LUXEMBOURG INSTITUTE OF HEALTH
RESEARCH DEDICATED TO LIFE

LECTURE SERIES **2018/2019**
IMPROVING PATIENT & POPULATION HEALTH THROUGH INNOVATIVE e-HEALTH INTERVENTIONS

30
September 2019
Monday

New dimensions of design for user experience and evaluation in digital health

SPEAKER: Dr. Joseph CAFAZZO

Supported by:

Fonds National de la Recherche Luxembourg

Partners:

uni.lu UNIVERSITÉ DU LUXEMBOURG

LISER Luxembourg Institute of Socio-Economic Research

Luxembourg Institute of Science and Technology LIST

CHL Centre Hospitalier de Luxembourg

Centre Hospitalier Emile Mayrisch

ITTM Information Technology for Translational Medicine

New dimensions of design for user experience and evaluation in digital health

Joseph Cafazzo PhD PEng
Wolfond Chair in Digital Health
Executive Director, Centre for Global eHealth Innovation, University Health Network
Associate Professor, University of Toronto

UNIVERSITY OF TORONTO

eHealth INNOVATION
a proud partner of UHN

HEALTHcare HumanFACTORS
a proud partner of UHN

1964. IBM.

the EHR

“less paper work”

“correlation of diseases”

“eliminate errors”

