum commitment of time to learn and use.
4. There several platforms that simply facilitate secure, hipaa-compliant text messages between medical professionals and patients. These technologies require access to a smartphone from the patient and introduce an extra step which reduces the ease of communication: ultimately undermining the intent of text message communication.
5. Generally, while the websites in the competitive landscape are effectively designed and usable, the actual applications that they have developed are significantly less user centric.

# Mosio

## Overall (B-)

Mosio is a fully formed product suite with a large variety of ways to create custom text message interactions between businesses and clients. The interface isn't difficult to use but because of the wide variety of functions there is a significant learning curve to become adept at the web controlled interface and as well as a significant time commitment to create all of the custom templates. For a highly motivated business with a clear vision for the type of text message service they want to offer their clients and with staff that can devote time to the endeavour, Mosio is a good option.

## Distinguished Features and Functions (B)

- + Offers 3 different pricing packages for single users up to large large companies.
- + Includes a variety of SMS service options that facilitate 1-way, 2-way, and live chat communication.
- + Highly customizable templates that allow text messages to be triggered based on day and time.
- + Custom number that clients and can send text messages to.
- + Live update notifications that alert users when a client has sent a new message.
- + Free 14-day trial.
- No template repository for specific applications.
- Not technically hipaa compliant

## Ease of Use (C+)

- + Extensive training videos to help users with many uses.
- Overwhelming number of options and technical descriptions in dashboard.
- Wide variety of use cases without clear models for which features are relevant.

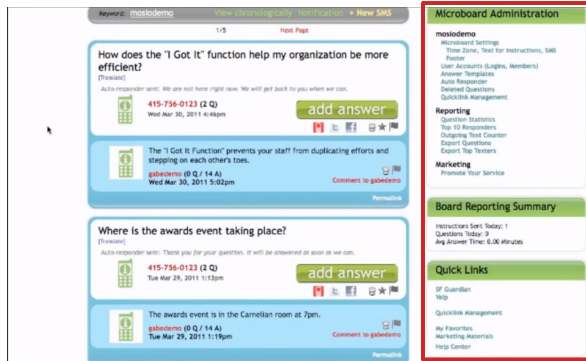


## Mosio (con't)

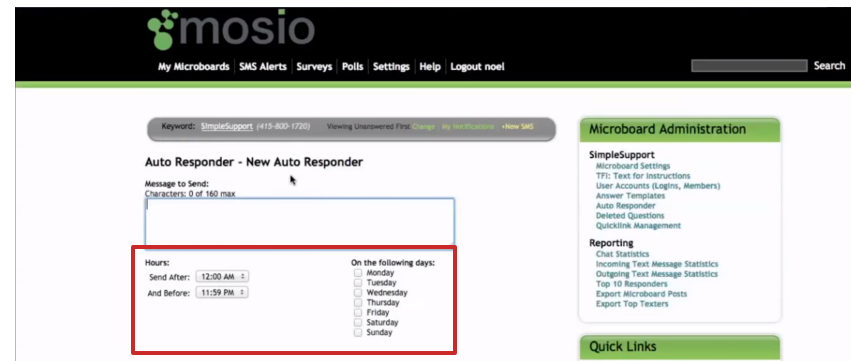
### Visual Distinction / Brand Characteristics (B-)

- + Website has strong visual hierarchy with clear calls to action.
- + Effective use of visuals to illustrate potential benefits and use cases for clients.
- + Repeated uses of color for specific purposes create a consistent visual language.
- Design and visual presence for from the administrative logins is significantly weaker.
- Administrative dashboards are visually overwhelming and difficult to parse.

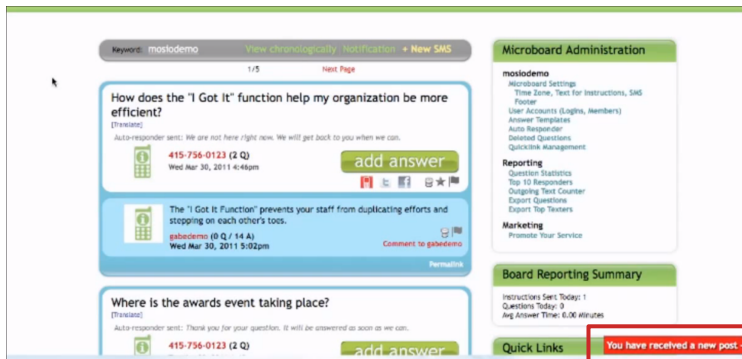
## Mosio (con't)



(-) Overwhelming number of options and technical descriptions in dashboard.



(+) Highly customizable templates that allow text messages to be triggered based on day and time.



(+) Live update notifications that alert users when a client has sent a new message.



(+) Repeated uses of color for specific purposes create a consistent visual language.

# docBeat

## Overall (C-)

docBeat is HIPAA compliant, secure messaging platform that is target towards smartphone using healthcare professionals. While touting it's simplicity as a selling feature, the application feels more limited than it does simple. Sending a message is simple and easy but reading that message involves following a link to an external website and in some case requires setting up an account resulting in a high level of difficulty to actually read the messages. Visually the web site gives a modern feel but the web and phone app both feel clunky and poorly designed with some key feature missing.

## Distinguished Features and Functions (C)

- + Simple dashboard interface
- + Can easily send a secure text
- + Built in directory allows you to search for Physicians, Hospitals, Pharmacies which displays contacts, and map location
- + Phone app has same layout and functionality as website
- Patient had to access message through a link to an external website
- Test "patient" was unable to view the text / Text was unavailable
- No way to sort, organize contacts
- Patient has to create an account to reply to text
- Requires a smartphone to access messages

## docBeat (con't)

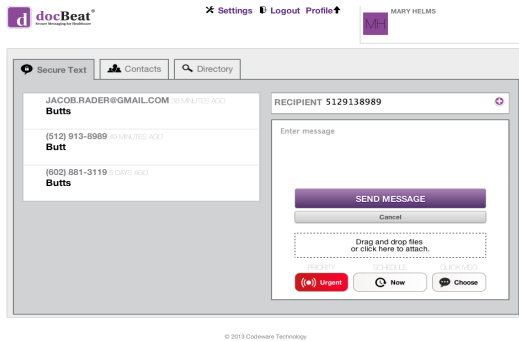
### Ease of Use (D)

- + Workflow was simple and easy to navigate
- + Framework is intuitive and easy to follow
- + Previous text are shown prominently
- + Can easily add attachments
- + Can view previous conversations / string of texts that you've sent
- No way to sort or organize either contacts or messages
- Directory doesn't allow you to add results to contacts
- Unclear/unable to add contacts
- Menu in a menu in the search section
- Web app login confusing
- Only 4 digit pin

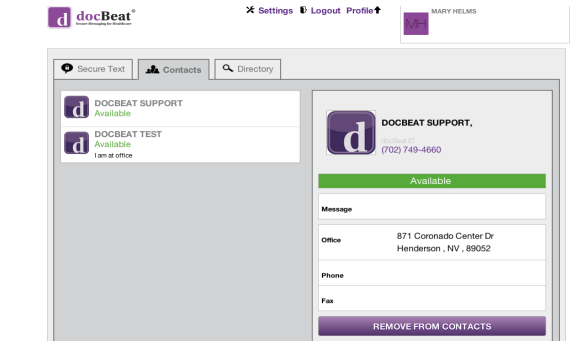
### Visual Distinction / Brand Characteristics (C+)

- + Overall clean, uncluttered interface
- + Visually simplistic
- Phone app and website have different visual styles
- Both web and phone have trouble with spacing issues

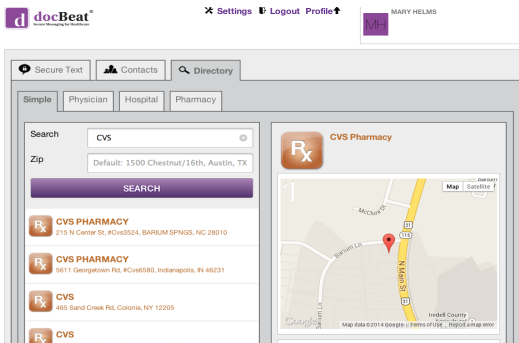
## docBeat (con't)



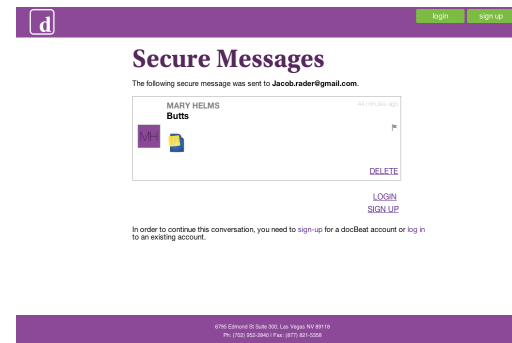
(+) Basic interface allows the user to access key features quickly



(-) Unable/unclear how to add new contacts and no apparent method for sorting or grouping contacts



(+/-) Built in functionality for searching for contact numbers but no way to add them to your contacts



(-) To reply to messages the system requires the recipient/patient to set up an account

# Medic Mobile

## Overall (B-)

Medic Mobile aim to be able to support most mHealth projects using generic, flexible software applications that do not need extensive project-specific customizations by software developers. They tend to be opportunistic, and interested in using existing software applications rather than reinventing the wheel. With each potential partner they discuss established opportunities for impact using mobile technology, the impact per unit for their proposed intervention, potential for scale the role of human centered design, local ownership, and our partner's ties to their community.

## Distinguished Features and Functions (A)

- + Leverages existing open-source technology to create healthcare impact in the international community.
- + Use of sim-card based applications facilitates use on almost any type of phone
- + Use of human centered design and field research to adapt technology to specific needs.
- No adaptations of their technology make an impact locally (in San Francisco).

## Ease of Use (NA)

- Custom app, Kujana, seems to require significant training to use.
- + Can be used in conjunction with low-cost technologies like feature phones through text message forms and Sim-card applications.

## Visual Distinction / Brand Characteristics (NA)

- + The website and custom developed tools are clean and professional with an apparent focus on ease of use.
- Their storyboards are mediocre and hard to read.

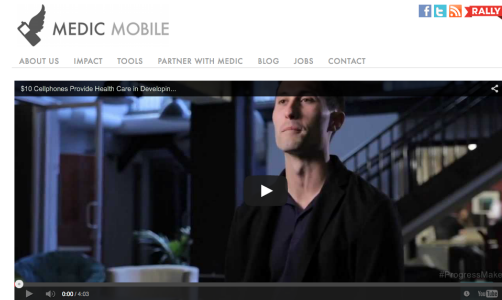
## Medic Mobile (con't)



+ Leverages existing open-source technology to create healthcare impact in the international community.

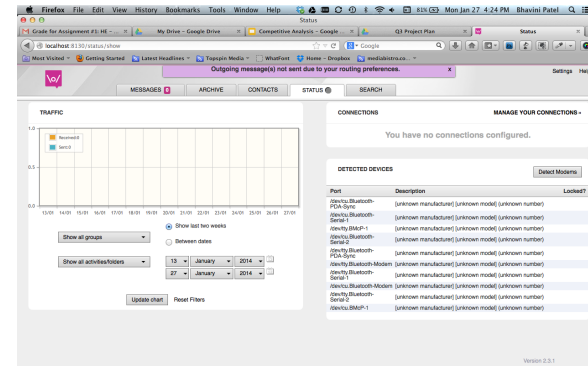


+ Use of sim-card based applications facilitates use on almost any type of phone



Our mission is to improve health in under-served communities using mobile technology.

+ The website and custom developed tools are clean and professional with an apparent focus on ease of use.



- Custom app, Kujana, seems to require significant training to use

# Healthy-TXT

## Overall (NA)

Healthy-TXT is a platform that is being developed around a variety of text-messaging service models ranging from public health campaigns to post-care instructions. While the system has been piloted in a couple of facilities it still looks to be in a development phase with no concrete system for testers to interact with. While Healthy-TXT has a wide ambition and have illustrated a number of applications for text message based health instructions they don't seem to have much focus. They are also relying heavily on external research.

## Distinguished Features and Functions (NA)

- + Delivers post care instructions to patients at key times via either text message or email, this can include image or video link
- + Provides a platform for patients to opt into informational campaigns to encourage preventive care and education
- + Targeted information and encouragement for patients with chronic conditions
- + Lifestyle app that can help prompt behavior change through text-based reminders
- + Medication Reminders
- + Appointment Reminders
- + Editable pre-built library of messages
- Targeted towards smartphone users
- Unclear whether target towards patient user or professional user



## Healthy-TXT (con't)

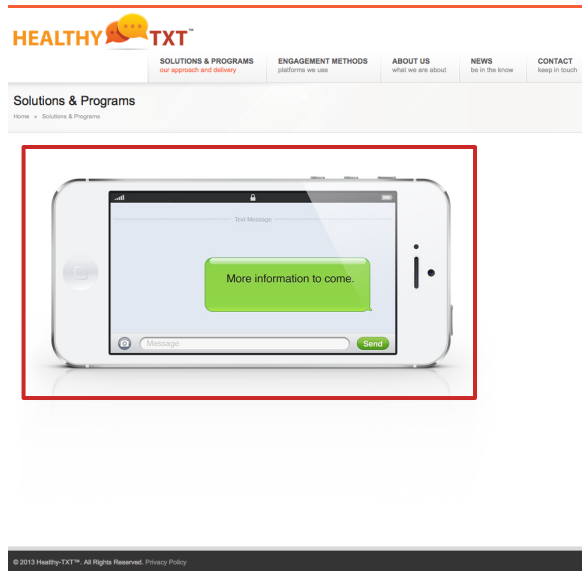
### Ease of Use (NA)

Product is not yet to market.

### Visual Distinction / Brand Characteristics (B-)

- + Logo is simple and appropriate
- + Homepage has an effective visual presence, balance of white space, and makes effective use of color.
- + Font weight is used in conjunction with color to create effective visual hierarchy.
- Repetitive use of "More to come" pages makes the website feel very unfinished.
- Use of double descriptors is confusing
- Video on homepage is somewhat boring and doesn't illustrate the concept through stories.

## Healthy-TXT (con't)



(-) Repetitive use of “More to come” pages makes the website feel very unfinished.



