

# Congestive Heart Failure Client











BlackBerry

Symptoms  
Have you fainted?

- 1 No
- 2 Yes
- 3 Cancel

Symptoms

Has your breathing at night worsened?

- 1 No
- 2 Yes
- 3 Cancel

BlackBerry

Summary

Weight **154.4** (-0.2)

**105**

BP

**78**

Pulse **74** /min

Sympt. **Abnormal**

Contact HF Clinic/ family  
Dr. Go to Emerg Dept if  
you feel you should

Press 1 for menu

BlackBerry

Details Needed

**110 / 80**

Pulse: 74 /min

Taken Today 10:00 AM

**Was this?**

- 1** First thing in the morning
- 2** During the day



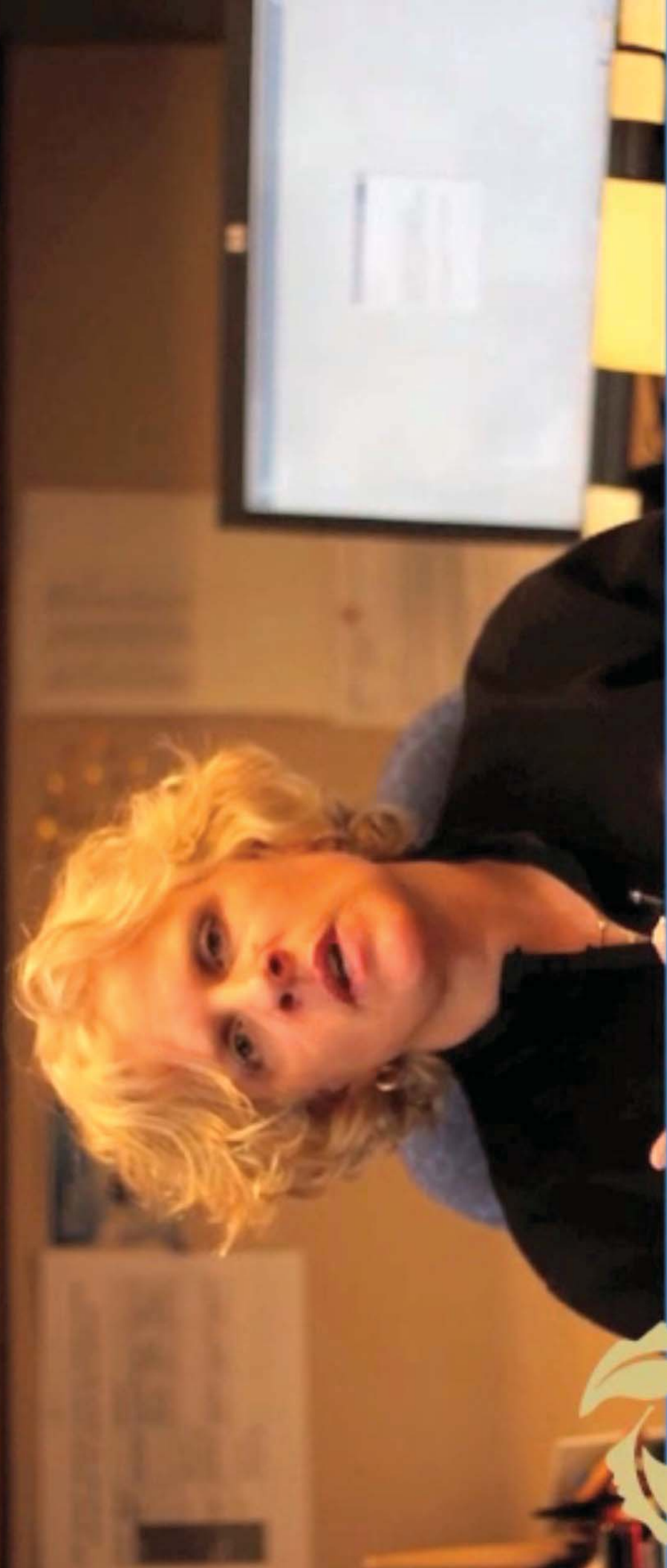


Fred

Heart Failure Patient

Study Participant





**Heather Ross MD, MHSC, FRCP(C)**

**Project Clinical Champion**

Medical Director, Cardiac Transplant Program  
University Health Network



Original Paper

# Mobile Phone-Based Telemonitoring for Heart Failure Management: A Randomized Controlled Trial

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## RCT Study Results

- BNP: -150pg/mL
- LVEF: +7.4%
- Self Care: +7 points



PRODUCT



PRODUCT



PRODUCT



# PRODUCT



# PRODUCT





# Service Blueprinting

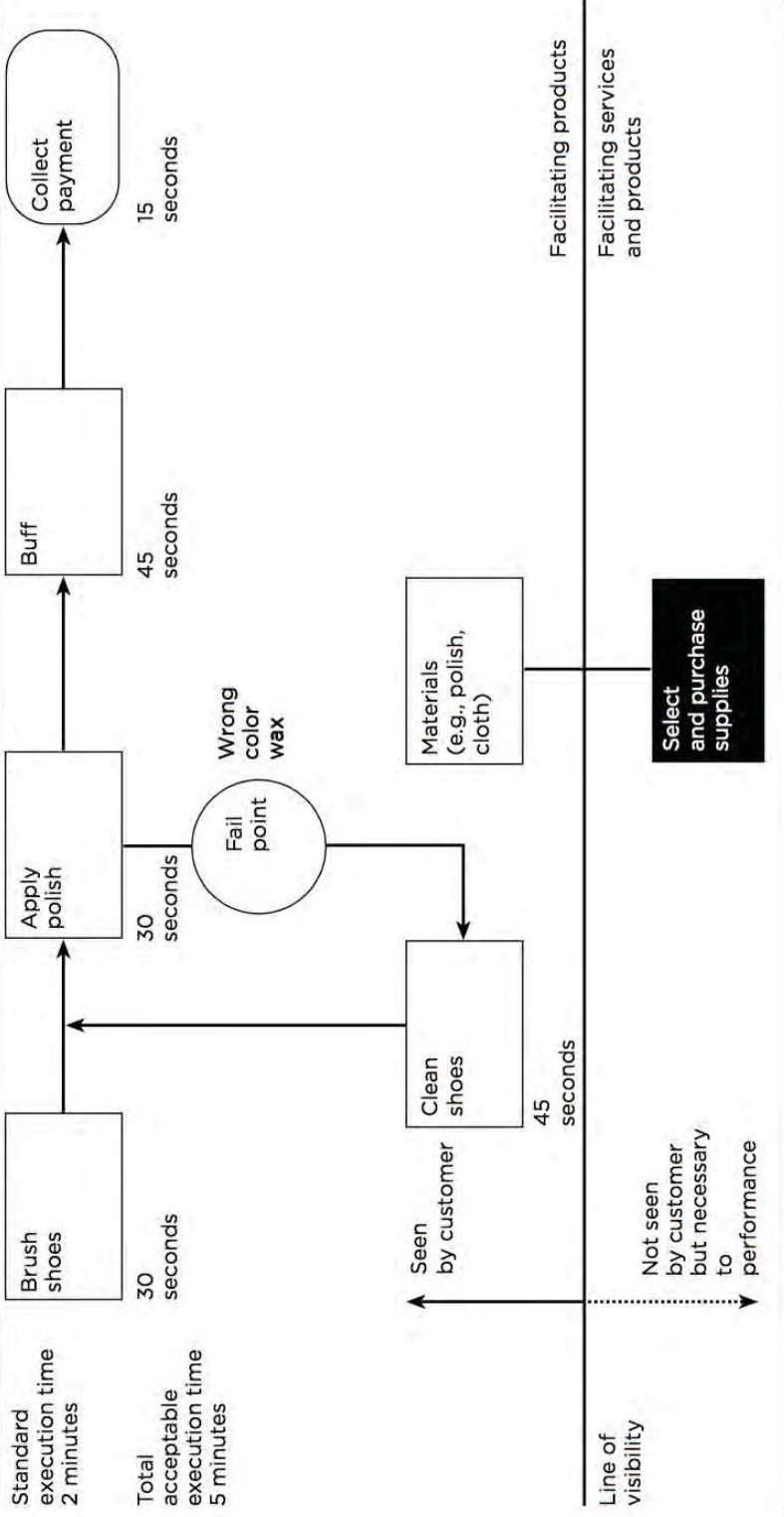


# — Roots of Service Design

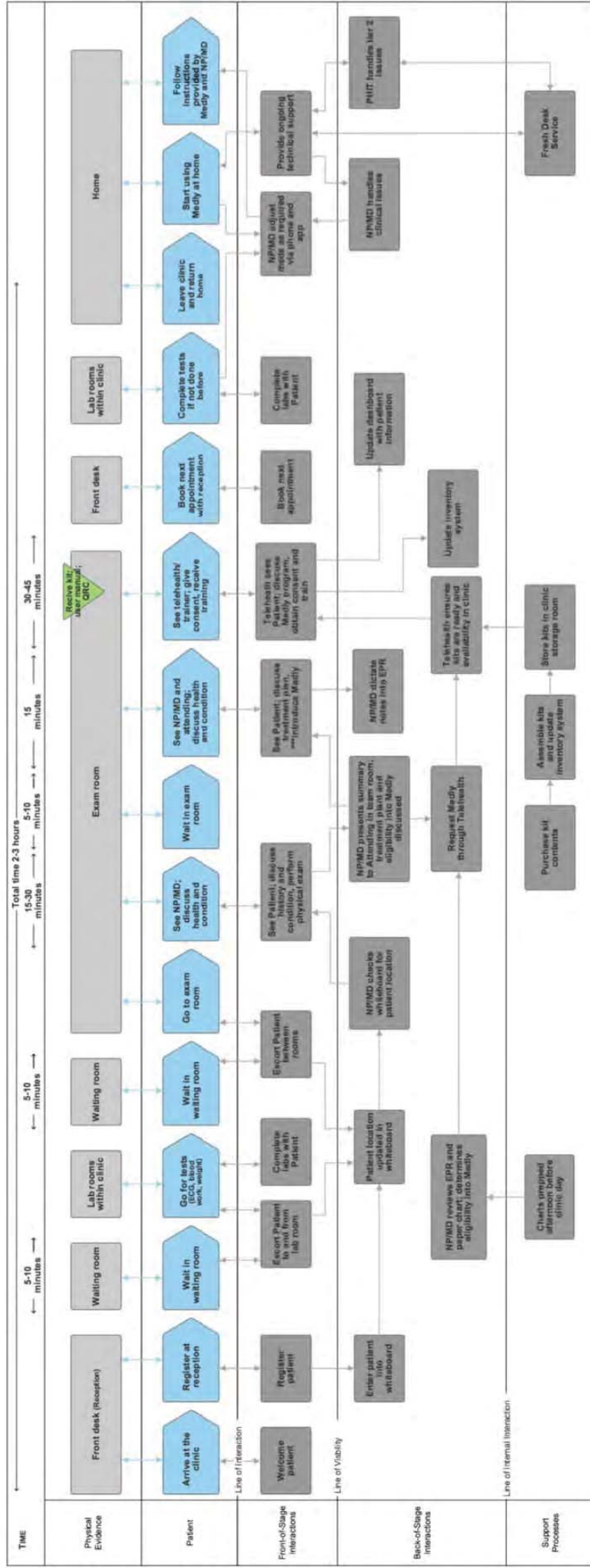
G. Lynn Shostack (VP of Citibank) pioneered the term

- “How to Design a Service” *European Journal of Marketing* 1982
- “Designing Services That Deliver” *Harvard Business Review* 1984
- Mapping:
  1. a customers’ service experience over time
  2. supporting operations for service execution