The New York Times

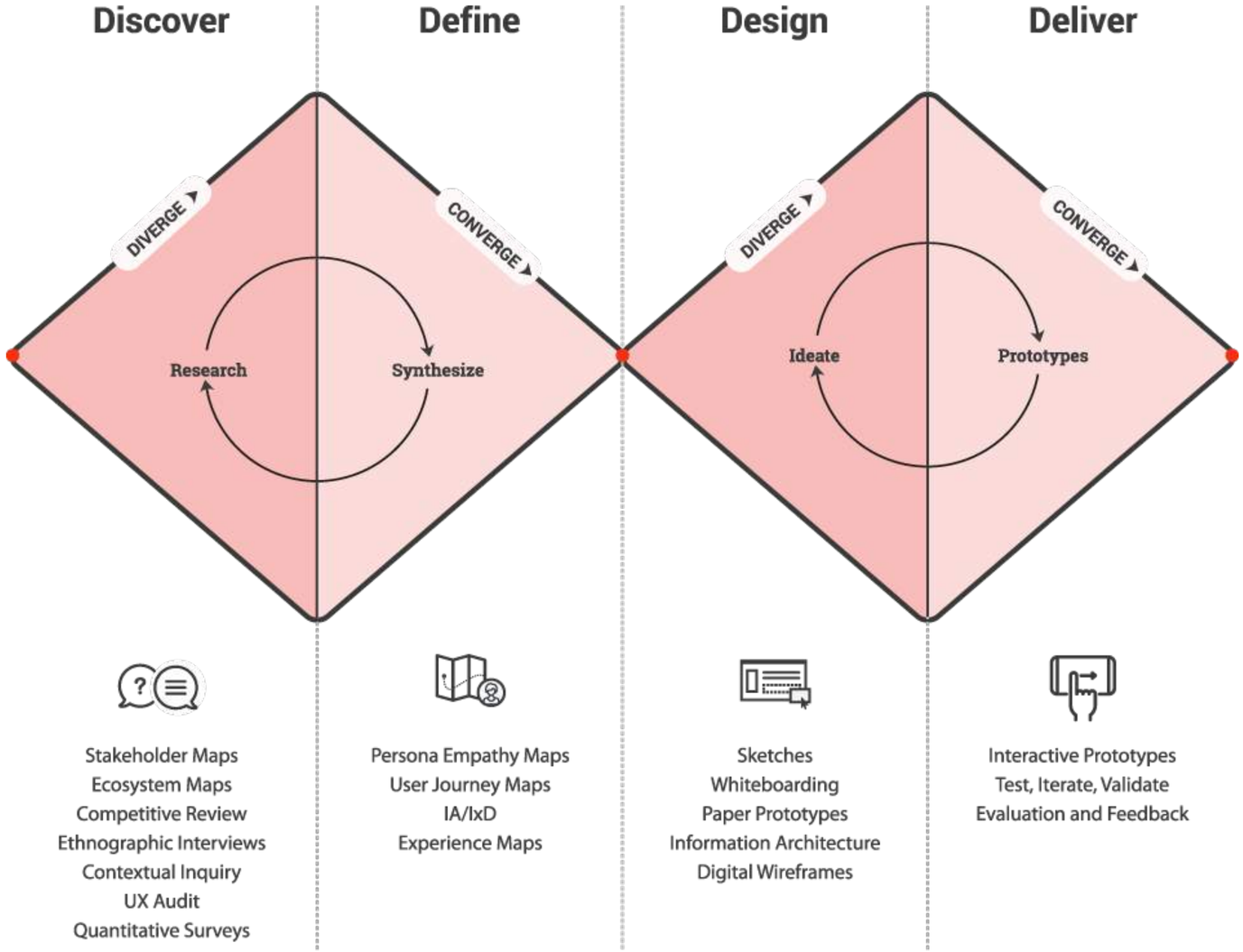
Bad Hospital Design Is Making Us Sicker

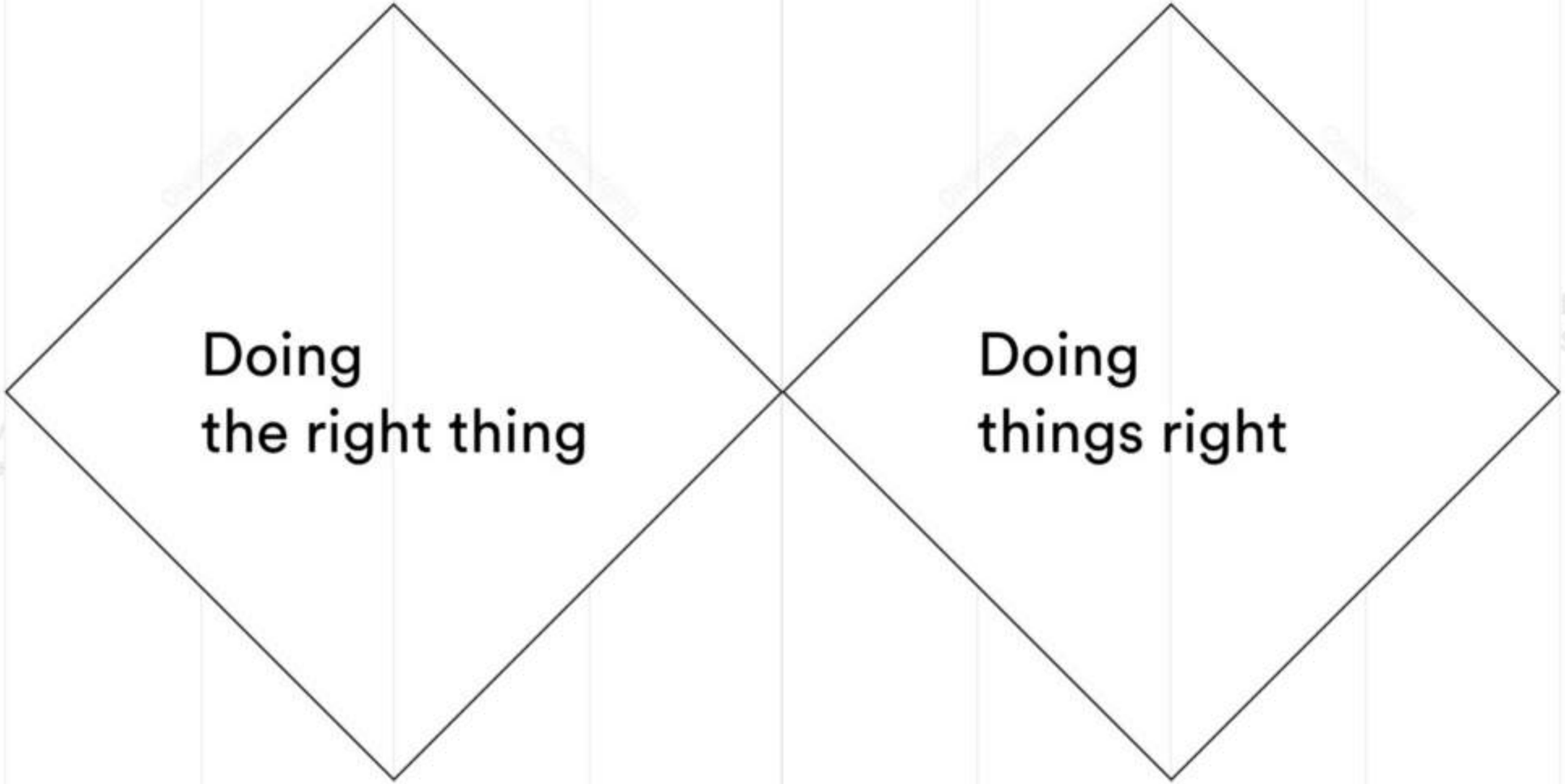
By DHRUV KHULLAR, M.D. FEB. 22, 2017

Bad Design?

No Design.

Double Diamond Design Model




Doing
the right thing
Doing
things right

ANNALS OF MEDICINE

WHY DOCTORS HATE THEIR COMPUTERS

Digitization promises to make medical care easier and more efficient. But are screens coming between doctors and patients?