### Our unique components work together to help you deliver optimum mobile health programs.

Healthy-TXT™ provides physician-designed health programs directly to where people are today, on their mobile devices. Targeted health messages on treatment regimens, post and chronic care, healthy lifestyle, and prevention are delivered via text messaging, mobile voice app, email, video, or website.

Our programs are turnkey and customizable, providing relevant solutions for fostering good health and wellness.

(+) Homepage has an effective visual presence, balance of white space, and makes effective use of color.

# Best of Breed

# Best of Breed Overview

## What is Best of Breed research?

The Best of Breed research identifies products that are succeeding in areas that we are seeking to improve or establish. This process allows us to identify proven strategies and find inspiration.

## Analysis Criteria

To conduct the Best of Breed, we looked for services that are successful at communicating information at appropriate times. We also looked for services that successfully extend their offering to users through text messaging. Finally, we looked at services that successfully gain trust and respect from their clients without relying on person to person interactions. To follow, we describe the criteria used during our best of breed analysis.

### 1. Communicates at Times when Information is Appropriate

The ability to provide users with information that they need, when they need is fundamental. We evaluated services based on how quickly they provided the user with the required or requested information. We also evaluated the forms the information took and whether it was appropriate and useful for the user. On the other side of the spectrum we also looked at whether these services gave the user too much information too often, and if they were providing information at inappropriate times.

### 2. Successfully Extends Service through Text Messaging

Text messaging is the core technological foundation built we are evaluating and its use among these services was key. We wanted to make sure that the information and value that was communicated through text was a reflection of the larger service as a whole. We also evaluated the tone and nature of these messages and what value they added to the existing service model.

### 3. Gains Trust and Respect of Clients

Due to the delicate nature of the information conveyed, it's important for the service as a whole to be perceived as trustworthy and respectful. A users perception of the service will determine if the user trusts the service and ultimately if they will continue to use the service. In the wrapper of trust and respect or issues around reliability, is the service available when a user needs it? Does the service give the user something valuable.

## Best of Breed Products and Services



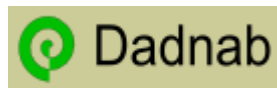
### Bank of America

Through their website, Bank of America offers a number of secure, online banking services. They use text messaging as a security layer when clients log into their accounts from an unknown computer.



### text4baby

A free text messaging program for pregnant women and new moms. Three times a week, text4baby delivers vital information, in English or Spanish, direct to the cellphones of new and expectant moms. Text4baby messages are timely and practical, because they're customized for each woman's stage of pregnancy or her baby's age.



### Dadnab

Dadnab is a simple text message based transit service that allows users to request travel instructions based off a starting location and end destination for their city.

# Ratings Overview

## About the Ratings

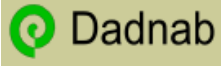











We used the following rating system while evaluating the Best of Breed products and services.

Rating	Meaning
	Great Overall
	Good overall, needs minor improvements
	Mediocre; needs major improvements
	Missing critical pieces and needs major revisions
	Doesn't exist or doesn't work

# Ratings Overview (con't)

## Ratings Summary

The chart below gives an overview of each product per rating category.

Best of Breed Criteria			
Time Appropriate			
Extends Thru TXT Msg			
Gains Trust and Respect			

# Dadnab

## Why Dadnab?

Dadnab is a simple text message based transit service that allows users to request travel instructions based off a starting location and end destination for their city. The simple nature, ease of use, and clear purpose are provide ripe examples that Health Text could emulate and build upon.

### 1. Communication at appropriate times.



Dadnab's only function is to provide transit instructions and times based off of a start and end destination and in this regard it succeeds admirably. It gives the user the exact information that they need in a timely fashion once it's requested.

### 2. Successful extends service through text



Since Dadnab functions solely through text messages it performs very well in this regard. The only complaint is that the information can be hard to decipher at times but this is more a limitation of the technology rather than a problem with Dadnab.

### 3. Gains trust and respect of clients



Dadnab hides the complexity associated with modern transit behind the simplicity of a text message based interface. While the results aren't pretty, they are functional and reliable and as a result clients have come to trust Dadnab for easily navigating what would otherwise be a difficult system to navigate.



## Dadnab (con't)

**Dadnab** HOME HELP SHARE MEDIA PRIVACY

**What is Dadnab?**  
Use Dadnab to get transit directions by text message. Send your origin, destination, and optional departure or arrival time. Within seconds, directions will appear in your inbox.

**Try Dadnab now.**  
Send your query as a text message to one of the numbers listed below. Or type a query in the box and click 'Send' to see how Dadnab would reply.

Austin, TX: (512) 981-6221

5th & lavaca to barton springs & kinney

Send

W 5TH ST & LAVACA ST to  
BARTON SPRINGS RD & KINNEY  
AVE/depart 500 CONGRESS & 5TH  
(#512) at 08:13 PM/30-SB/arrive  
1518 BARTON SPRINGS & JESSIE  
at 08:22 PM

**Query tips for Austin** (general help [here](#)):

- Use 'n', 's', 'e', and 'w' instead of 'north', 'south', 'east', and 'west'.  
ex: 311 w 5th to mopac & far west
- For origins and destinations, enter a full address (not just a street name), intersection, landmark, or stop ID.  
ex: 1123 s congress to highland mall

*Austin schedule information is provided as a courtesy by [Capital Metro](#).*

### Key Observations

#### Simple Interactions

Dadnab is both benefits and is hurt by it's simple interface and usage. While the text messaging based query system is easily accessible, feedback is sparse and interacting with the system at times can be frustrating

#### Clear Purpose

Dadnab has a clear purpose and value and it acts on the purpose completely. While the simple nature at times can hinder the interactions the direct nature of the service is refreshing and free from scope creep.

#### Ugly but Functional

Dadnab proves that something doesn't have to be pretty to be useful. In fact Dadnab doesn't look like anything, it's appearance and interface agnostic; it takes on the appearance of your phone's interface. Yet it still provides a useful service that takes a large amount of complex information and gives it to the user in a small, understandable package that is direct and actionable.

# Bank of America

## Why Bank of America?

Bank of America offers various online banking services. In order to do so, they must ensure that the users perceive secure in their interactions as well as maintaining a high level of actual security. In conjunction with https encrypted communication and passworded logins with photo matching, Bank of America uses a temporary SafePass Code that is sent via text message on the phone that you have linked to your account.

### 1. Communication at appropriate times.



Bank of America only uses the SafePass Code system when you attempt to log in from a new computer (untrusted). This is in contrast with other services that use similar technology as their primary means of security (like VPNs and multiplayer games). The discretionary use of the SafePass txt message keep it from being distracting or annoying and instead instill an additional awareness of security for the user. They have similar discretion with emails concerning bank account statements as well as post mail concerning credit and debit cards. Their limited and intentioned communication makes their users more likely to pay attention to each correspondence.

### 2. Successful extends service through text



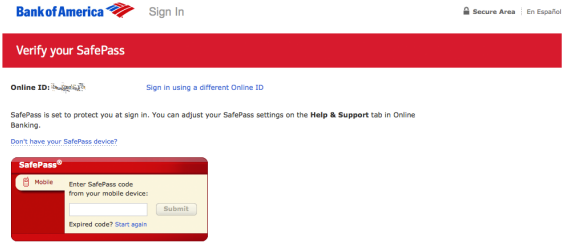
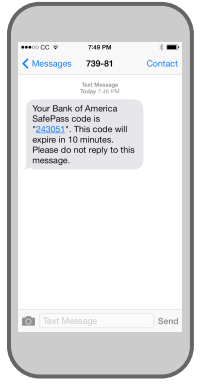
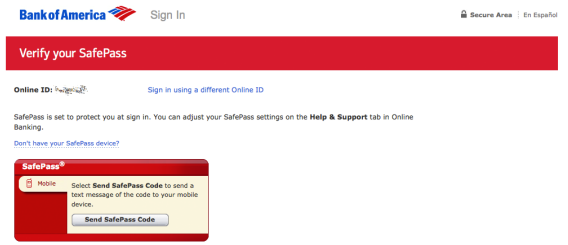
While the use of the SafePass Code system does add another layer of security to the Bank of America online banking service, it's also the only use of text message interactions in their service offering. This tends to make it feel like an outsourced feature that they have added rather than an integral piece of security. This ultimately makes it feel disjointed with the rest of the service and actually undermines some of the perception of security and trust.

### 3. Gains trust and respect of clients



Bank of America's discretionary use of multiple layers of security as well as the formal tone of the visual style and content of their correspondences create a sense of unification across the service through different mediums (website, web app, email, post mail, and text message). Of these forms of communication, the SafePass text message is perhaps the most disjointed but still conveys the essential information. Since the nature of the information is inherently very sensitive, it's both impressive and imperative that they are able to create a sense of trust and respect in these mediums.

# Bank of America (con't)



## Key Observations

### Discretionary Use

The best aspect of the SafePass Code system employed by Bank of America is that it is only used when a user logs in from an unknown computer. This mitigates some of the impatience to accomplish an immediate goal (logging in) and heightens awareness of Bank of America's security measures.

### Disjointed Add-On

The SafePass Code system makes effective use of text messaging for a specific purpose. However, since Bank of America doesn't leverage text messages for any other purpose, it makes the SafePass system feel somewhat disconnected from other Bank of America services.

### Conflicting Codes

The code in the subject of the text message ("739-81" as shown to the left) is not the code the user needs to use ("243051"). This is somewhat confusing, especially since the subject displays by itself when the message first arrives and presumably the user is looking at their phone waiting for a number.

## text4baby

### What is text4baby?

Text4baby is a free text messaging program for pregnant women and new moms. Three times a week, text4baby delivers vital information, in English or Spanish, direct to the cellphones of new and expectant moms. Text4baby messages are timely and practical, because they're customized for each woman's stage of pregnancy or her baby's age.

#### 1. Communication at appropriate times.



The primary goal of text4baby is to reach low-income pregnant women and new moms. Upon registration, users receive 3 text messages: instructions, disclaimer and sponsorship. However, it is unclear when the user will start to receive messages containing critical information and the encouragement to connect to care.

#### 2. Successful extends service through text



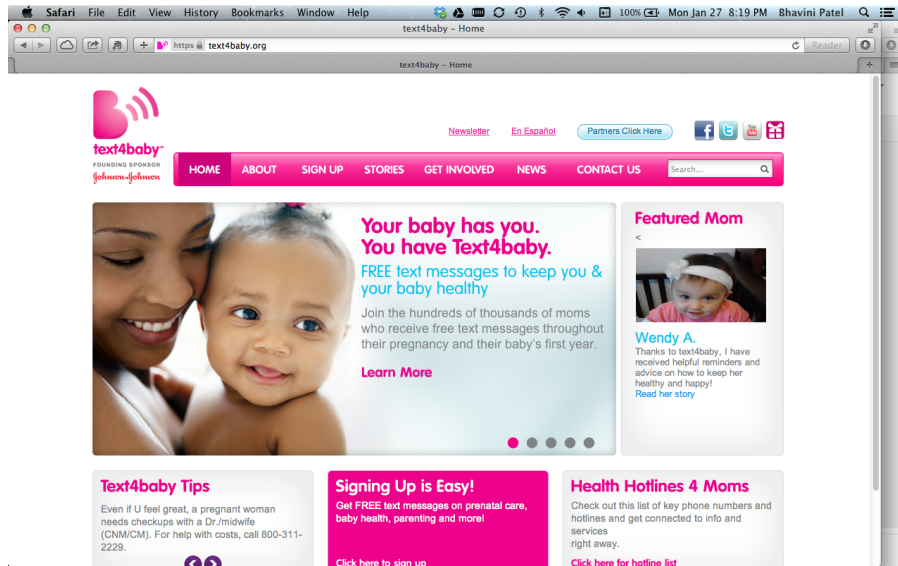
Text4baby service includes over 250 messages with the critical information that experts want pregnant women and moms with infants under one to know.

#### 3. Gains trust and respect of clients



Accredited organizations and partners providing feedback on the text4baby content encourages trust and respect. But because the the introduction to the text messaging service does not include helpful information pertaining to pregnancy, users could lose respect for the program.

# text4baby



## Key Observations

### Clear Mission

The best aspect of the text4baby system is that it was created to reach low-income pregnant women and new moms through text messaging service. This mission is inline with our current system.

### Match Between System and User's World

Upon registration, the user does not receive critical and encouraging information to engage with their healthcare. This is confusing as a user.

### Lack of System Feedback

It is unclear if the user registered correctly or if the program just does not include helpful information for first time users.

# Scenario Validation

# Introduction to Design Concepts

## Phases: From Ideate to Prototype

Following the Research and Synthesis phases we entered the Ideation phase where we generated a few hundred ideas, ranging over the fidelity spectrum. Grounding those ideas in our research we narrowed down to a single concept. We tested that concept against the competitive landscape and have moved it into the Prototype phase. At its heart, Recovery Text is a service and tool that builds better communicative relationships with physicians and in many ways acts as a translator between those two disparate groups. Keeping this in mind we designed two testing scenarios, one for patients and one for professionals. For the professionals we focused on testing the usability of the concept and how it could fit into their workflows. For the patients we focused on the type of information they might want to see as well as the tone of the messages.

## Prototype Creation

The team created paper prototypes of both the professional and patient facing systems. These prototypes contained a minimum amount of information to convey the intent and elicit feedback and conversation.

## Prototype Validation

To validate the concepts we held two group sessions with a total of 7 participants (5 professionals, 2 patients).

### Patients

The scenario was tested in three steps. The first focused on information needs and expectations. We provided the participants with moc exit documents and had them fill out questionnaires regarding the content of the documents. The second step tested the relevance of content provided in the text messaging service. Patients were provided with potential messages and asked to select those they wanted to receive; this was accompanied by a questionnaire. The final step was designed to examine the tone of messages. Participants were provided with 5 different versions of the messages containing similar information and asked to rate them from 1 to 5, based on which they would most like to receive and why. The three steps were followed up with a group discussion around tone and relevance in text messaging.