### Exhibit I Blueprint for a Corner Shoeshine



# Blueprinting



# Prototyping

# Prototyping the Touchpoints

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- Mobile App
- Peripheral Devices
- Packaging
- Referral Materials + Training/On-Boarding
- *Clinician Dashboard\**
- *Clinical Workflow\**
- *Clinician Pitch\**
- *Support\**



# Peripherals



# Forms

## medly Onboarding Slip

### RCT QUESTIONS

NYHA Class \_\_\_\_\_ Ejection Fraction \_\_\_\_\_ Eligible for RCT?  Yes  No

Patient Email \_\_\_\_\_



### MEDICAL ALERT THRESHOLDS

#### WEIGHT

##### Set Ranges to Trigger Alert

Min. \_\_\_\_\_ Max. \_\_\_\_\_

kg \_\_\_\_\_ lb \_\_\_\_\_

#### Delta Value

Max. weight change between morning readings \_\_\_\_\_

kg \_\_\_\_\_

#### Target Weight

(optional) \_\_\_\_\_ kg \_\_\_\_\_ lb \_\_\_\_\_

#### BLOOD PRESSURE & PULSE RANGES

##### Systolic BP

Min. \_\_\_\_\_ mmHg \_\_\_\_\_ mmHg

Max. \_\_\_\_\_ mmHg

##### Diastolic BP

Min. \_\_\_\_\_ mmHg \_\_\_\_\_ mmHg

Max. \_\_\_\_\_ mmHg

##### Pulse

Min. \_\_\_\_\_ bpm \_\_\_\_\_ bpm

Max. \_\_\_\_\_ bpm

##### Default Values

Min. SBP \_\_\_\_\_ mmHg  
 Max. SBP \_\_\_\_\_ mmHg  
 Min. DBP \_\_\_\_\_ mmHg  
 Max. DBP \_\_\_\_\_ mmHg  
 Min. Pulse \_\_\_\_\_ bpm  
 Max. Pulse \_\_\_\_\_ bpm

### QUESTIONS

Does the patient have an ICD?  Yes  No

Were medications changed during this visit?  Yes  No

#### Automatic message to patients on excessive weight gain:

Follow your doctor's orders to take an extra \_\_\_\_\_ now. Restrict salt and fluids.