By Atul Gawande November 5, 2018

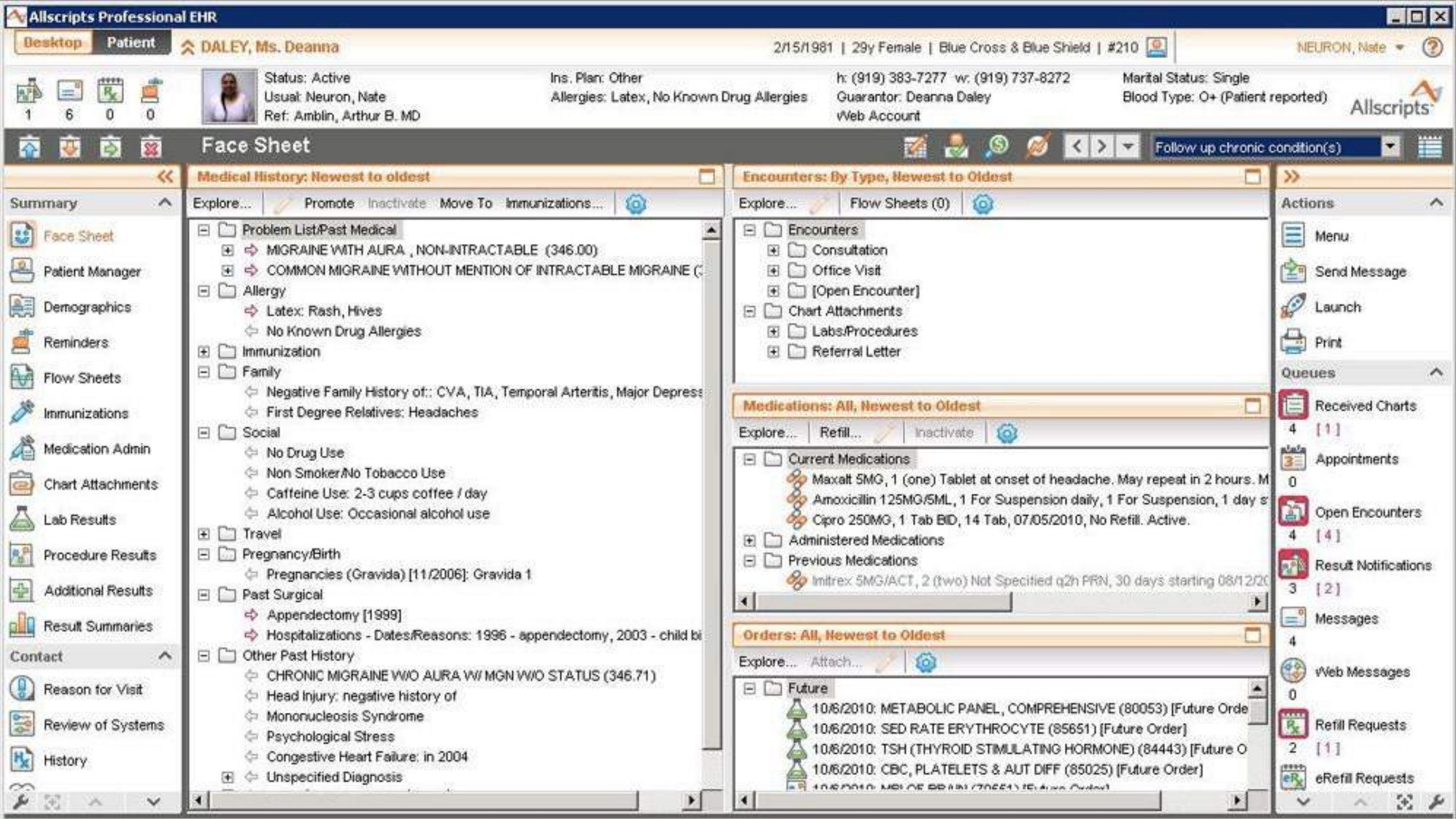
FORTUNE

Death by a Thousand Clicks: Where Electronic Health Records Went Wrong

The U.S. government claimed that turning American medical charts into electronic records would make health care better, safer, and cheaper. Ten years and $36 billion later, the system is an unholy mess: Inside a digital revolution gone wrong. A joint investigation by Fortune and Kaiser Health News.