### Professionals

We started the session by prompting the participants to create a visual timeline around a patient's exit from the hospital. Next we introduced the scenario in two flows (a fast and slow) and asked the participants to fill out questionnaires about each flow., included were some high-level wire frames. After reviewing the scenario flows and wires we held a group discussion about the concept and the how they saw the idea fitting into their workflow.

## Scenario 1: Patient Recovery

### Scenario Intro

While you're hanging out with a friend, you start to experience severe pain in your abdomen. You are rushed to the hospital and have to have surgery to remove a burst appendix. After resting for a day following the surgery, the hospital staff informs you that you are well enough to leave the hospital. The staff gives you some paperwork before you leave the hospital.



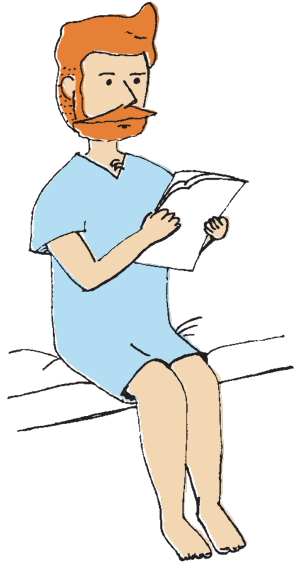
### Scenario Addendum

Before you leave the hospital, a hospital staff member informs you that they have a new text message service that will send you message throughout your recovery. The professional takes your phone number and enrolls you in the service.





# Scenario 1: Information Expectations



## Recovery Text

A B

### Diagnosis

\_\_\_\_\_, \_\_\_\_\_

### Medications

(~) \_\_\_\_\_  
 (~) \_\_\_\_\_  
 \_\_\_\_\_

### Follow Up

\_\_\_\_\_ ~ / ~ / ~  
 \_\_\_\_\_ (~) ~ - ~ ~ ~ / ~ / ~  
 \_\_\_\_\_ ~ - ~ ~ ~ / ~ / ~

### Additional Instructions

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

### Call Your Doctor Immediately If...

- \_\_\_\_\_ : \_\_\_\_\_
- \_\_\_\_\_ : \_\_\_\_\_
- \_\_\_\_\_ : \_\_\_\_\_

## Information Expectations

Mock-documentation containing all of the categories of information that is currently used in discharge documentation were used to test participant expectations.

A Simple documentation that is clearly geared toward patients.

B Document is structured with a clear visual hierarchy and actionable instructions.

## Scenario 1: Message Tone

Please Rank the following from 1-5 (1 being your favorite, 5 being your least favorite)

□	□	□	□	□
<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>
<p>It's super important to keep the incision area clean and dry. Try not to mess with the stitches, staples or adhesive strips around the incision. If you want to bathe, take a shower and try to avoid getting the incision area wet by covering it and/or keeping it away from the direct spray of the shower.</p> <p>Your thoughts about this message</p>	<p>Following an appendectomy, it is important that patients keep the area around their incision clean and dry. If they need to, they can take a shower as long as they avoid getting the incision in the direct spray of water coming from the shower. If stitches or surgical staples were used...</p> <p>they will be removed during a follow-up office visit. If adhesive strips were used, they should be kept dry and generally will fall off within a few days.</p> <p>Your thoughts about this message</p>	<p>It is important to keep the incision clean and dry. Avoid getting the incision wet, even when bathing. If stitches or staples were used, they will be removed during a follow-up visit. If adhesive strips were used, they should be kept dry and generally will fall off within a few days.</p> <p>Your thoughts about this message</p>	<p><b>INCISION CARE:</b> keep clean and dry as much as possible. <b>STAPLES, STITCHES, ADHESIVE TAPE:</b> leave them alone. They will either fall off on their own or be removed during a follow-up appointment.</p> <p>Your thoughts about this message</p>	<p>In these first few days after having your appendix removed, it's important that you keep the area around your incision clean and dry. This will help prevent infections while you heal. Many patients instinctively want to wash the area around the incision while they are bathing or showering...</p> <p>but it's best not to agitate it and to keep it clear of direct streams of water. If the area does get wet, lightly pat it dry and do your best to leave the staples, stitches or adhesive strips alone.</p> <p>Your thoughts about this message</p>

### Message Tone

Participants ranked messages and shared reactions that the different message tones provoked.

**A** Informal tone.

**B** Third person voice to facilitate projection.

**C** Concise, direct, and actionable.

**D** Clear callouts.

**E** Direct addressing of patient with high level of detail.

# Scenario 1: Message Relevance

Please circle all the messages you would want to receive.

Day 1

A

You may be feeling a little groggy, confused, chilly, nauseated or even sad when waking up. Don't worry this is normal. Recovery Text will support you every step of the way.

Your thoughts about this message

With a little rest and care, most people recover from appendicitis and an appendectomy with little difficulty. Recovery Text will support you every step of the way for your home care needs.

Your thoughts about this message

You may have little or no appetite, but if you can, try and drink small amounts of liquid and work up to 8 to 10 glasses of water today.

Your thoughts about this message

Don't forget to drink plenty of water today. We recommend at least 8 to 10 glasses.

Your thoughts about this message

Be sure to keep the area clean and watch for signs of infection. Call us at the office @ 512.340.8963 if you notice any redness or swelling around the incision, or if you develop pain or a fever greater than 101° F (38.3° C).

Your thoughts about this message

You might feel some pain near the incision site, but medication can help lessen it so be sure to let doctors or nurses know if you are uncomfortable or in pain.

Your thoughts about this message

B

The incision and the abdominal muscles may ache, especially after long periods of standing. Take a pain reliever for soreness as recommended by your doctor. Aspirin or certain other pain medications may increase the chance of bleeding. Be sure to take only recommended medications.

Your thoughts about this message

Get out of bed. Walking and limited movement are generally encouraged, but strenuous activity should be avoided.

Your thoughts about this message

Failure to have a bowel movement today is normal, however if this is still the case tomorrow, give us a call at 512.460.9354.

Your thoughts about this message

Please circle all the messages you would want to receive.

Day 1

Please circle all the messages you would want to receive.

Day 2

A Messaging should be encouraging and include specific calls to action.

B Messaging frequency should taper off as the recovery progresses.

## Message Relevance

Participants indicated which messages felt most relevant over the first two hypothetical days of recovery in the scenario in order to gauge the appropriate type and frequency of messages.

# Scenario 1: Findings

## Overall Concept

### Validation

Patient participants were able to easily understand the service concept and perceived it as a clear improvement over the current system. The consensus was that this was a service that would have desired during the hospital health recoveries they had personally experienced.

### Concerns

Patients expressed some concern about giving out their phone number and exposing themselves to potential unwanted contact. Additionally, they thought that this service potentially would feel antiquated if it didn't have some component of interactivity or patient participation. They noted that the service absolutely needed to avoid ever feeling like a robot pretending to be a person.

## Information Expectations

### Validation

Patients reported generally finding the information they expected to be present with a few exceptions.

### Concerns

Patients wanted information like doctor's notes included as well as specific list of procedures performed while they were in care.

## Message Tone

### Validation

Patients wanted to receive the type of information contained in the messages and found aspects of the tones presented that resonated with them.

### Concerns

Patients articulated clear disdain for casual tone. They also expressed a desire for content specific use of voice. For messages designed to encourage reflection and a sense of place in a recovery, patients prefer third person. While direct addressing of the patient is desirable when messages contain calls to action.

## Message Relevance

### Validation

Patients found messages that encouraged their recovery or gave them specific calls to action to be the most relevant. Through their selection of messages over the first few days of a recovery and associated discussion, patients indicated that they wanted about 1-3 messages per day early in the recovery and then a tapering frequency as they progressed.

### Concerns

Patients were not receptive to repetitive messages or messages that contained information they perceived to be judgemental. They expressed concern about receiving about too many texts from the service and feeling hounded.

## Scenario 1: Implications

### **Concise, actionable messages directed at patients.**

Patients want to be told exactly what they can do to support their own recovery.

### **Emotionally validating and reflective messages should not directly address the recipient.**

Using generally language about patient recovery is desirable to give the patient an opportunity to project their own experience into a timeline and avoid awkward feelings about artificial consolation or accentuate feelings of isolation during recovery.

### **Participant Quotes:**

*“(In reference to an emotionally consoling message) Cool, what do I do to assuage these feelings?”*

*“I like the direct message in this that gives clear instruction. I feel like lots of care instructions are somewhat left up to interpretation.”*

*“I would like this to be reworded to ‘Many patients’. In initial stages I might not want the language to be about me specifically.”*

### **Better to receive too few than too many.**

From a logistical standpoint, patients were very direct about not wanting to be flooded by text messages at any point because of emotional factors (annoyance) as well as practical factors (phone plans).

### **Patients expect some opportunity for participation.**

Without some aspect of interactivity or participation (i.e. only one way messaging) the system will feel antiquated to many patients despite being an improvement upon the existing system.

*“I might be concerned if I couldn’t interact with it directly, meaning that I would have to find a number to call a nurse or doctor then explain which text message I received.”*

*“When it’s about what I should do (a message), I want language that empowers me.”*

*“Too many (messages) and I’d start to disregard.”*

## Scenario 2: Professional Interaction Concept



### Slow Flow:

Nurse Jack is near the end of his shift; he's exhausted. He's had eight high needs patients but he's on his last discharge and he's ready to head home. A young man came in earlier today with a broken leg, he's all patched up and now he's getting impatient to leave. Jack comes in and prints out the exit documentation from the EMR system. While that's printing out he pulls up the Recovery Text software and selects "Broken Bone" and "Pain Meds" from the drop down menu, as he selects each condition, a timeline at the top of the software starts to populate with points. He types in the patient's phone number into the contact region and hit's 'SEND'. As the exit documentation finishes printing, the printer spools back up and prints the Recovery Text 'Timeline' and 'Guide' sheets. At the same time the patient receives a text message welcoming him to the hospital's extended care system. Jack introduces the patient to the text messaging service and explains the patient's recovery process, using the timeline as a visual guide and prompt.

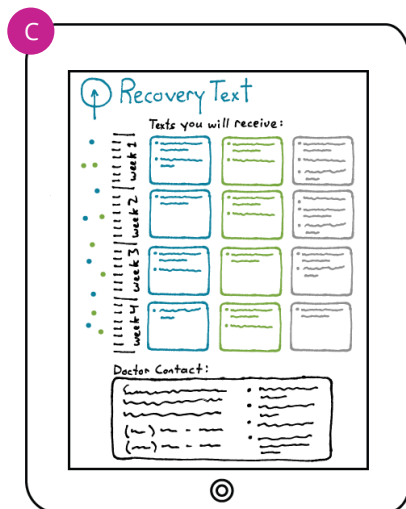
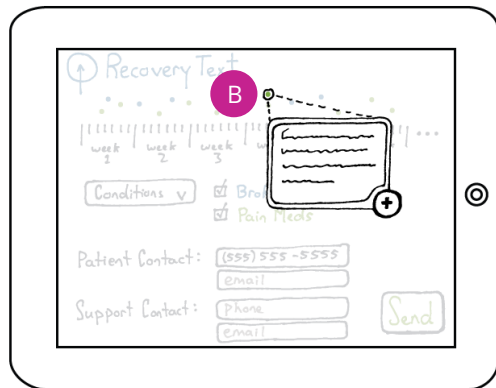
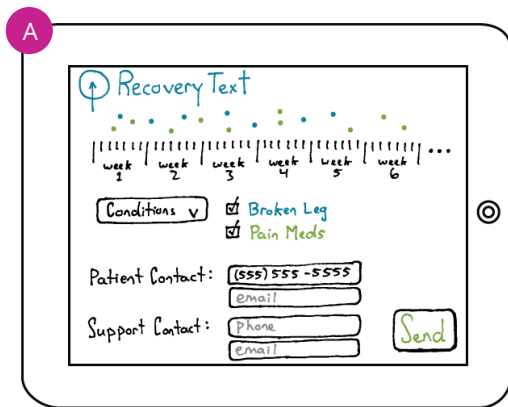
## Scenario 2: Professional Interaction Concept



### Fast Flow:

Social worker Jackie is meeting with one of her clients, an elderly woman who's been in the hospital a few days after a taking nasty fall. Jackie sits down with the patient and starts going over her recovery process, she begins by pulling up the Recovery Text software. In the program she types in "Broken Hip" and "Osteoporosis" into the text field and the timeline at the top of the field populates. Jackie walks through the recovery process adding some extra notes by clicking on the timeline. Jackie adds the patient's email and her daughter's cell number to the Recovery Text dialog and hits 'SEND". She goes over the recovery process again with the patient on the printed out timeline generated by the Recovery Text Software and includes it with the documentation generated by the EMR system.

## Scenario 2: Set-Up Concepts



### Information Expectations

High-level wireframes were generated to ground our participants articulations around the scenario flows.

**A** The Main Screen; in this screen the professional will select the type of conditions and the timeline of messages populates at the top.

**B** Message Modification; this screen illustrates the professionals ability to edit individual messages and add custom messages.

**C** Summary Screen; this screen acts as an example of the type of information that would be provided to the patient.



## Scenario 2: Findings

### Overall Concept

#### Validation

Professional participants, overall were very excited about the concept and think it would be a welcomed addition to their respective workflows. The consensus was that the current system of information distribution to patients isn't working and is only serving to overwhelm an anxious and impatient patient. A service that reinforces the important information would be a welcomed addition.

#### Concerns

The professionals expressed a number of concerns especially in regards to patient privacy and patient access. There were also concerns about how this system would handle more complex patients with co-existing conditions.

### Current System Integration

#### Validation

Professionals overwhelming agreed that this was something that could be integrated to the current system and would be a beneficial addition to their workflows.

#### Concerns

None

### Barriers to Integration

#### Validation

Overall the only barriers to integration from the professional side had to do with the willingness of the provider to add an additional tool to but the overall feel was that due to the potential benefit this service could provide that was something that could worked past.

#### Concerns

The major concerns had to do with patient access. Many low income patients will change their phone number often and the system will need a way to update to stay in contact. The other concern was making the system multi-lingual.

### Potential System Usage

#### Validation

Due to the varied background of our participants and the simplicity of the concept, our participants provided a wide range of implementations for this tool ranging from appointment reminders to wound care to postnatal care.