### AUTHORIZATION

I have read this notice and have authorized the use of my personal health information.

Clinician Signature \_\_\_\_\_

Date \_\_\_\_\_

Telehealth Signature \_\_\_\_\_

Date \_\_\_\_\_

# Scripts

## Medly Patient Training Checklist

### With all patients in RCT

- All forms in orange folder (Prescreening, Consent, Cheque & form, Randomisation, Questionnaires)

### Medly kit training (Intervention/Program patients)

- Show the kit
- Introduce the manual (tech support, clinic support, passcode etc.)
- Training on smartphone with Medly app (using the manual as a guide during training)
  - Lock-screen
  - Homepage, general navigation
  - Accepting the EULA/terms and conditions
  - Taking readings (Weight, BP, symptoms) demonstration
    - Weight scale **MUST** be on hard floor (not on the carpet)
  - Alerts + coloured cards (blue – you're fine, orange – notification, red – notification & emergency)
  - Trends (different views)
  - Care team (can call clinic from the phone)
  - Adherence calls at 10am if you miss your measures (**verify phone #**)

### Explain program expectations

- Daily readings
  - ALL 3 before 12pm, within 30 minutes of each other
  - Morning measures – shortly after waking, before breakfast, after restroom
- Keep phone on at all times (for data to send to dashboard & for app updates)
- Make sure phone and equipment are in the same room
- Inform us when you will be leaving the province/country (avoid roaming charges)
- Inform us if you lose the phone (Airwatch app can remotely wipe personal info if lost)

### Other requests

- Kit is only used by you (no one else)
- Do not delete any apps
- Do not download anything on this phone/do not use it to stream videos/Netflix etc.

### After patient leaves (study/program patients)

- Update dashboard with parameters
- Update inventory and tracking sheets
- Sign and photocopy on-boarding slip – original in patient chart, we keep copy
- Update dashboard with medications (follow-up on this, may take 24 hours to receive)

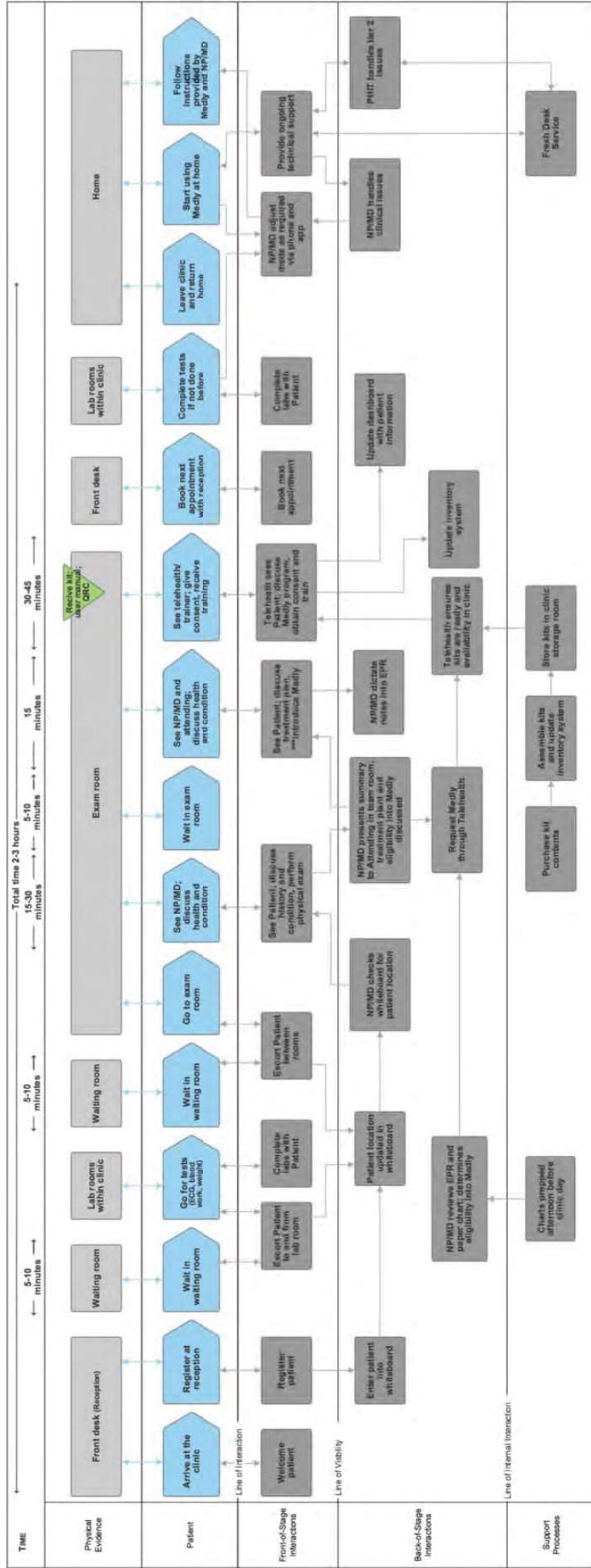
### After patients leave (for all patients)

- Place Medly sticker on chart
- Email update to clinicians
- Email External labs sheet to Anna-Gail (if in study/program)