By Erika Fry and Fred Schulte

March 18, 2019


Allscripts Professional EHR
Desktop
Patient
DALEY, Ms. Deanna
2/15/1981 | 29y Female | Blue Cross & Blue Shield | #210
NEURON, Nate
Status: Active
Usual: Neuron, Nate
Ref: Amblin, Arthur B. MD
Ins. Plan: Other
Allergies: Latex, No Known Drug Allergies
h: (919) 383-7277 w: (919) 737-8272
Guarantor: Deanna Daley
Web Account
Marital Status: Single
Blood Type: O+ (Patient reported)
Face Sheet
Follow up chronic condition(s)
Summary
Face Sheet
Patient Manager
Demographics
Reminders
Flow Sheets
Immunizations
Medication Admin
Chart Attachments
Lab Results
Procedure Results
Additional Results
Result Summaries
Contact
Reason for Visit
Review of Systems
History
Medical History: Newest to oldest
Explore... Promote Inactivate Move To Immunizations...
Problem List/Past Medical
MIGRAINE WITH AURA , NON-INTRACTABLE (346.00)
COMMON MIGRAINE WITHOUT MENTION OF INTRACTABLE MIGRAINE
Allergy
Latex: Rash, Hives
No Known Drug Allergies
Immunization
Family
Negative Family History of:: CVA, TIA, Temporal Arteritis, Major Depress
First Degree Relatives: Headaches
Social
No Drug Use
Non Smoker/No Tobacco Use
Caffeine Use: 2-3 cups coffee / day
Alcohol Use: Occasional alcohol use
Travel
Pregnancy/Birth
Pregnancies (Gravida) [11/2006]: Gravida 1
Past Surgical
Appendectomy [1999]
Hospitalizations - Dates/Reasons: 1996 - appendectomy, 2003 - child bi
Other Past History
CHRONIC MIGRAINE W/O AURA W/ MGN W/O STATUS (346.71)
Head Injury: negative history of
Mononucleosis Syndrome
Psychological Stress
Congestive Heart Failure: in 2004
Unspecified Diagnosis
Encounters: By Type, Newest to Oldest
Explore... Flow Sheets (0)
Encounters
Consultation
Office Visit
[Open Encounter]
Chart Attachments
Labs/Procedures
Referral Letter
Medications: All, Newest to Oldest
Explore... Refill... Inactivate
Current Medications
Maxalt 5MG, 1 (one) Tablet at onset of headache. May repeat in 2 hours. M
Amoxicillin 125MG/5ML, 1 For Suspension daily, 1 For Suspension, 1 day s
Cipro 250MG, 1 Tab BID, 14 Tab, 07/05/2010, No Refill. Active.
Administered Medications
Previous Medications
Imitrex 5MG/ACT, 2 (two) Not Specified q2h PRN, 30 days starting 08/12/20
Orders: All, Newest to Oldest
Explore... Attach...
Future
10/6/2010: METABOLIC PANEL, COMPREHENSIVE (80053) [Future Orde
10/6/2010: SED RATE ERYTHROCYTE (85651) [Future Order]
10/6/2010: TSH (THYROID STIMULATING HORMONE) (84443) [Future O
10/6/2010: CBC, PLATELETS & AUT DIFF (85025) [Future Order]
Actions
Menu
Send Message
Launch
Print
Queues
Received Charts
4 [1]
Appointments
0
Open Encounters
4 [4]
Result Notifications
3 [2]
Messages
4
vWeb Messages
0
Refill Requests
2 [1]
eRefill Requests

EHR Intelligence

Physician Burnout Is a Problem at 83% of Healthcare Organizations

A new study found 83 percent of surveyed clinicians and healthcare organization leadership see physician burnout as a problem.