#### Concerns

There was interest in making a system that was 2-way, that had some sort of feedback. Overall though most of the participants agreed that if the service started simply it could be easily expanded.

## Scenario 2: Implications

### The service should start early in the process.

As soon as a patient enters care the staff is preparing for them to leave. This same practice should be extended to the patient and our service could start giving the patient relevant information early on in the process, before they leave care.

### The service needs to address comorbidity.

There is inherent complexity to patient care where no condition is clear cut and there are often multiple, things going on at the same time. Our system needs to address this complexity.

### Participant Quotes:

**“the discharge process includes being given a TON of useless paper that I am never going to look at again. However if info is being sent to my phone or ipad I am more likely to look over it.”**

**“There’s always more than 1 thing wrong with the (patient).”**

**“Everyone has a cell phone, not everyone has an email/computer.”**

### Patients need to opt in.

Due to concerns around privacy and HIPPA standards our professional participants expressed that the service needs to be opt-in. While we agree with this assessment we believe that the service will have the most impact if it is opt-out, in this regard the requirements of privacy and HIPPA need to be explored further.

### There needs to be a clear introduction.

One of the most crucial points of interaction with a patient lies in the introduction of the service. For a patient there needs to be a clear value to the service for them to trust it.

**“This workflow sounds great! If only it existed...”**

**“(in regards to the service) Should be introduced earlier - like beginning of admission. Earlier introduction will make it easier/smoothen on discharge.”**

**“More follow up! Even tiny reminders can help”**

**“It would be something they would have to opt into.”**

# Think Aloud Testing

# Introduction to Think Aloud Testing

## Phases: From Ideate to Prototype

Following the Research and Synthesis phases we entered the Ideation phase where we generated a few hundred ideas, ranging over the fidelity spectrum. Grounding those ideas in our research we narrowed down to a single concept. We tested that concept against the competitive landscape and have moved it into the Prototype phase. At its heart, Recovery Text is a service and tool that builds better communicative relationships between patients and physicians; in many ways it acts as a translator between those two disparate groups. Keeping this in mind we designed two testing scenarios, one for patients and one for professionals. For the professionals we focused on testing the usability of the concept and how it could fit into their workflows. For the patients we focused on the type of information they might want to see as well as the tone of the messages.

## Wireframe Creation

The team created a digital prototype of the professional facing interface as well as paper representation of the test messages directed toward patients. These prototypes contained a minimum amount of information to convey the intent and elicit feedback and conversation.

## Prototype Validation and Usability

To validate the underlying concepts and get an initial feel for usability we tested with seven participants who had relevant experiences as either a healthcare patient, caregiver, or professional.

### Message Tone and Content

In order to test the tone and content of message, participants were given a scenario as asked to consider a number of messages related to a specific recovery. As they considered the messages, they externalized reactions and rated messages. Following the activity they were engaged in discussion about their overall impressions and thoughts and explored their thoughts about desirable interactions with a text message system.

### Interface Expectations

Using a digital wireframe pdf, participants walked through two distinct professional workflows. They were given scenarios to help them understand the context of the interface. They were also given overall goals with itemized task lists to guide their motivations in their interaction with the interface. The tests were designed to explore each aspect of the interface and gauge user expectations in order to identify interaction design issues at an early stage.

# Think Aloud Testing Methodology

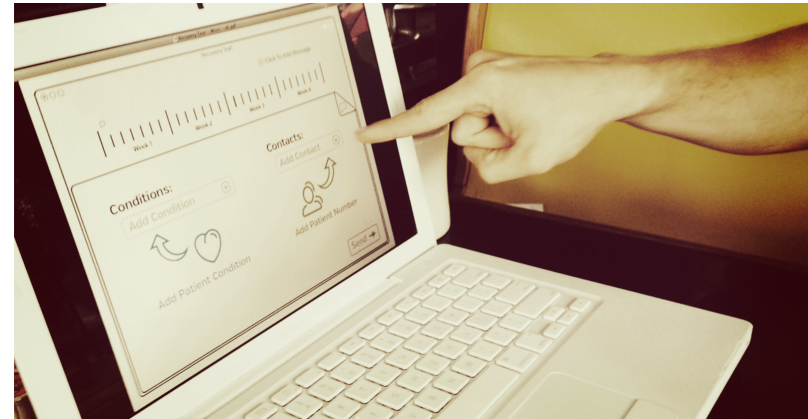
## Validation

Although think aloud testing is originally grounded in externalizing working memory for usability testing, it can also be modified and used as a way of encouraging participants to reveal their expectations about interactions. Although this isn't a representation of their working memory, it can provide valuable insight in early stages of design about user expectations and problems solving and can help the design team address troublesome interactions early on.



## Usability

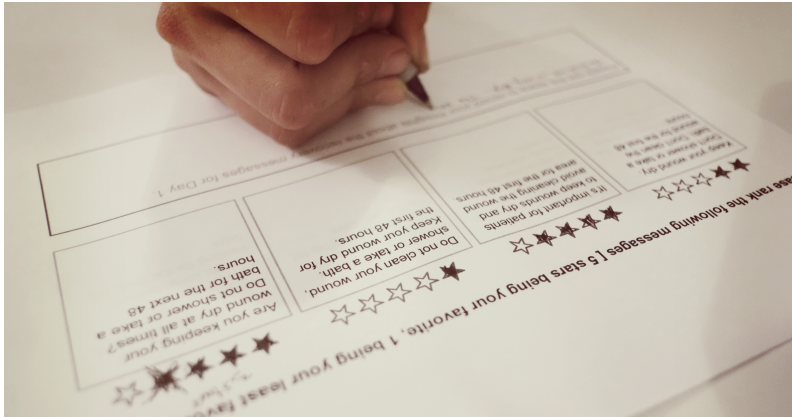
Think aloud testing is an effective way to expose some of the thoughts in working memory without interrupting or altering outcomes. Participants are able to speak aloud their thoughts and intentions as they are happening and in this way, the design team gains valuable insight into a users mental models and intuitive responses related to the interface.



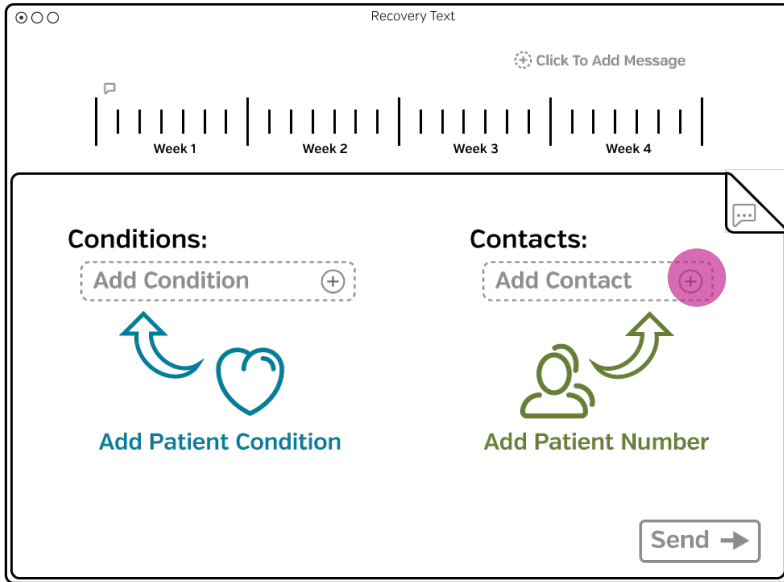
# Think Aloud Testing Methodology (con't)

## Provocation

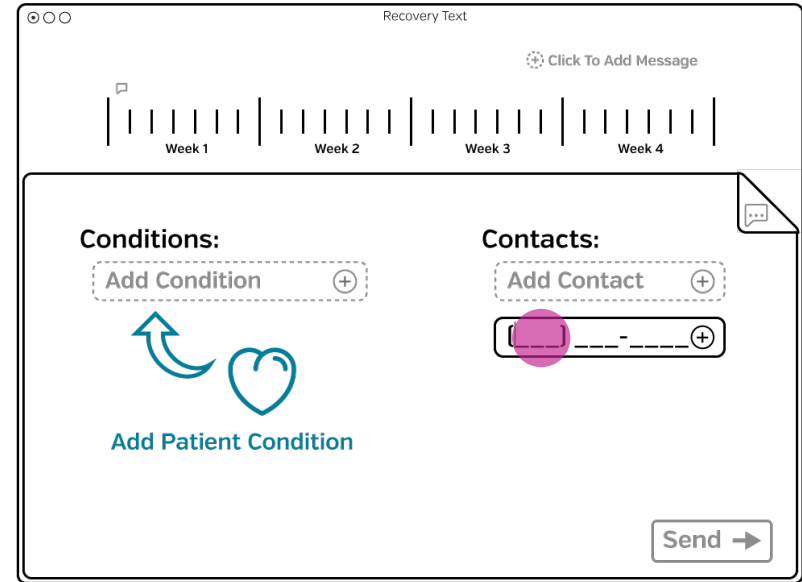
Talking out ideas can act as a provocation for participants and prompt them to externalize deeper insights about their own perspective. This is especially effective if they have been given an activity that gives time to place themselves in a specific context or mindset before being prompted about new ideas that build on that context.



# High-Level Professional Wireframes

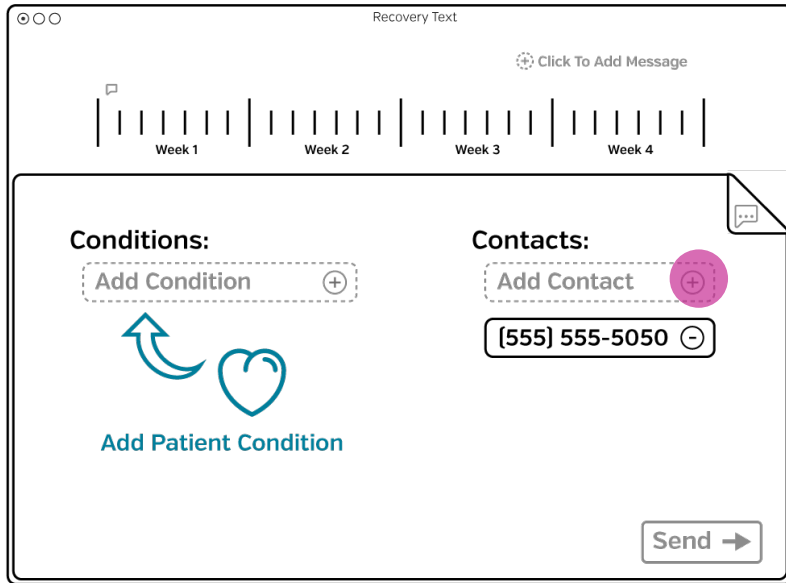


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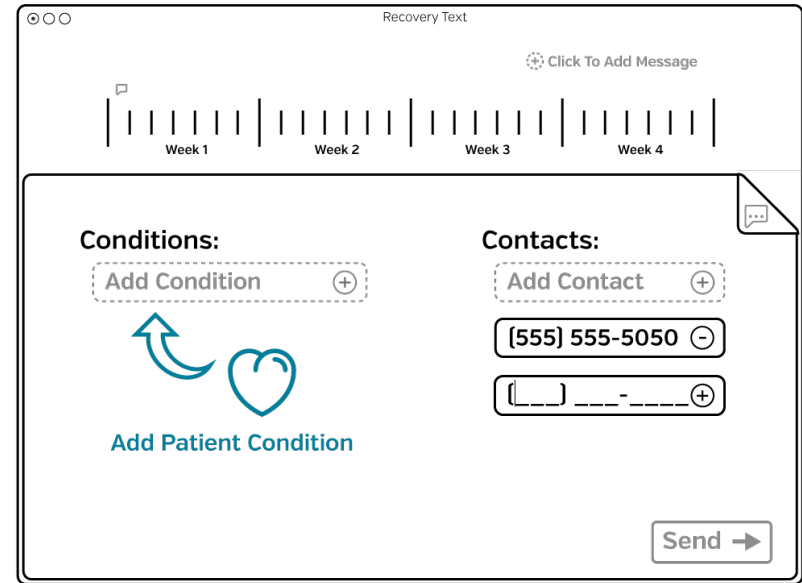


1.2

# High-Level Professional Wireframes



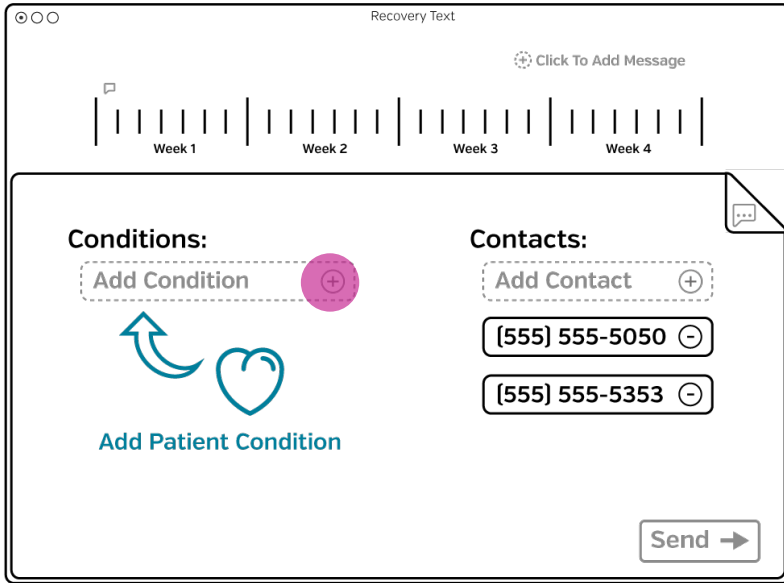
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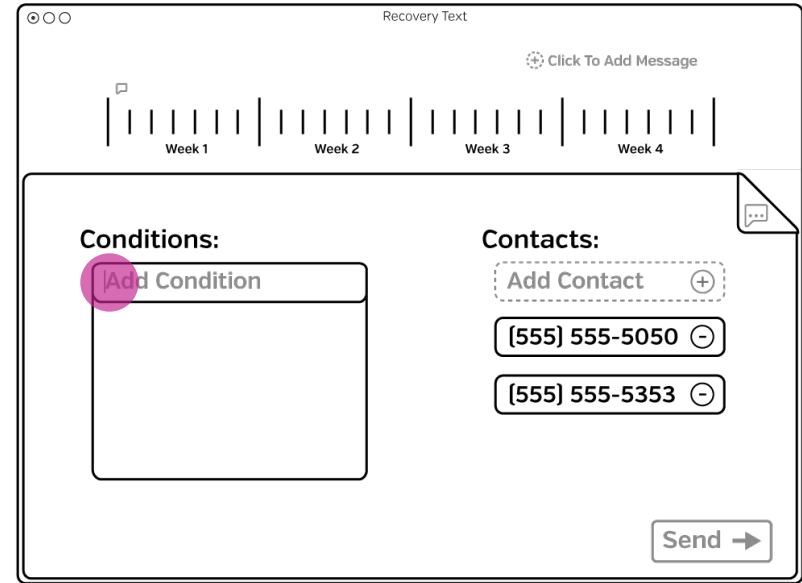
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# High-Level Professional Wireframes