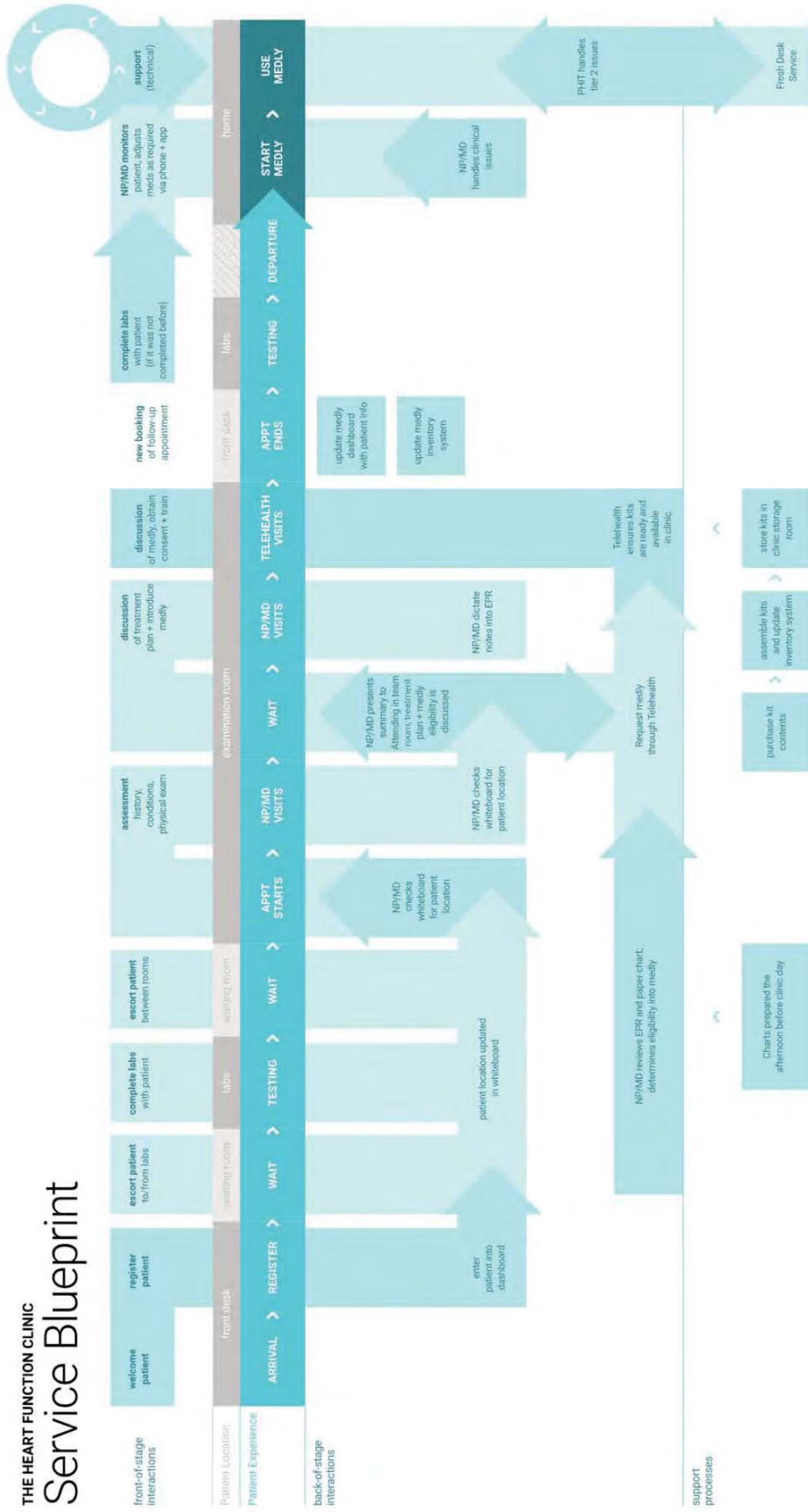
### Throughout the program

- Daily: make sure number of alerts match number of emails
- Monitor fresh desk for unresolved tickets (forward any Medly email to fresh desk)
- Monitor the tech support phone
- Restock kits
- Monitor patients (adherence, alerts etc.)
- Contact patients (case-by-case based on adherence, suspicion of technical difficulty etc.)