Accumed
AccuMed
Home
Appointments
Referrals
Patient
Messages
Reports
Admin
Logout
Welcome Jim
Home
Admin
Dashboard
Appointments
Alerts
Patient Tracker
Messages
Encounters List
Tasks
Preferences
Dashboard Configuration
Patient Chart Configuration
Simple Text Tokens
Datalink Tokens
Appointments
Patient Nan
Appointmer
Account
Status
Provider Na
Test,Mary
04/30/20... 10:00 AM
100002
Not Seen
Welby,M...
Internal,...
04/30/20... 10:15 AM
100197
Not Seen
Welby,M...
MedicalJoe
04/30/20... 10:30 AM
100194
Not Seen
Welby,M...
Orthope...
04/30/20... 10:45 AM
100198
Not Seen
Welby,M...
Surgical,...
04/30/20... 11:00 AM
100199
Not Seen
Welby,M...
Page 1 of 2 (6 items)
[1] 2
Alerts
Subject
Start Date
Message
System Generated Alert
04/28/... 05:13 AM
Account: 100002 Test,Mary - Patient's BP Diastolic is more than 100. Patient requires attention.
System Generated Alert
04/28/... 05:13 AM
Account: 100002 Test,Mary - BP Diastolic is more than 130. Attention reqd.
System Generated Alert
04/28/... 05:12 AM
Account: 100002 Test,Mary - BP Diastolic is more than 130. Attention reqd.
Messages
Message Date
Subject
02/12/2008 09:50 AM
Message with Attachement
12/18/2007 06:28 AM
RE: To all the providers/doctors
12/18/2007 06:27 AM
To all the providers/doctors
12/04/2007 04:59 PM
RE: RE:
12/04/2007 04:59 PM
RE:
Encounter List
Encounter Dat
Encounter Nan
Patient Name
Status
2/12/2008 8:31:38 AM
Jim Encounter
Internal, Mark
Pending
2/12/2008 6:54:24 AM
Jim Encounter
Orthopedic, Jim
Pending
2/12/2008 6:49:16 AM
Jim Encounter
ObGyn, Jane
Pending
2/11/2008 11:21:53 AM
Jims encounter
Ms. Test, Mary
Pending
2/11/2008 11:18:44 AM
Office Visit
Ms. Test, Mary
Pending
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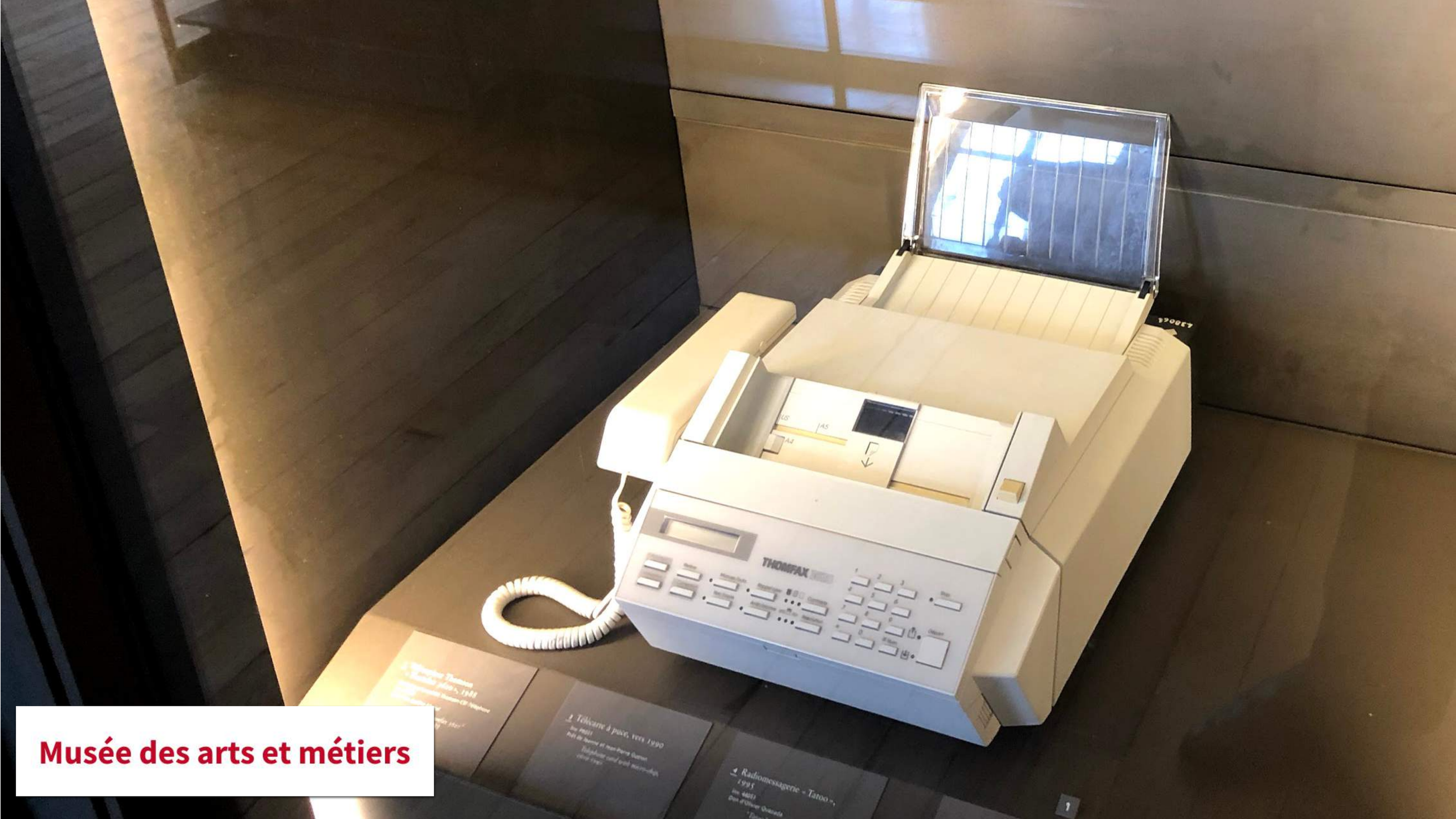
EHR Intelligence

Scribes Reduce EHR Use, Restore Joy of Practice for Physicians

Utilizing scribes in primary care clinics can help reduce EHR use, lessen administrative burden, and improve physician satisfaction.



Musée des arts et métiers

INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

T.4

(07/2003)