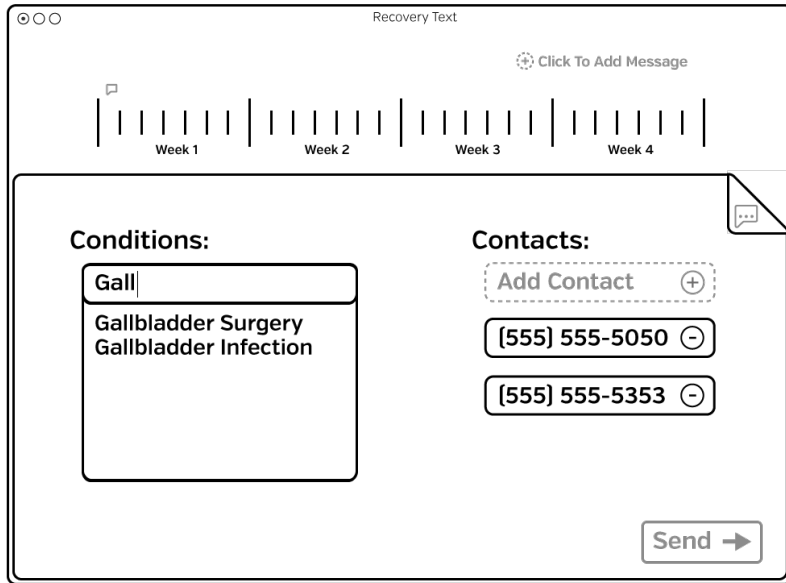


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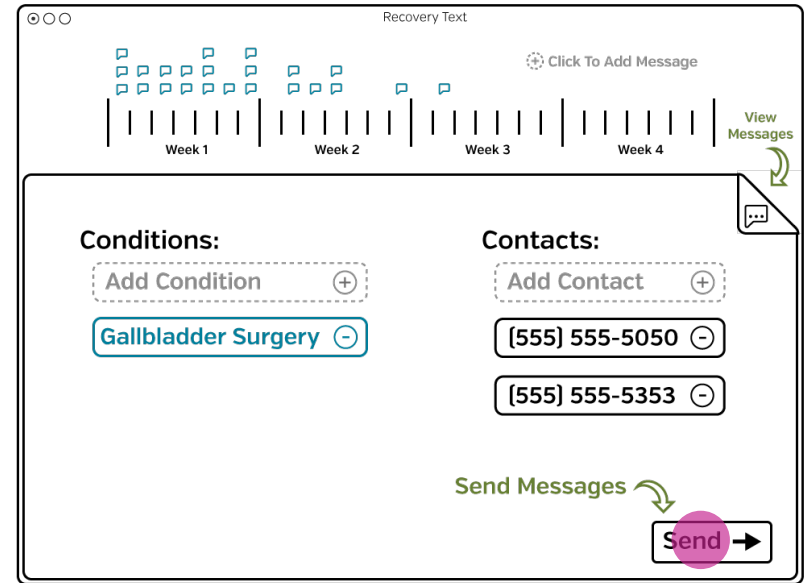


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# High-Level Professional Wireframes

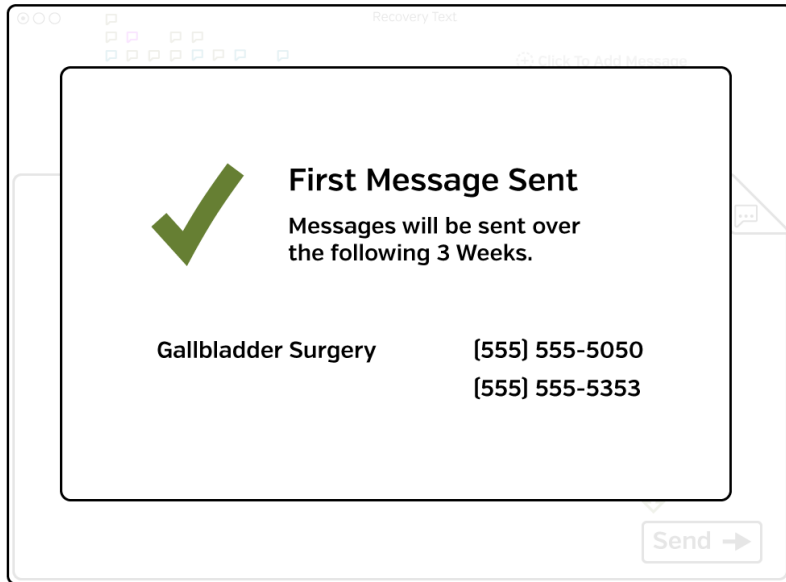


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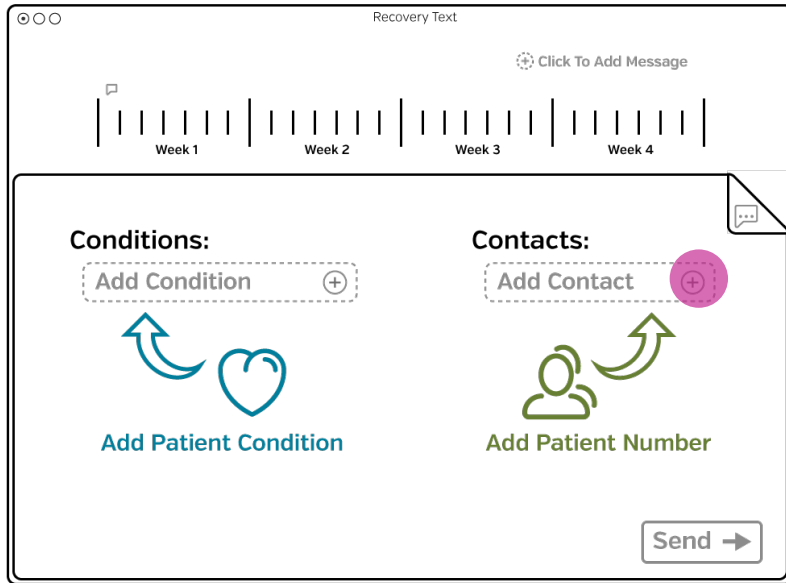
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## High-Level Professional Wireframes

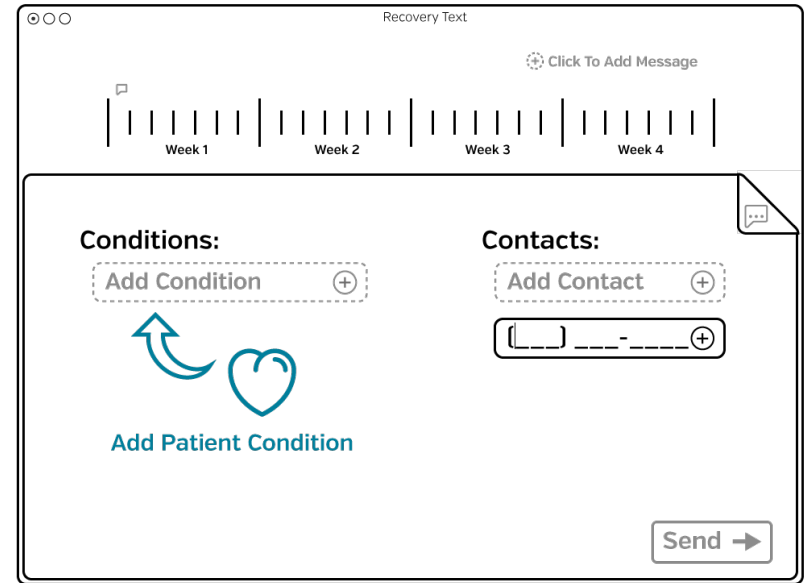


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# High-Level Professional Wireframes

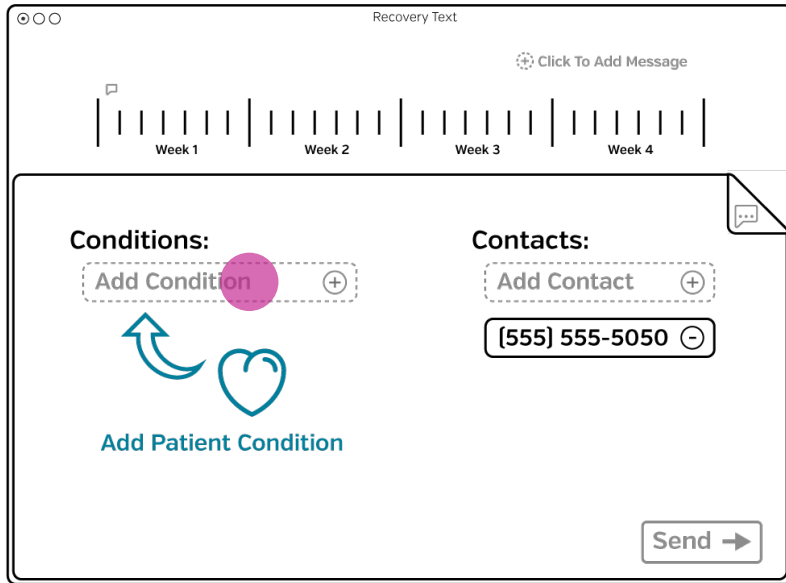


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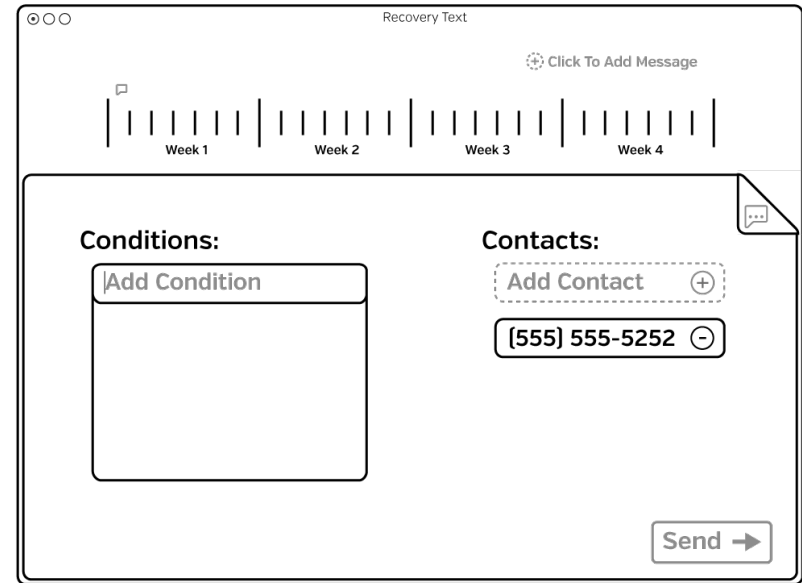


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# High-Level Professional Wireframes

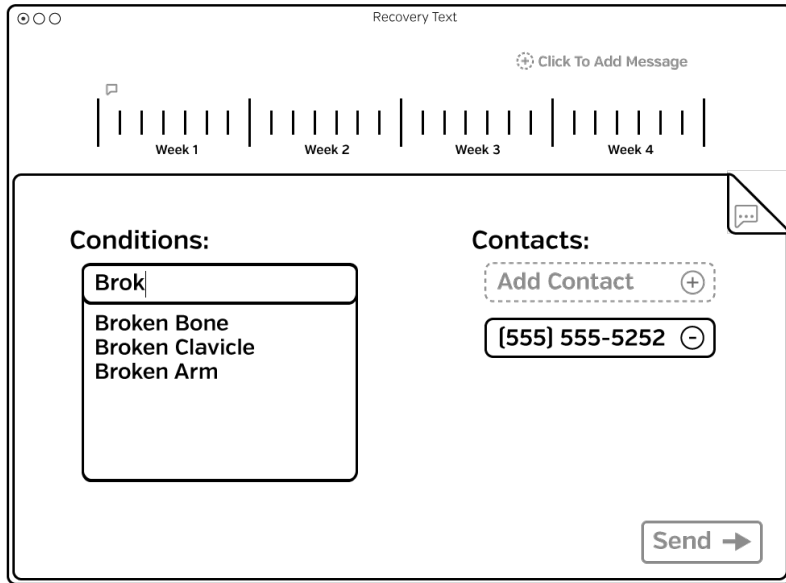


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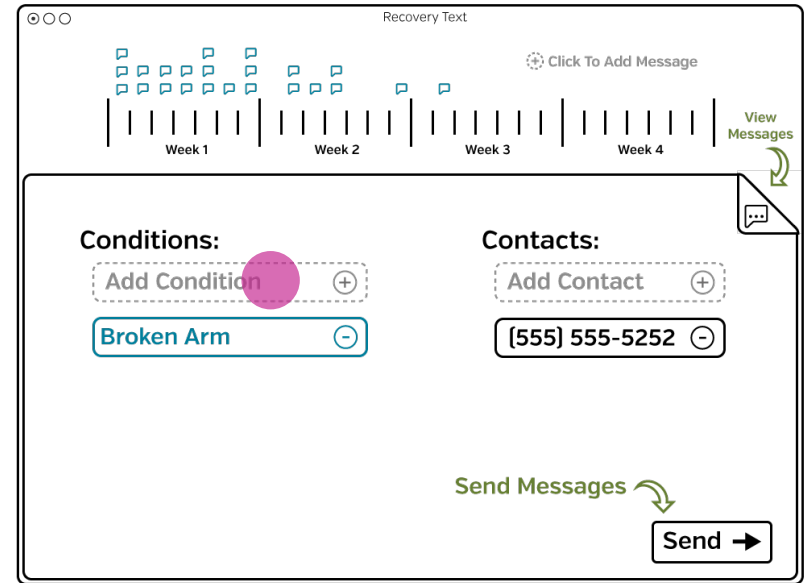