# Intangible Interactions



# THE HEART FUNCTION CLINIC Service Blueprint

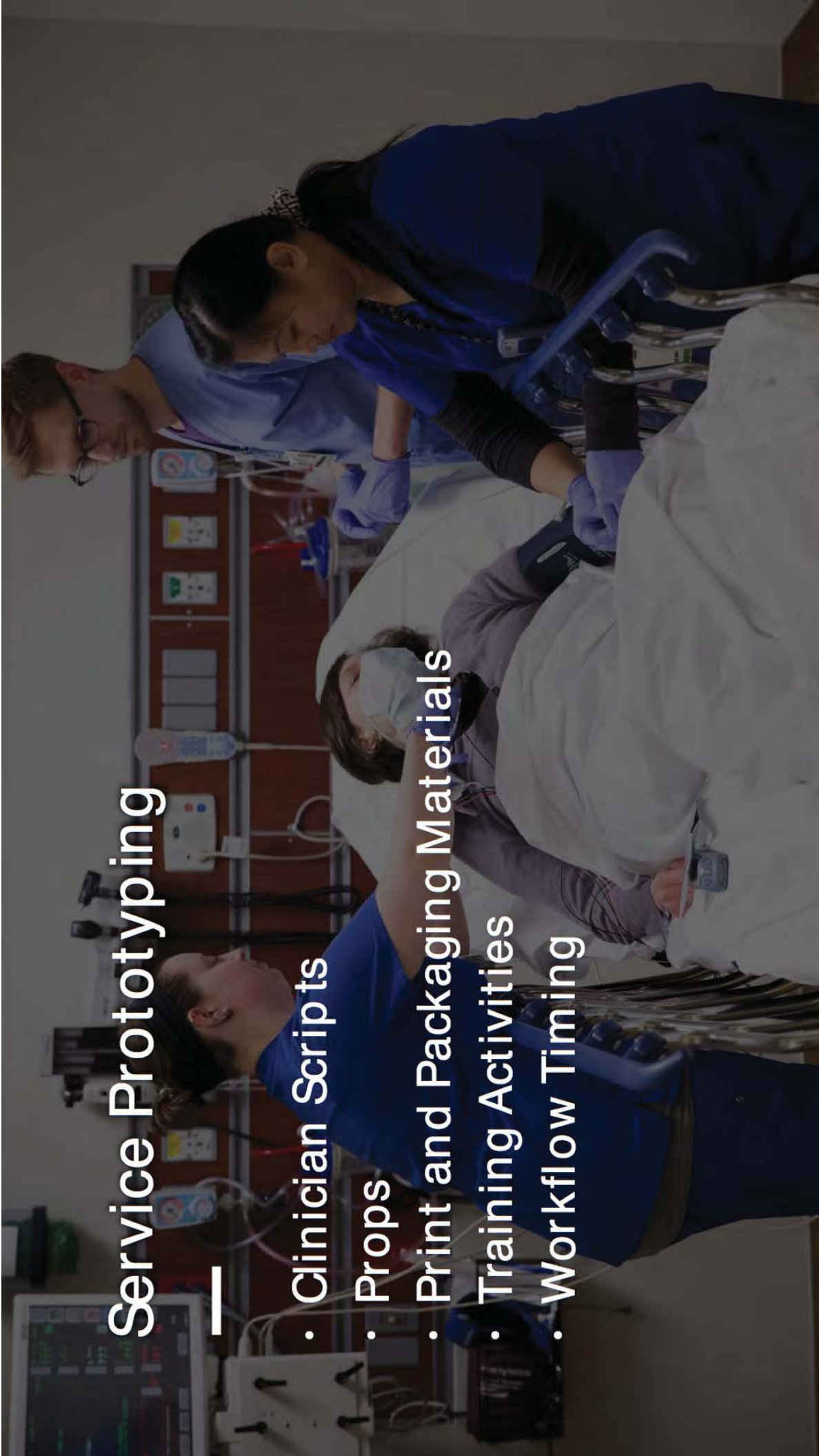




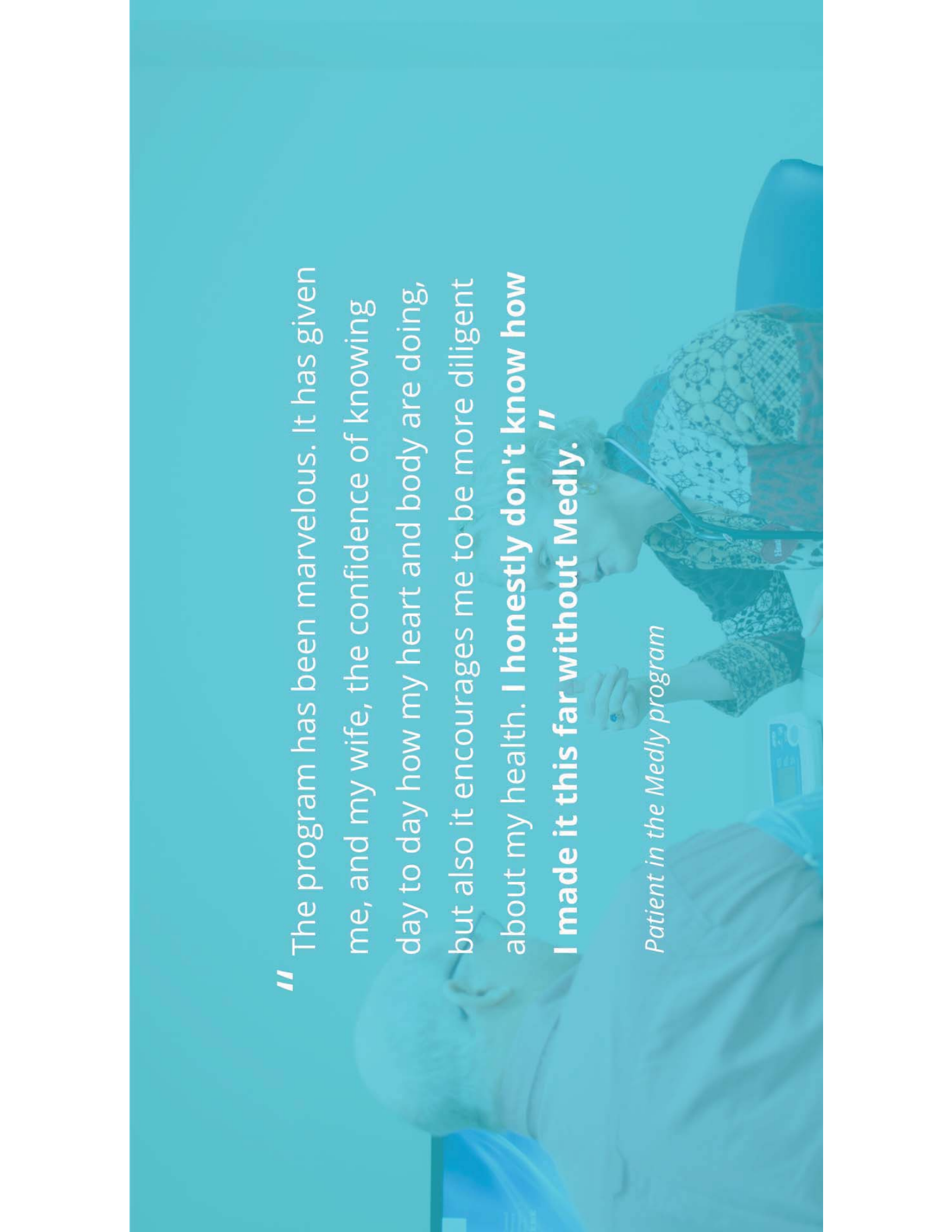
# Service Prototyping

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- Clinician Scripts
- Props
- Print and Packaging Materials
- Training Activities
- Workflow Timing