SERIES T: TERMINALS FOR TELEMATIC SERVICES

Standardization of Group 3 facsimile terminals for document transmission

works with any other fax … in the world

simple to use

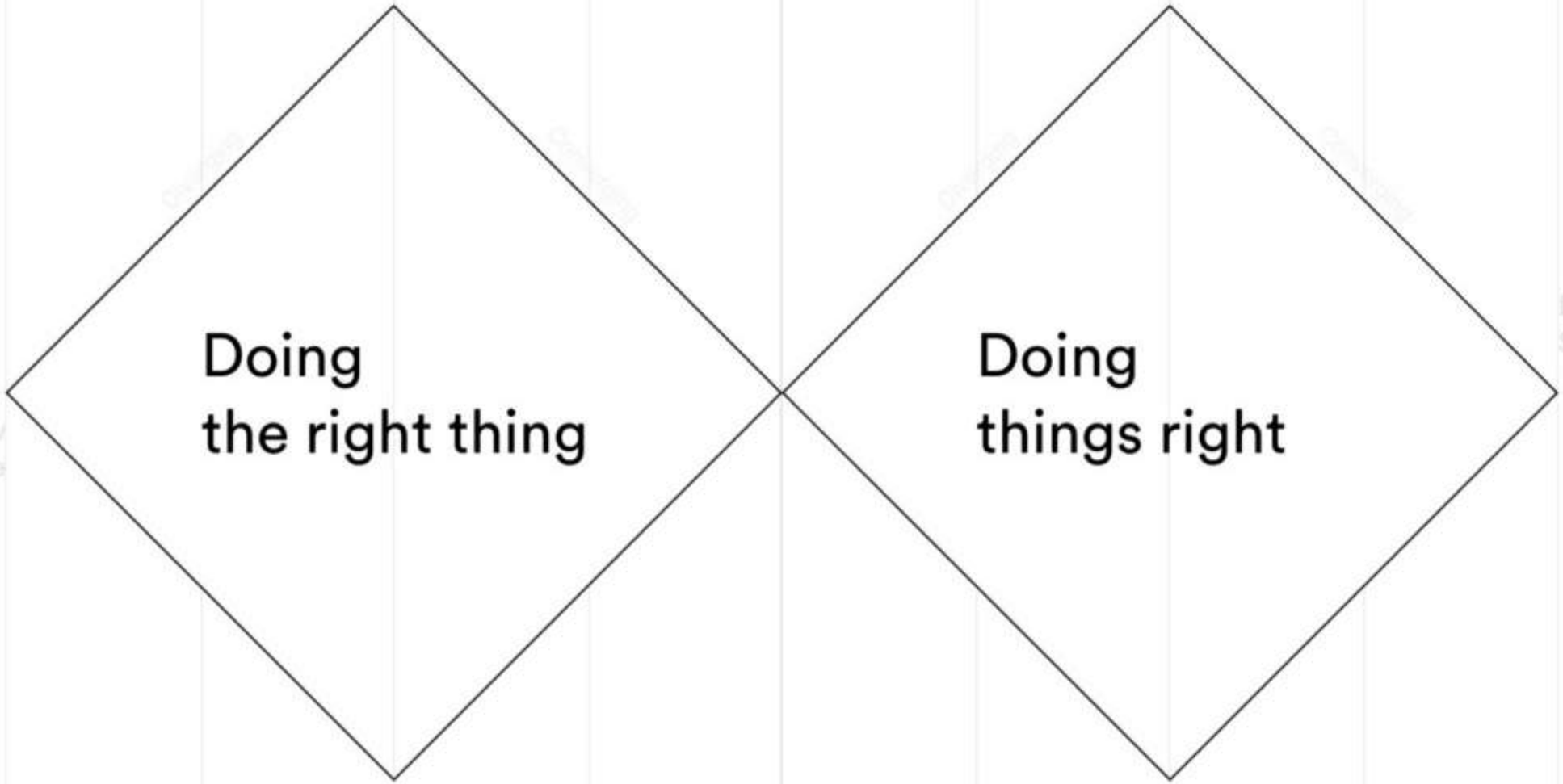
it’s cheap

If your fax machine was like your EHR

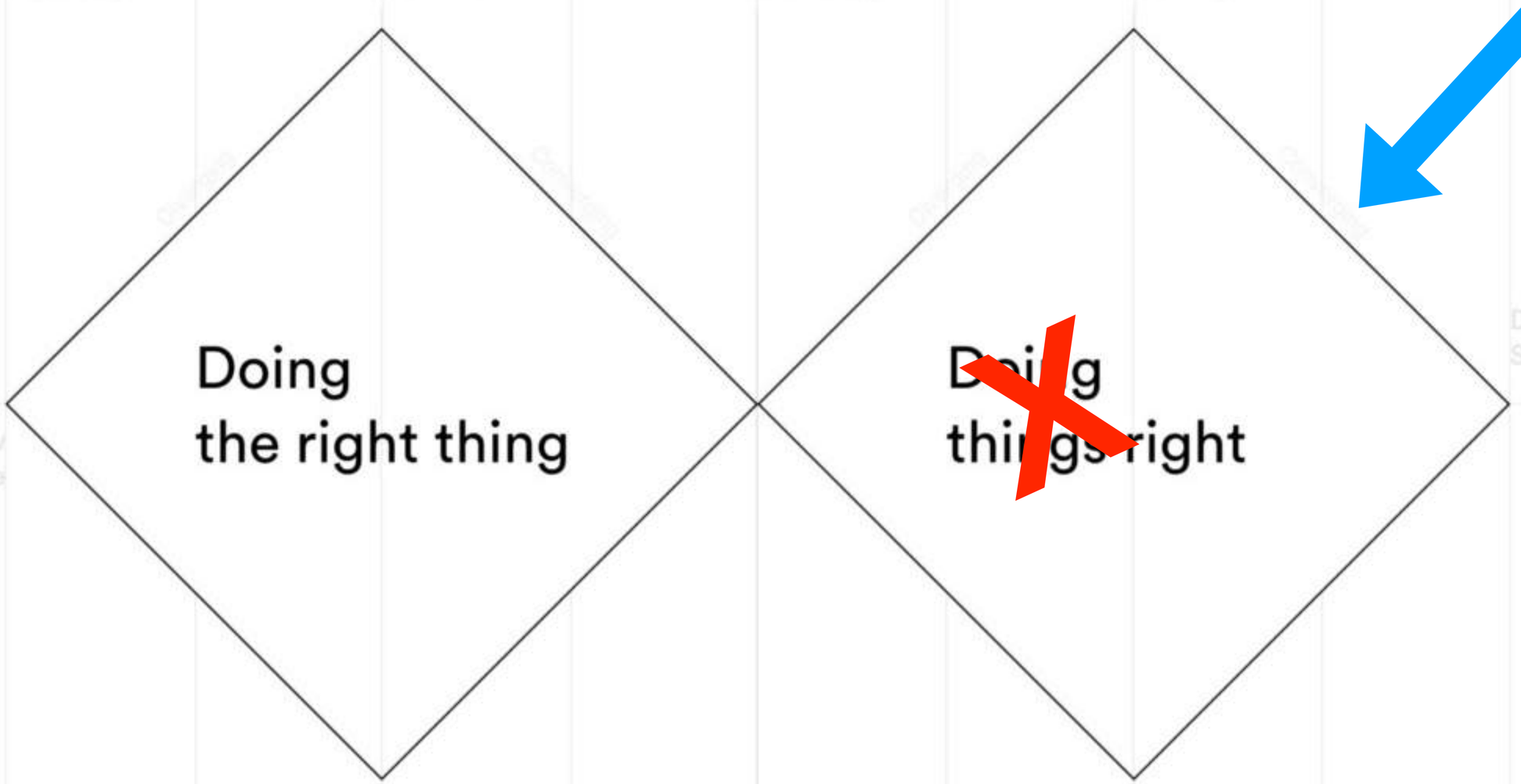
It can’t connect to any other fax machine