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# High-Level Professional Wireframes

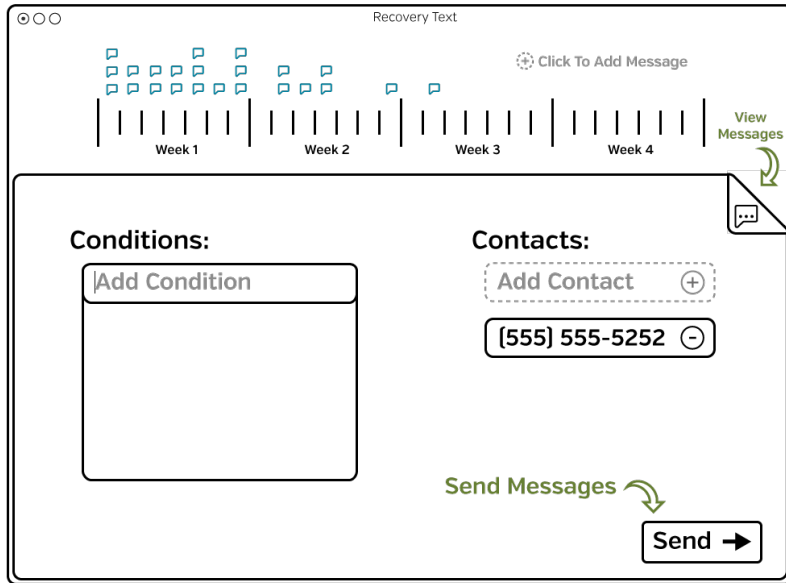


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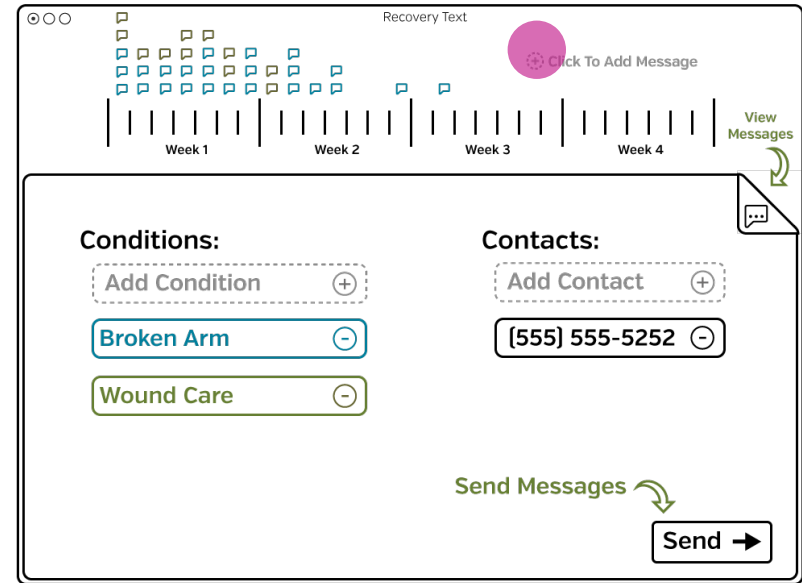


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# High-Level Professional Wireframes

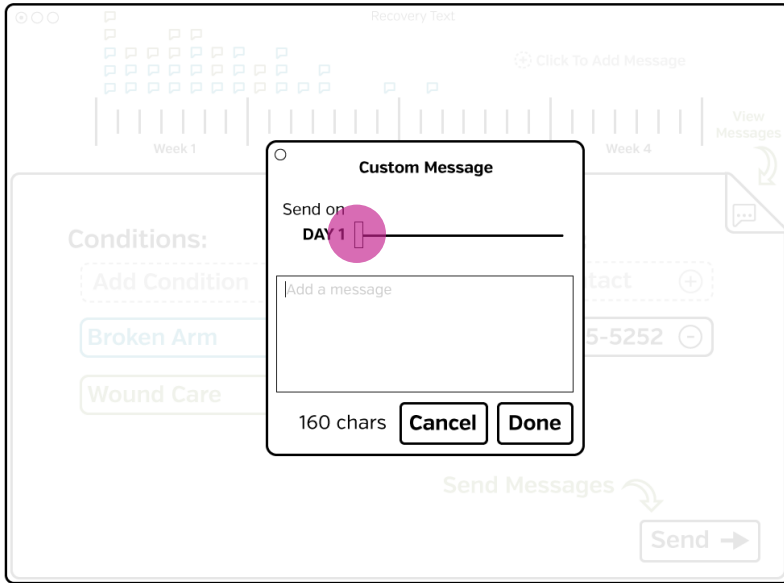


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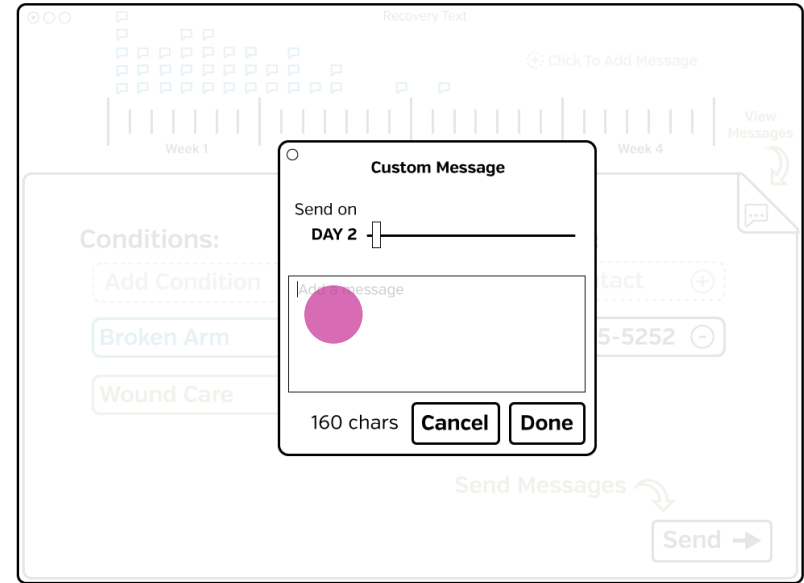


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# High-Level Professional Wireframes



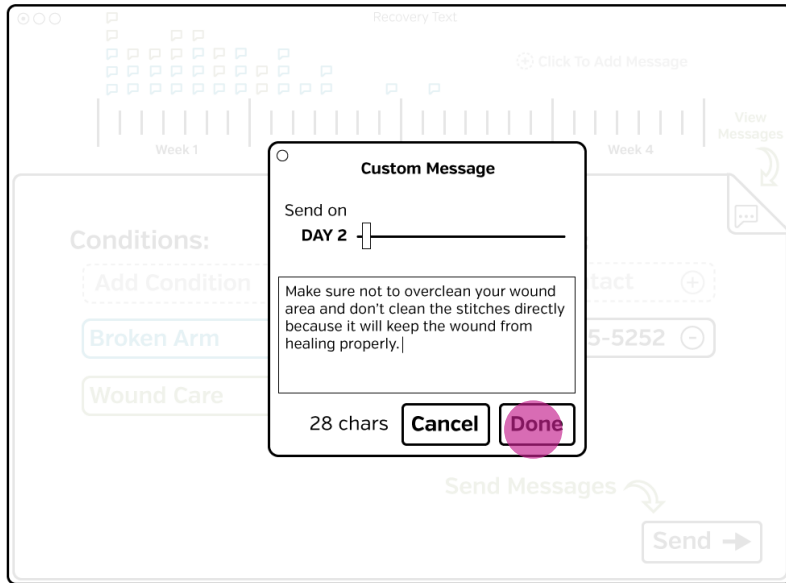
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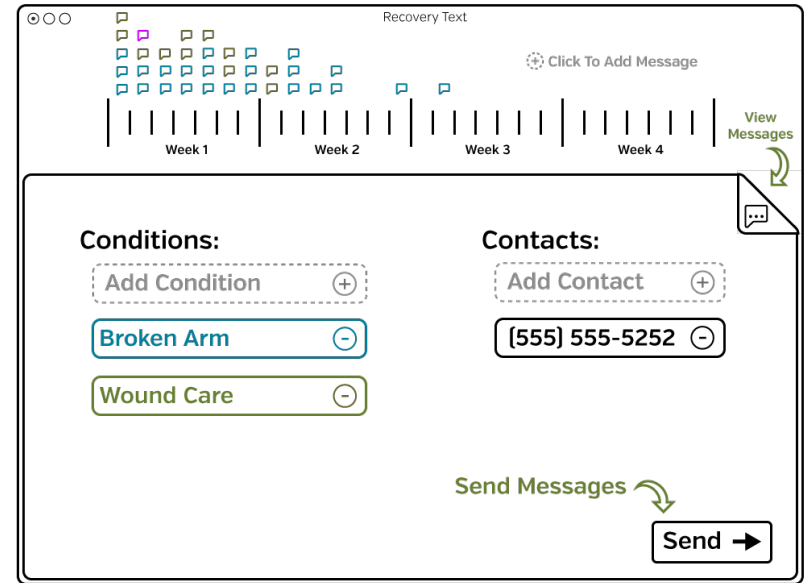
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# High-Level Professional Wireframes

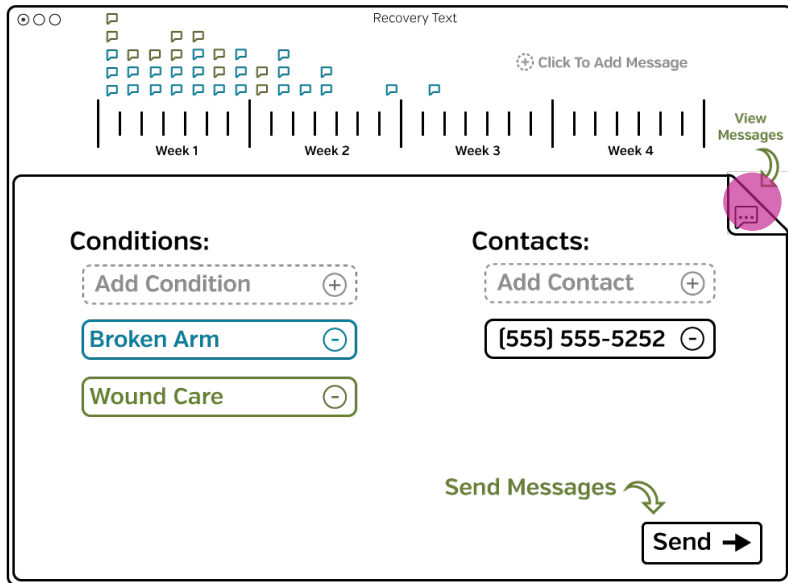


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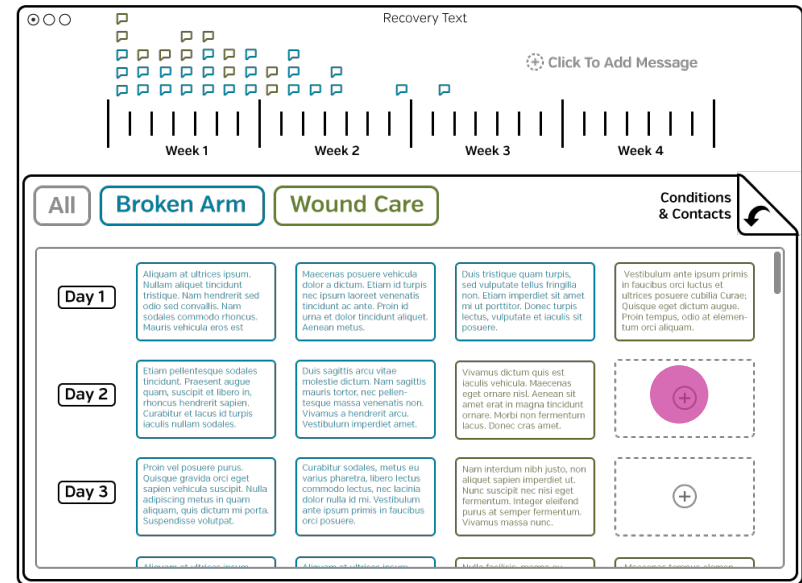


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# High-Level Professional Wireframes