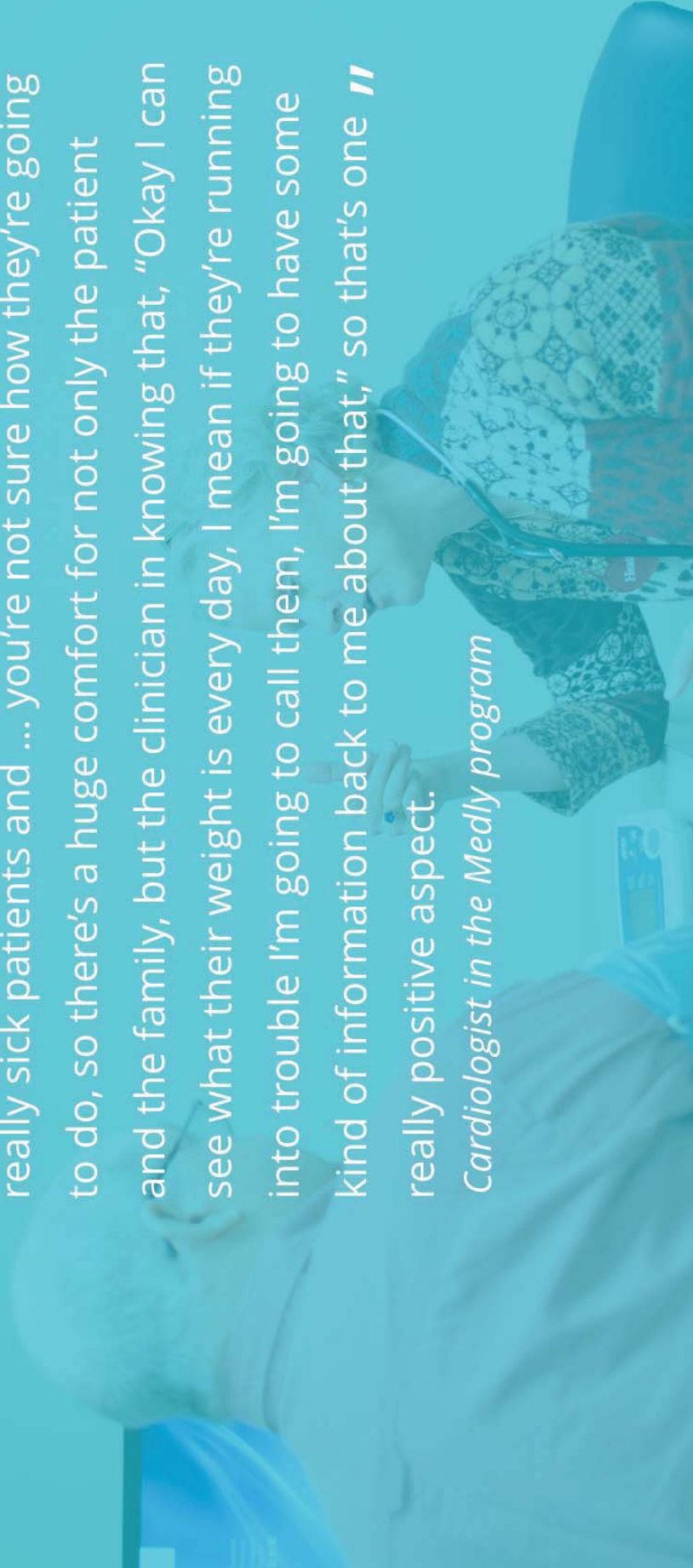


“ The program has been marvelous. It has given me, and my wife, the confidence of knowing day to day how my heart and body are doing, but also it encourages me to be more diligent about my health. **I honestly don't know how I made it this far without Medly.** ”

*Patient in the Medly program*

**“** If I think about patients who we’ve enrolled...they’re often really sick patients and ... you’re not sure how they’re going to do, so there’s a huge comfort for not only the patient and the family, but the clinician in knowing that, “Okay I can see what their weight is every day, I mean if they’re running into trouble I’m going to call them, I’m going to have some kind of information back to me about that,” so that’s one **”** really positive aspect.

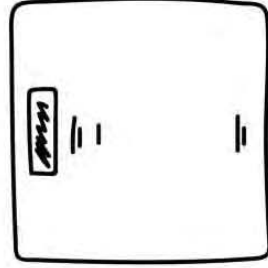
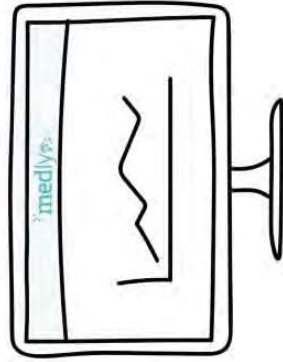
*Cardiologist in the Medly program*