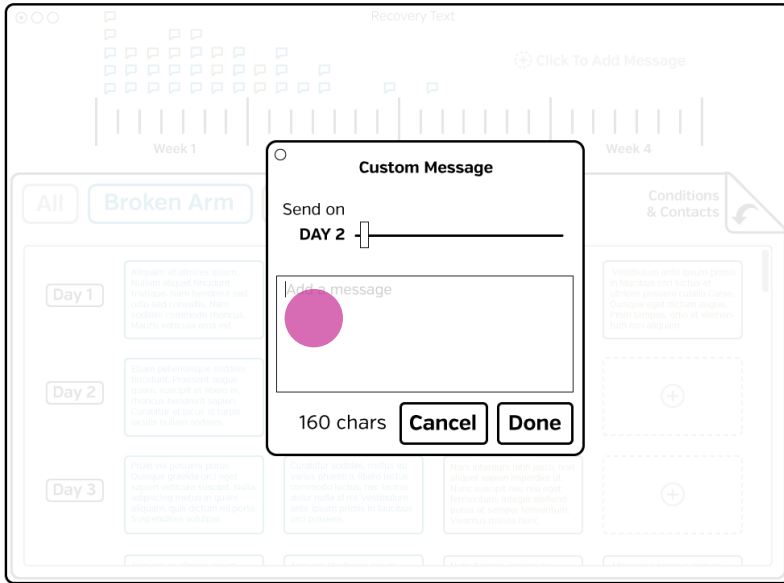


2.13

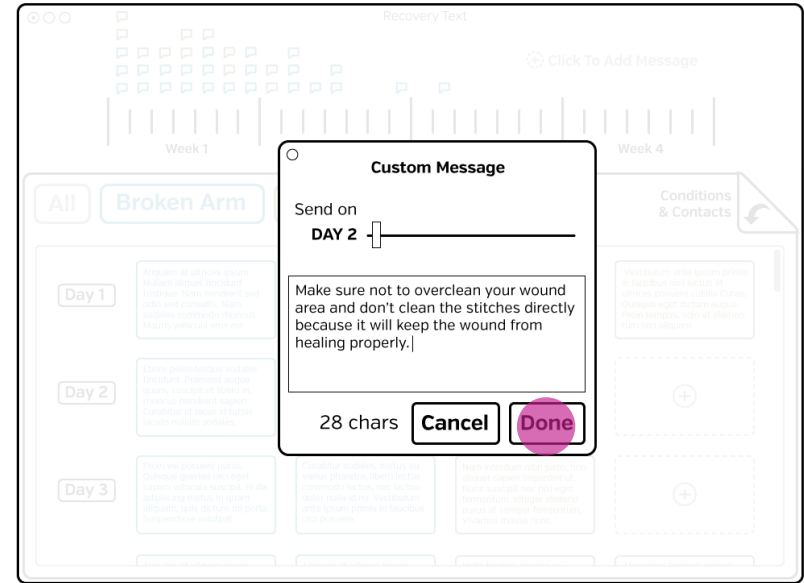


2.14

# High-Level Professional Wireframes

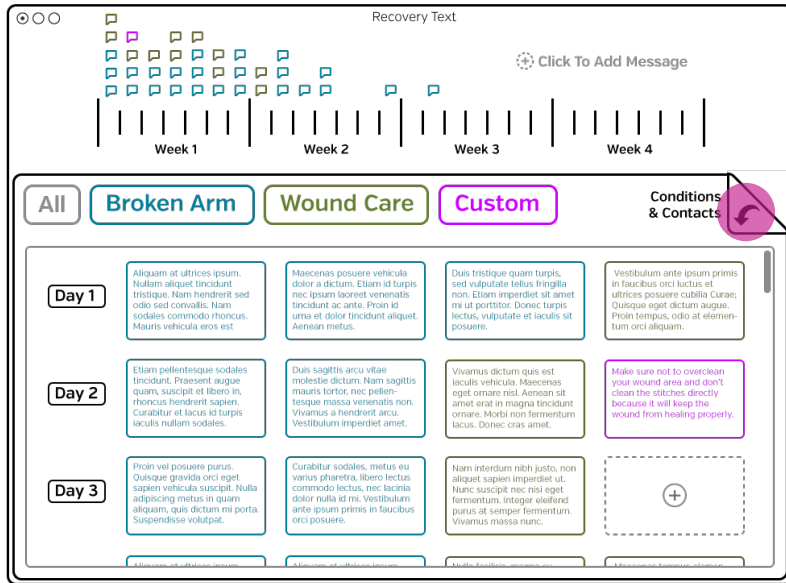


2.15

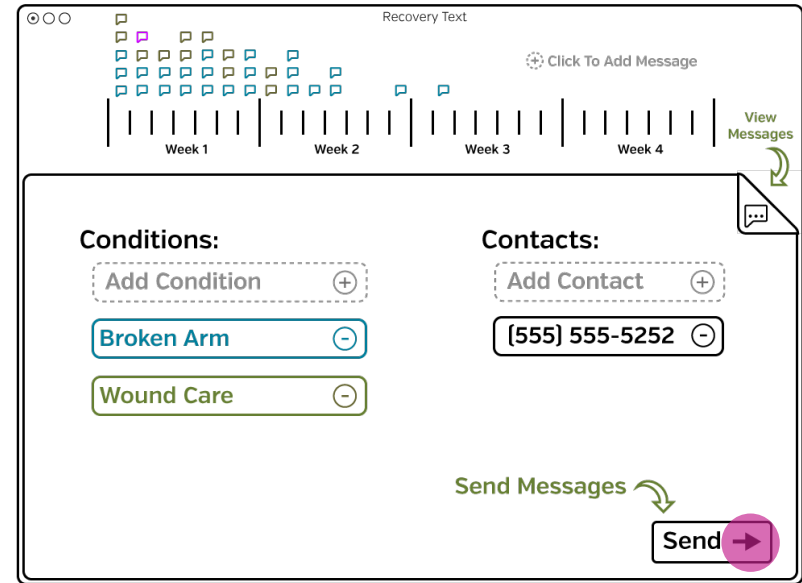


2.16

# High-Level Professional Wireframes

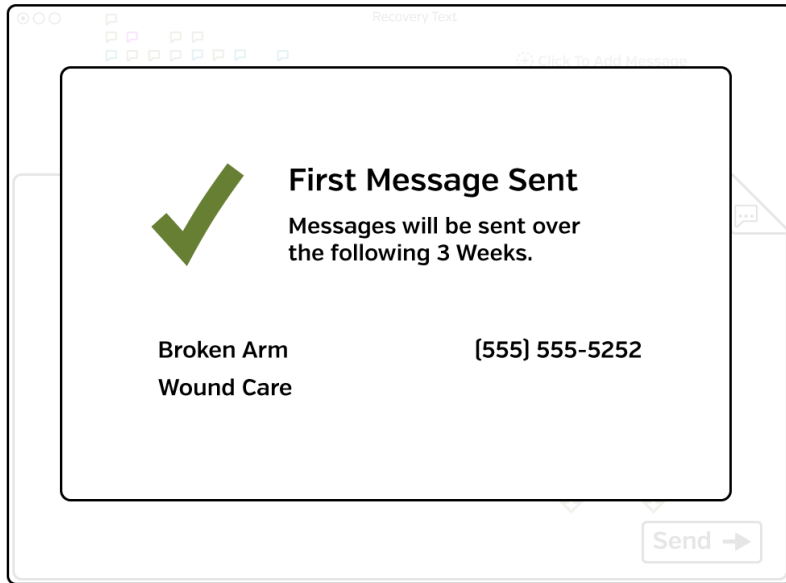


2.17



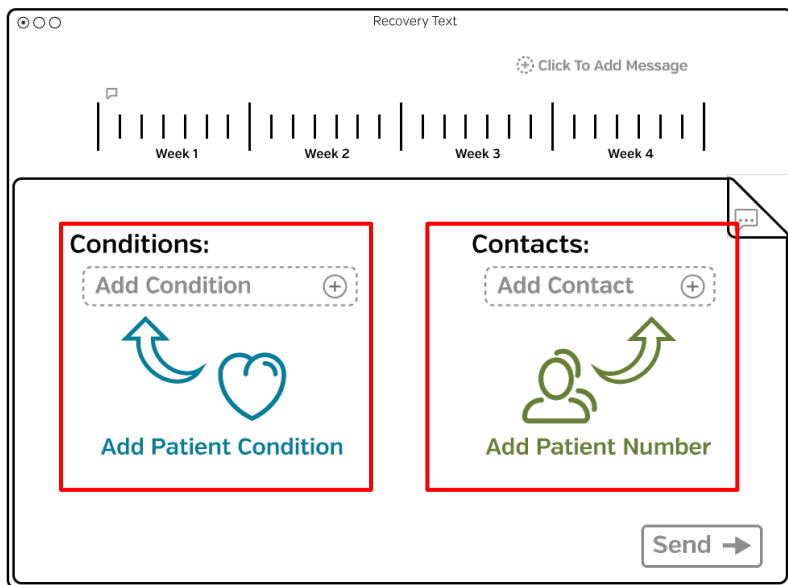
2.18

## High-Level Professional Wireframes



2.19

## High-Level Professional Wireframes



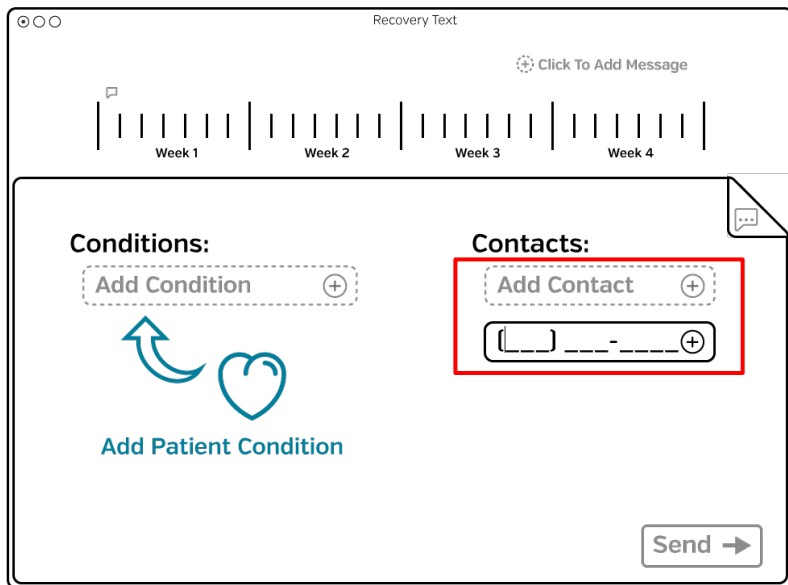
### Issue: Order of Operations

We expected that users would want to enter “Conditions” before they enter “Contacts”. Through testing we found the opposite to be true; our participants wanted to enter “Contacts” prior to “Conditions”.

### Potential Solutions:

When the software is built out it won't matter in which order “Contacts” and “Conditions” are entered but in order to match the user's expectations we suggest simply reversing the “Contacts” and “Conditions” fields.

## High-Level Professional Wireframes



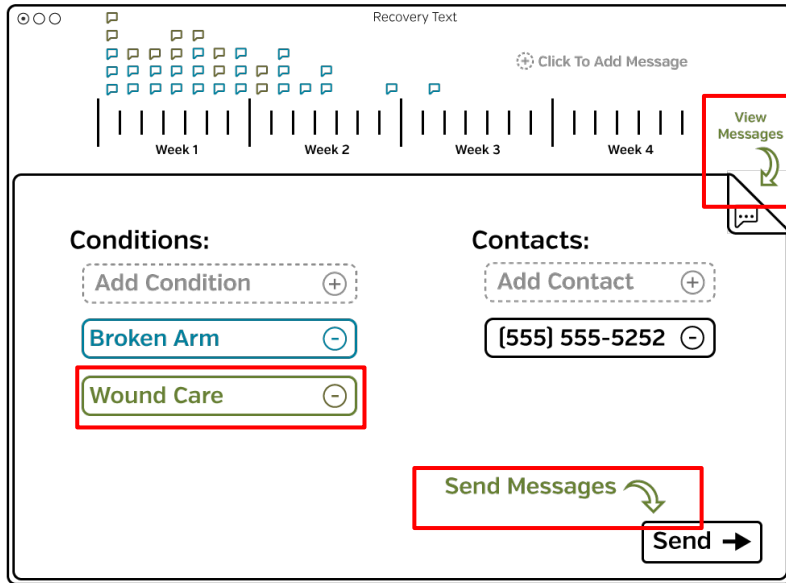
### Issue: “Add Contact” Box

There was a general break between the user’s expectations of how the “Add Contact” box would work and how it actually worked. In our proposed interface, when you click on the “Add Contact” box a box the same size appears below it and prompts the user to add a phone number. Users expected to add the contact into the original “Add Contact” box.

### Potential Solutions:

The interface should reflect this expectation and allow the user to input the phone number into the original field and a new “Add Contact” field should appear below it. In addition we suggest shortening the “Add Contact” box in order to give it extra visual distinction from the input field. Finally removing the “+” symbol and circle from the input field would further help with clarity of intent.

# High-Level Professional Wireframes



## Issue: Misuse of Color

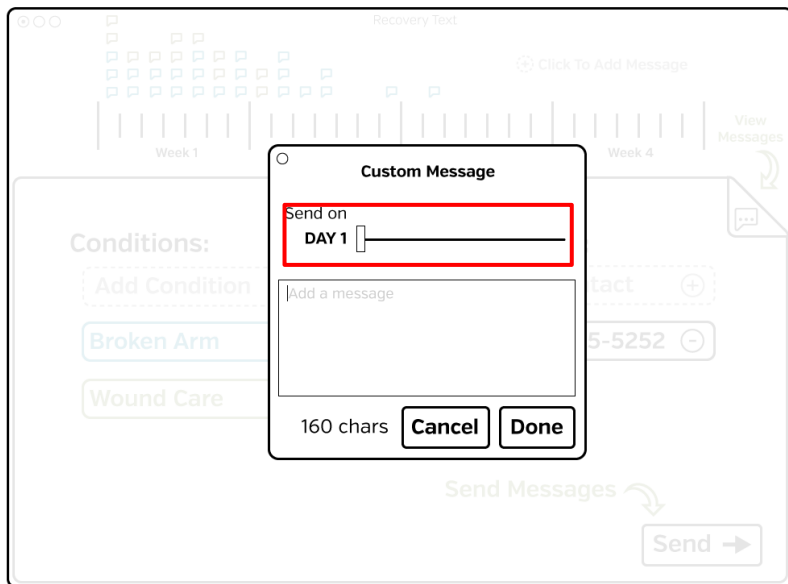
In our interface we used color as a way to indicate affiliation of various design components. One of the main issues that we ran into was that the colors had multiple meanings and relationships throughout the interface resulting in user confusion.

## Potential Solutions:

One of our participants actually suggested that we choose a specific and differentiable color to use in all our internal interaction and to have colors that are specific only to selected conditions. This would help to alleviate confusion and create better continuity throughout the interface.



## Professional Wireframes - Primary Findings (con't)



### Issue: Slider Usability

When a user enters a new message a dialog box appears that has prompts for a message and a field to select the day the message will be sent. It's the later that caused some concern with a number of our users. Most were concerned with the accuracy of selecting a day on a slider, especially if there was a long recovery.

### Potential Solutions:

A simple text input field that would allow the user to enter the desired day directly would help to alleviate this issue. This could also be combined with a more visual method of input (like the slider) to give a level of confirmation and feedback to the user.