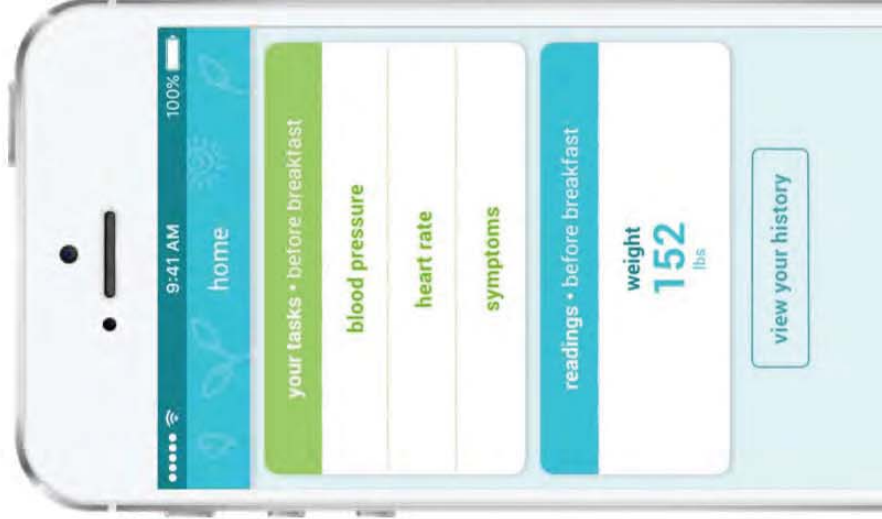
Remote Patient Monitoring for

## Heart Failure

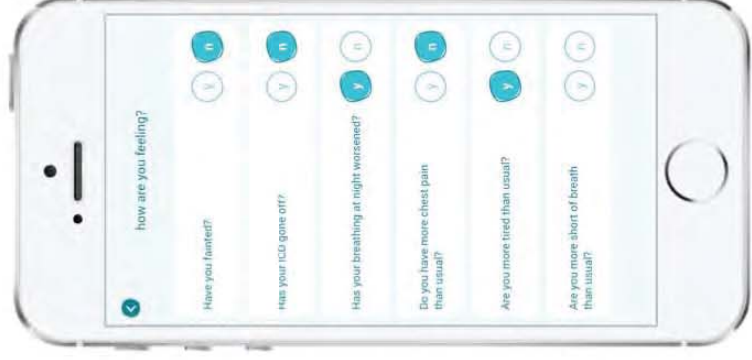


# Key Features

Take Readings & Receive Feedback



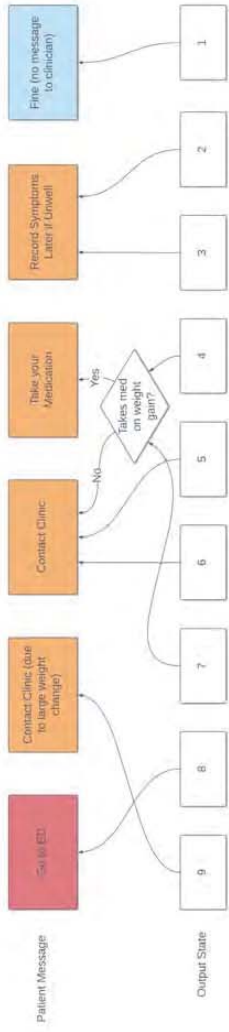
Answer Symptom Tracking Questions



Review trends

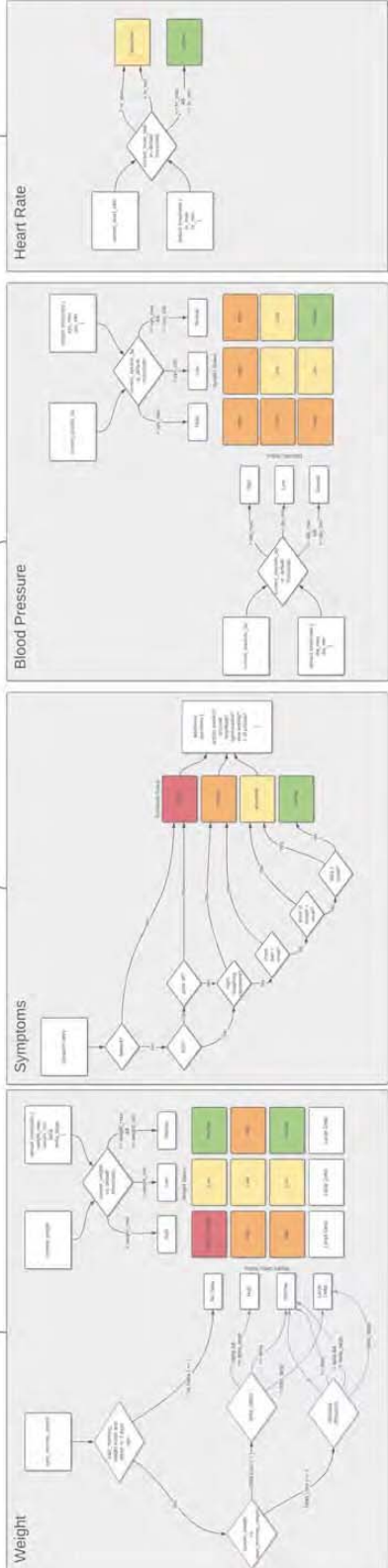






**SYMPTOMS**

	Weight	Blood Pressure	Heart Rate	Symptoms
1	Normal	Normal	Normal	None
2	Normal	Normal	Normal	None
3	Normal	Normal	Normal	None
4	Normal	Normal	Normal	None
5	Normal	Normal	Normal	None
6	Normal	Normal	Normal	None
7	Normal	Normal	Normal	None
8	Normal	Normal	Normal	None
9	Normal	Normal	Normal	None