## Professional Wireframes - Secondary Findings

Unique Identifier	Unique Screen ID	Critical Incident Description	Critical Incident Evidence	Severity (1-5)	Frequency (1-5)	Proposed Solution
BT_01	1.1	Confusion about three circles in upper left corner.	Participant said, "I think these are showing me that there are 3 steps to the process."	1	1	Add dash and plus symbols to create a stronger association with the look and feel of standard "close", "minimize", and "expand" actions
BT_02	1.2	Mismatch of expectations about phone number entry.	Participant thought that the Add boxes should move down the interface as new info is populated	3	2	Change the operation of the Add Contacts and Add Conditions buttons
BT_03	1.2	Mismatch of expectations about order of entry	Participant thought it would be more natural to have the contact info on the left and conditions on the right	3	3	Switch the placement of contacts and conditions
BT_04	1.3	Unexpected symbol for remove	Participant thought an X would work better than a - for removing a contact or condition	1	1	Consider replacing minus with Xs

## Professional Wireframes - Secondary Findings (con't)

Unique Identifier	Unique Screen ID	Critical Incident Description	Critical Incident Evidence	Severity (1-5)	Frequency (1-5)	Proposed Solution
BT_05	2.8	Misuse of color	Participant was confused by green being used for than one purpose. It's used for association with a health condition as well as action buttons and the check mark	3	2	As the design progresses, use a more coherent and consistent color palette and interaction paradigm.
BT_06	2.8	Failure to notice of available action	Participant didn't not an action button at the top of the screen to add a custom message	2	1	Explore options like animation or use of color to call more attention to the shortcut to custom messages.
BT_07	2.9	Slider Usability	Participant was concerned about longer recoveries and that a slider would be difficult to get on the exact day	2	2	Consider other possible micro interactions for adjusting the Day field like a drop down or dual entry
BT_08	2.12	Color model confusion	Participant was curious if the person receiving the texts would be able to tell the message was a custom message sent by the professional	3	2	Explore the implications of a patient knowing versus not knowing about custom messages. This also has implications for patients with concurrent conditions

## Professional Wireframes - Secondary Findings (con't)

Unique Identifier	Unique Screen ID	Critical Incident Description	Critical Incident Evidence	Severity (1-5)	Frequency (1-5)	Proposed Solution
BT_09	2.14	No horizontal scroll	Participant said, "It seems like there should be five in this row since there are five message indicated for the first day at the top."	3	1	Either limit to total number of messages per day, modify the message screen to show more messages, or add a horizontal scroll
SF_01	1.1	Mismatch of expectations about order of entry	Participant thought it would be more natural to have the contact info on the left and conditions on the right	3	3	Switch the placement of contacts and conditions
SF_02	1.9	Modification before sending messages	Participant wanted check boxes on the final screen to be able to customize the set of messages related to a condition	1	1	Although this specific feedback doesn't make sense in the current interface, the notion of having a primary condition with modifiers based on concurrent conditions rather than just layering a second set of messages on top of the first could be a smart way to develop message templating
AH_01	1.8	Confusion about where to interact	Participant wasn't sure which part of the timeline was click-able to add a message	1	2	Consider using animations to support the current layout

## Professional Wireframes - Secondary Findings (con't)

Unique Identifier	Unique Screen ID	Critical Incident Description	Critical Incident Evidence	Severity (1-5)	Frequency (1-5)	Proposed Solution
BT_10	1.9	Not enough info about first message	Patient wanted to be able to see a little bit of the first message on this screen	2	1	Might be a good idea to show some content on this confirmation screen or have a review screen before confirmation
AH_02	2.12	Failure to notice custom message icon	Patient didn't notice the pink icon indicating the custom message been added until prompted	1	1	A filled color or animation might be more noticeable
BD_01	1.1	Mismatch of expectations about order of entry	Participant wanted to enter contact information on the left side of the screen	3	3	Switch contact info to the left side and move conditions to the right
BD_02	1.2	Confusion about where to interact	Participant wanted to type directly into grey box	3	3	Allow users to type directly into contact field
BD_03	1.3	Color model confusion	Participant was unable to recognize the distinction between the blue and green	2	1	Consider updating color to allow for more contrast between conditions
BD_04	1.4	Mismatch of expectation on functionality	Participant was unclear on what was happening when clicking add condition field	2	1	Consider updating copy to be more actionable i.e. click to add condition here

## Professional Wireframes - Secondary Findings (con't)

Unique Identifier	Unique Screen ID	Critical Incident Description	Critical Incident Evidence	Severity (1-5)	Frequency (1-5)	Proposed Solution
BD_05	2.1	Failure to notice custom message scroller	Patient overlooked Day 1 prompt	3	3	Constrain field to start with the date before moving forward in customizing message
BD_06	2.2	Failure to notice updated timeline	Patient did not notice the update text messages on timeline	2	1	Consider filling text message icons with bold color
BD_07	2.3	Sense of Place	Patient wanted to see new and current conditions on first screen	2	1	Explore options to integrate current messaging preview on first screen
MK_01	1.1	Mismatch of expectations	"After adding contact number I don't see where their name is."	2	2	Consider integrating confidential patient identifier
MK_02	2.1	Mismatch of expectations	"What if you are sending a text to 3 or 4 family members?"	3	2	Consider including patient relationship titles i.e. patient's mother
MK_03	2.2	Mismatch of expectation on functionality	Patient added message instead of adding additional condition	1	1	Consider updating copy to say "add additional condition here"
MK_04	2.3	Multiple points of access	Prefers to update messages by clicking on timeline icons	1	1	Consider including progressive disclosure for click-able timeline icons

## Professional Wireframes - Secondary Findings (con't)

Unique Identifier	Unique Screen ID	Critical Incident Description	Critical Incident Evidence	Severity (1-5)	Frequency (1-5)	Proposed Solution
MK_05	2.4	Frequency level of detail	"What time will the patient receive the text messages?"	1	3	Consider including time detail option

## Patient Provocations

Please rank the following messages [ 5 stars being your favorite, 1 being your least favorite ]



Keep your wound dry.  
Don't shower or take a  
bath. Don't clean the  
wound for the first 48  
hours.

Most Popular



It's important for patients  
to keep wounds dry and  
avoid cleaning the wound  
area for the first 48 hours.



Do not clean your wound,  
shower or take a bath.  
Keep your wound dry for  
the first 48 hours.



Are you keeping your  
wound dry at all times?  
Do not shower or take a  
bath for the next 48  
hours.

Please use this space to record your thoughts about the recovery messages for Day 1.



## Patient Provocations

Please rank the following messages [ 5 stars being your favorite, 1 being your least favorite ]



Try to keep the area of the wound propped above your heart whenever you can for the first few days to prevent unnecessary swelling for the first two days.



Patients can prevent unnecessary swelling the first few days by keeping the wound area propped up higher than their hearts whenever possible.



Keep the area of the wound propped above your heart to prevent unnecessary swelling for the first two days.

Most Popular



Are you propping your wound above your heart everytime you are resting? Do this to prevent unnecessary swelling for the first two days.

Please use this space to record your thoughts about the recovery messages for Day 1.

## Patient Provocations

Please rank the following messages [ 5 stars being your favorite, 1 being your least favorite ]



Today is a good day to begin showering but don't take a bath, go swimming, or soak the wound until after it has healed completely.

Most Popular



Patients can shower but should avoid soaking the wound. Taking a bath or swimming before the wound has completely healed can cause complications.



Begin showering but do not take a bath, swim, or soak the wound until after it has healed completely.



You can shower today, but do not take a bath, go swimming, or soak your wound until after it has healed completely.

Please use this space to record your thoughts about the recovery messages for Day 3.

## Patient Provocations

Please rank the following messages [ 5 stars being your favorite, 1 being your least favorite ]



Begin cleaning around the wound 1-2 times daily with some cool water and soap. Don't clean the stitches directly and gently pat the area dry afterwards.



Patients should avoid cleaning the stitches directly but should begin cleaning around the wound with cool water and soap about 1-2 times a day.



Clean around your wound 1-2 times a day with cool water and soap. Do not clean your stitches directly. Pat the area dry afterwards.

Most Popular



Have you cleaned around your wound with cool water and soap today? Do this twice a day but do not clean your stitches directly. Also, remember to pat the area dry afterwards.

Please use this space to record your thoughts about the recovery messages for Day 3.

# Patient Provocations

Please rank the following messages [ 5 stars being your favorite, 1 being your least favorite ]



If the wound isn't rubbing against anything, it's best to let it be open to the air.



Many patients experience good healing results by letting the wound be open to the air as much as possible as long as it isn't rubbing against anything.



Let your wound be open to the air if your wound is not rubbing against anything.



Keep your wound open to the air if it's not rubbing against your clothing.

Most Popular

Please use this space to record your thoughts about the recovery messages for Day 4.

## Patient Provocation Primary Findings

### Messages should be direct

Participants rated very direct messages the highest.

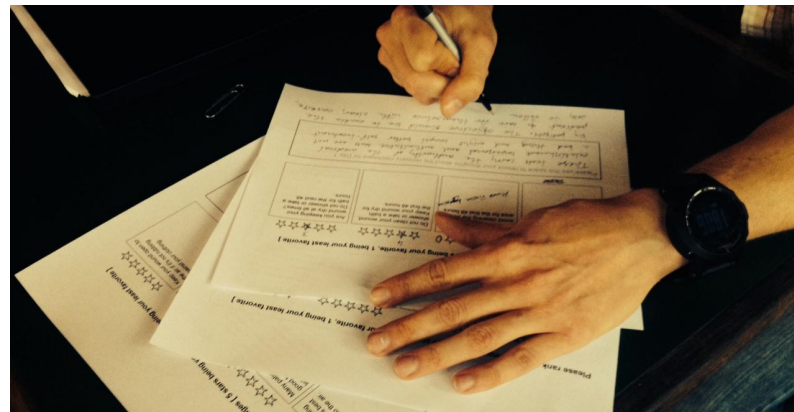
*“Addressing the patient directly is more respectful and will garner more compliance, as well as make them feel more involved in the process of healing.”*



### People respond to timely information

Participants responded to information that fit into a clear timeline.

*“I like this message because it is the whole point (the text messages), today do this... next day do this...”*



## Patient Provocation Primary Findings cont'd

### Many patients don't like "many patients"

Participants gave the lowest rating to messages that addressed patients in general.

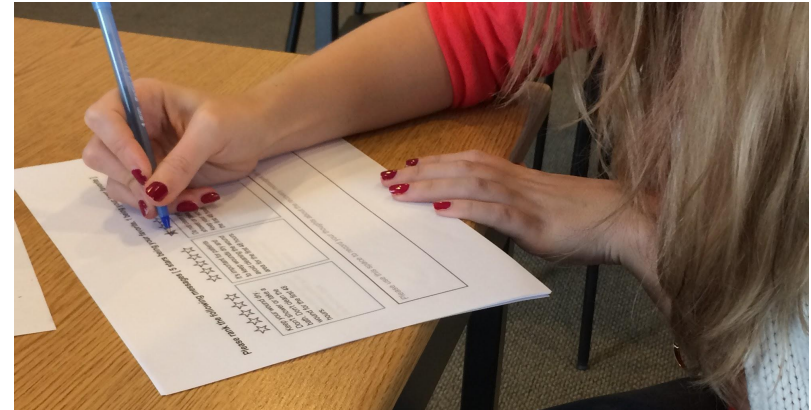
*"The one that I gave only one star is too impersonal by addressing with 'patients'."*



### Personality can be used in spots

In some contexts, participants responded strongly to personified messages.

*"Surprisingly, in this context I preferred the 'motherly' text the most."*



# Appendix

# Think Aloud Testing Protocol - Scenario 1

**Scenario 1 Tasks:**

1. Add Contact Numbers
2. Add Medical Recovery Condition
3. Send Messages

**Testing Goal:** Use the Recovery Text software to get Julia and Miles set up to receive text messages related to Julia's Gallbladder Surgery.

**Start Task On:** 1.1 (Home Screen)

**Scenario:** Imagine you're a nurse that works for a new hospital called Valencia. One of the aspects of your role at Valencia is helping prepare patients for discharge from the hospital. Valencia has an optional text message service called Recovery Text that sends patients information related to their recovery. One of your patients, Julia, has elected to receive these messages and her husband, Miles, would also like to receive the texts. Julia is recovering from a gall bladder surgery and will be leaving the hospital later today.

**Facilitator Prompts:**

- Q: How would you add the phone number?
- Q: What would you expect to happen if you did that?
- Q: How would you add an additional phone number?
- Q: How would you add a medical condition?
- Q: How could you send a message?

**Anticipated time:** 10 minutes

**Anticipated Path:**

1. User clicks plus sign in Contacts field
2. User types in phone number for Julia
3. User types in phone number for Miles
4. User clicks plus sign in Conditions field
5. User starts typing Gallblader
6. Field auto populates with Gallbladder Surgery
7. User reviews the updated timeline
8. User clicks sends message



## Think Aloud Testing Protocol - Scenario 2

- Scenario 2 Tasks:**
1. Add Contact Numbers
  2. Add Medical Recovery Condition
  3. Add a Custom Message for Day 2
  4. Send Messages

**Testing Goal:** Use the Recovery Text software to get Julia and Miles set up to receive text messages related to Julia's Gallbladder Surgery.

**Start Task On:** 2.1 (Home Screen)

**Scenario:** Imagine you're a nurse that works for a new hospital called Valencia. One of the aspects of your role at Valencia is helping prepare patients for discharge from the hospital. Valencia has an optional text message service called Recovery Text that sends patients information related to their recovery. One of your patients, Julia, has elected to receive these messages and her husband, Miles, would also like to receive the texts. Julia is recovering from a gall bladder surgery and will be leaving the hospital later today.

- Facilitator Prompts:**
- Q: How would you add phone number?
  - Q: What would you expect to happen if you did that?
  - Q: How would you add a medical condition?
  - Q: How would you add an additional medical condition?
  - Q: How could you send messages?

**Anticipated time:** 10 minutes

- Anticipated Path:**
1. User clicks plus sign in Contacts field
  2. User types in phone number for Blaine
  3. User clicks plus sign in Conditions field
  4. User starts typing Broken Arm
  5. User clicks plus sign to add additional Wound Care Condition
  6. User reviews the updated timeline
  7. User clicks sends message



**Thank You**