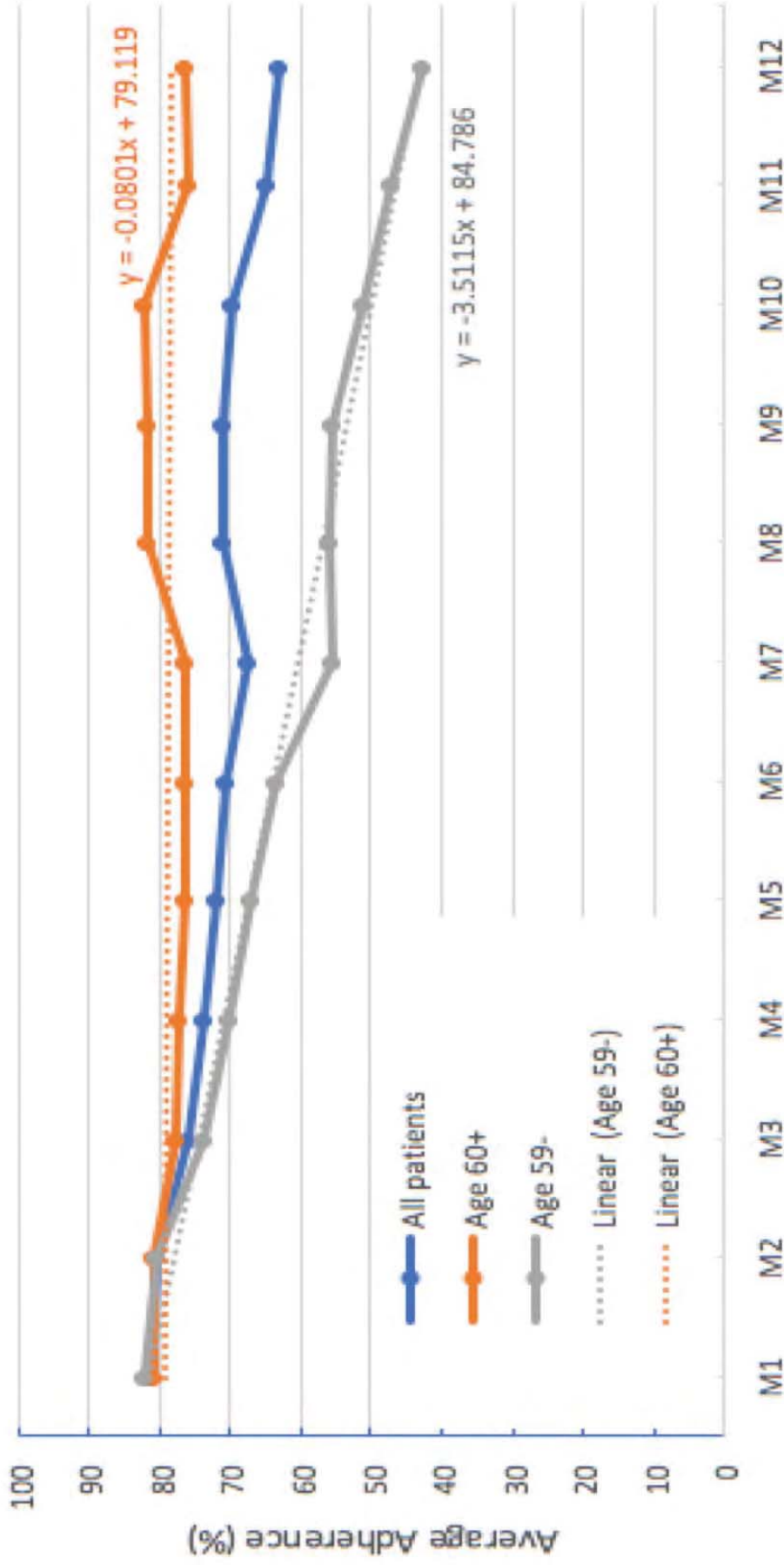
## Past Study Results

### Congestive Heart Failure

- BNP: -150pg/mL
- LVEF: +7.4%
- Self Care: +7 points



# medly Attrition over 1 year



# LUBDUB

HOME



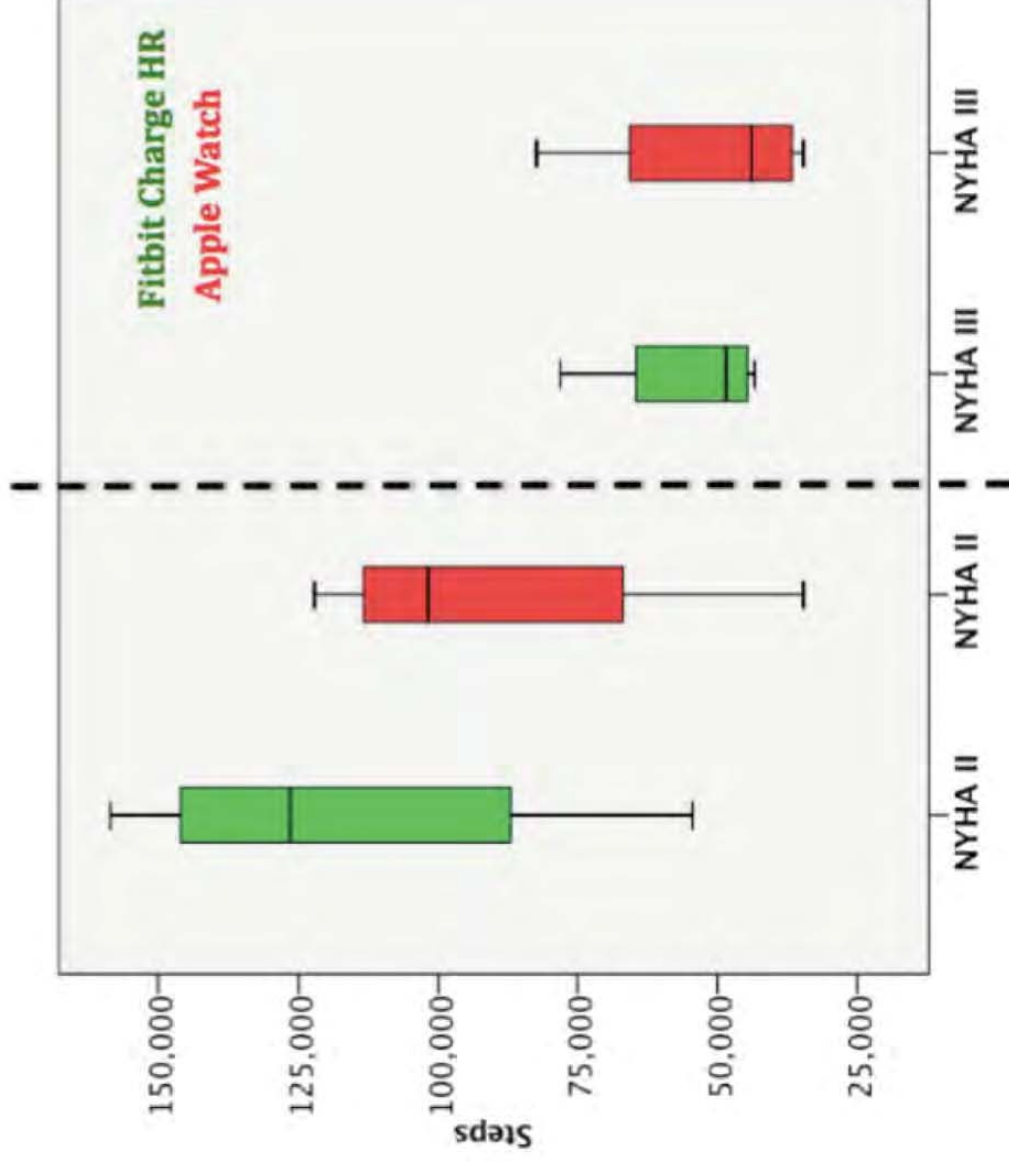
LOGIN

A smartphone displays the login screen for the LubDub app. The screen features the LubDub logo (a pink heart) and the text 'LubDub'. Below the logo, there is a text input field labeled 'PATIENT ID'. At the bottom right, there is a pink button labeled 'REGISTER'.

HEART RATE MEASURED  
VIA APPLE WATCH



Can an activity monitor  
classify heart failure?



Original Paper

# Uptake of a Consumer-Focused mHealth Application for the Assessment and Prevention of Heart Disease: The <30 Days Study

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# 30 DAYS

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Risk assessment app for  
cardiovascular disease.





ROGERS-3G 3:30 PM

DAY Today Details

For putting up with all our questions, you earned the **Initiator Award!**




Trophies Continue >

Today Progress Settings

ROGERS-3G 3:30 PM

DAY Today Details

For doing five challenges in a day, you earned the **Threener Award.** Those medals getting heavy?




Trophies Continue >

Today Progress Settings

ROGERS 3G 3:30 PM

DAY Today Details

For completing 5 challenges  
between 11am and 1pm,  
you earned the **Lunch**  
Award



Trophies Continue >

Today Progress Settings

ROGERS 3G 3:30 PM

DAY Today Details

For completing 30 challenges  
in xx days, you earned the  
**30 Days Award!**



Trophies Continue >

Today Progress Settings

ROGERS 3G 3:30 PM

DAY Today Details

We have spent 10 beautiful hours together! You've earned the **Ball and Chain** award.




Trophies Continue >

Today Progress Settings

ROGERS 3G 3:30 PM

DAY Today Details

It's getting hot in here! For completing challenges 14 days in a row, you earned the **Boiling Point** award!



Trophies Continue >

Today Progress Settings



70,000 downloads

15,000 > 2 weeks

6,000 all 30 days



**#1 downloader:**

**young women**



**most frequent user:**  
**older woman**



used the longest:  
older men

# <30 Days

To a Healthier Heart



# 30 Days

To a Healthier Heart

# 30 Jours

Vers un cœur en santé



1/15

**Do you feel any of these issues are affecting your personal health?**

Tap all that apply to you

Weight

Stress



PICK A CHALLENGE



PHYSICAL ACTIVITY

1 x 1

Get up at least once an hour, every hour.



BADGE ACHIEVED!

**HEALTHY LIVING**

PROGRESS



1/15

**Do you feel any of these issues are affecting your personal health?**  
Tap all that apply to you

<b>Weight</b>
<b>Stress</b>
<b>Alcohol</b>
<b>Smoking</b>
<b>Unhealthy Diet</b>
<b>Physical Activity</b>
<b>None of the above</b>



BADGE ACHIEVED!

## HEALTHY LIVING PROMOTER

You are a Healthy Living Promoter! You have completed 5 challenges since the beginning of your <30 Days journey.

Share with Your Friends?



Continue



PICK A CHALLENGE



PHYSICAL ACTIVITY

1 x 1

Get up at least once an hour, every hour.

Why?

Moving a little can help with your circulation.



Accept This Challenge



# DIGITAL HEALTH and OLDER ADULTS

don't count them out!

attrition is lower  
than younger adults

may be more effective  
than with younger adults

UX is paramount

**HEALTHcare**  
**humanFACTORS**  
a proud partner of UHN



**eHealth**  
**INNOVATION**  
a proud partner of UHN

# The role of health technologies in shaping behaviour

Joseph Cafazzo PhD PEng  
Executive Director, University Health Network  
Associate Professor, University of Toronto  
Wolfond Chair in Digital Health

 @JosephCafazzo