It would take you months (years?)
to figure out how to use it

It would cost $100,000

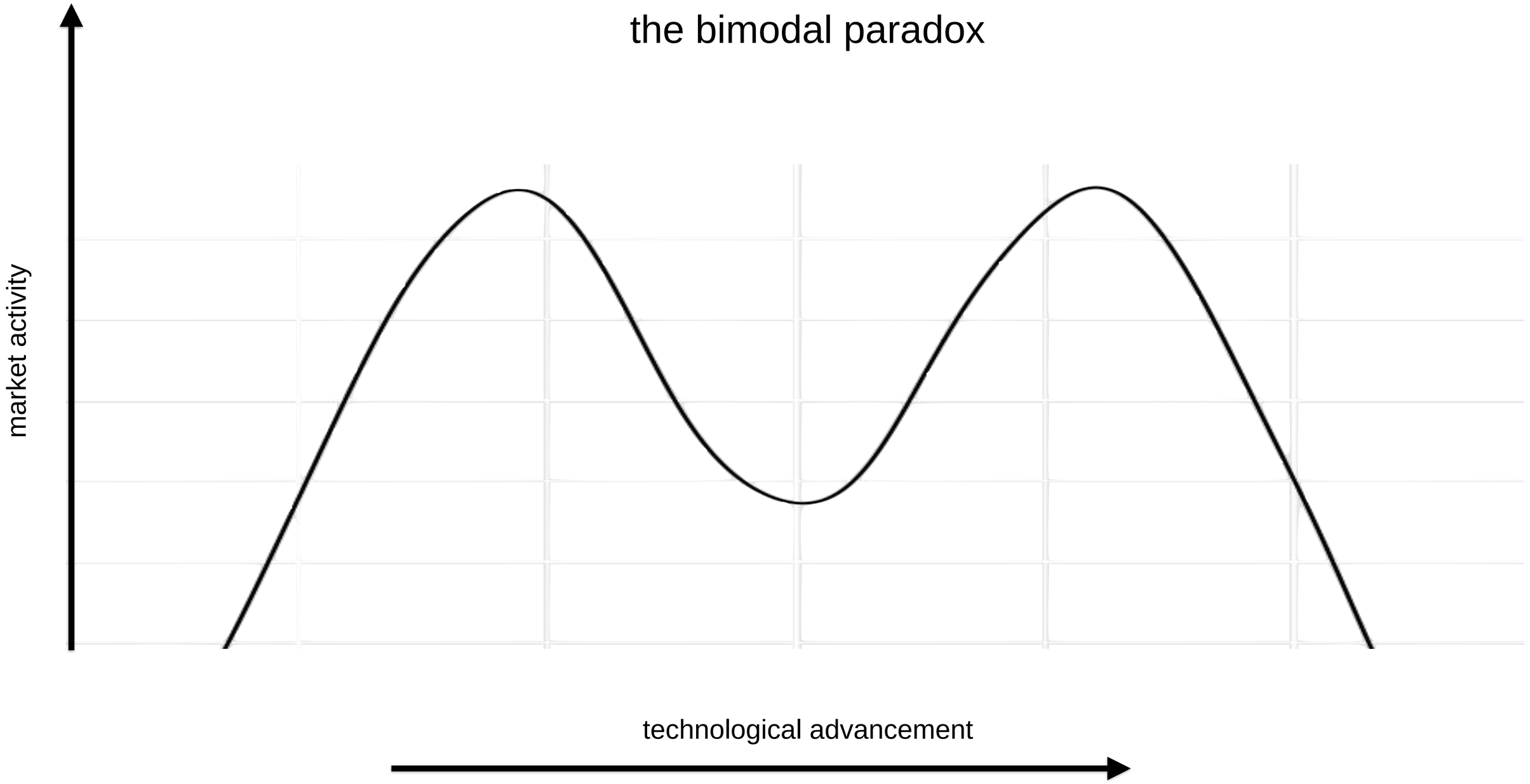


Dan Nessler

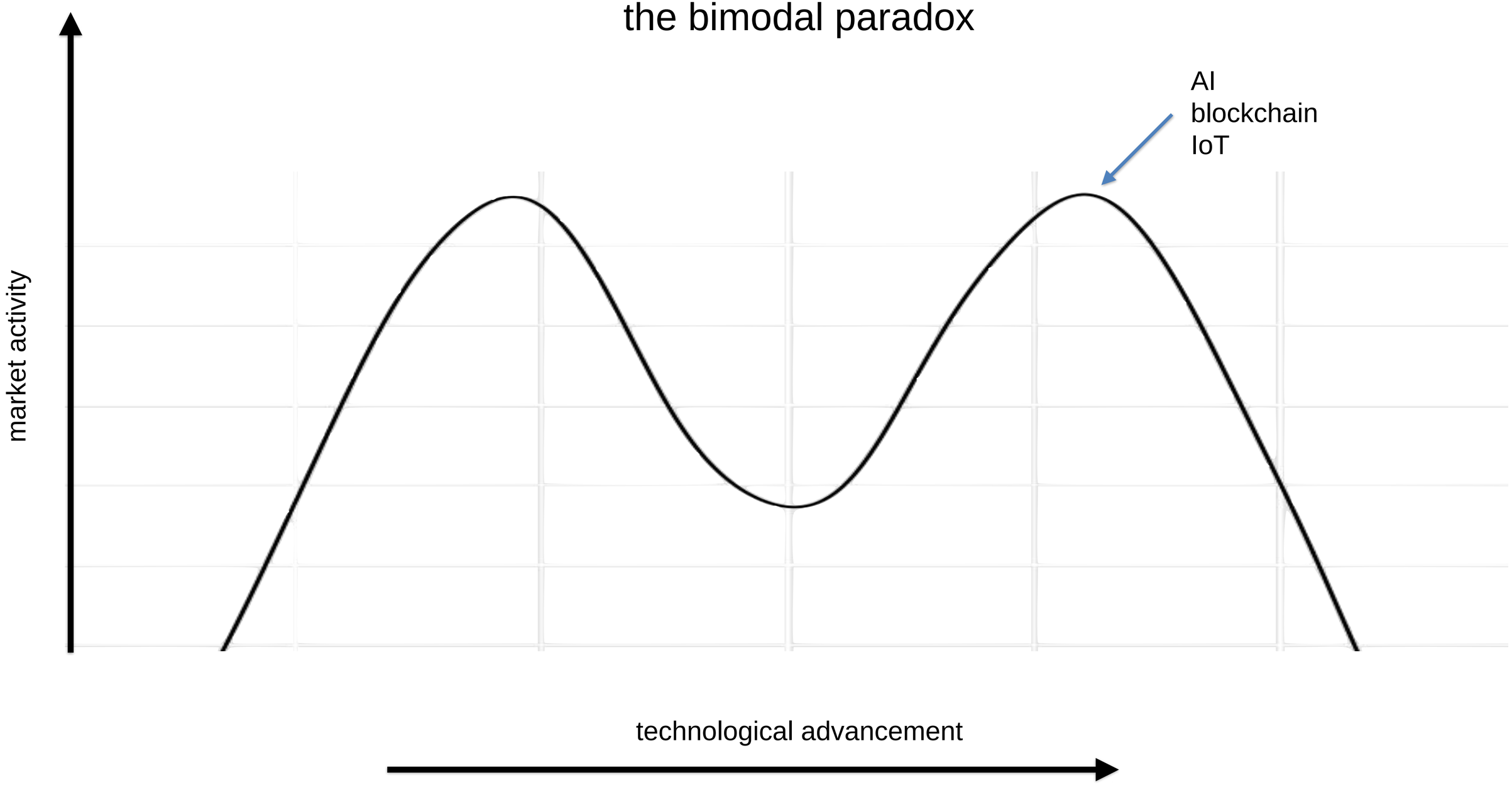


Dan Nessler

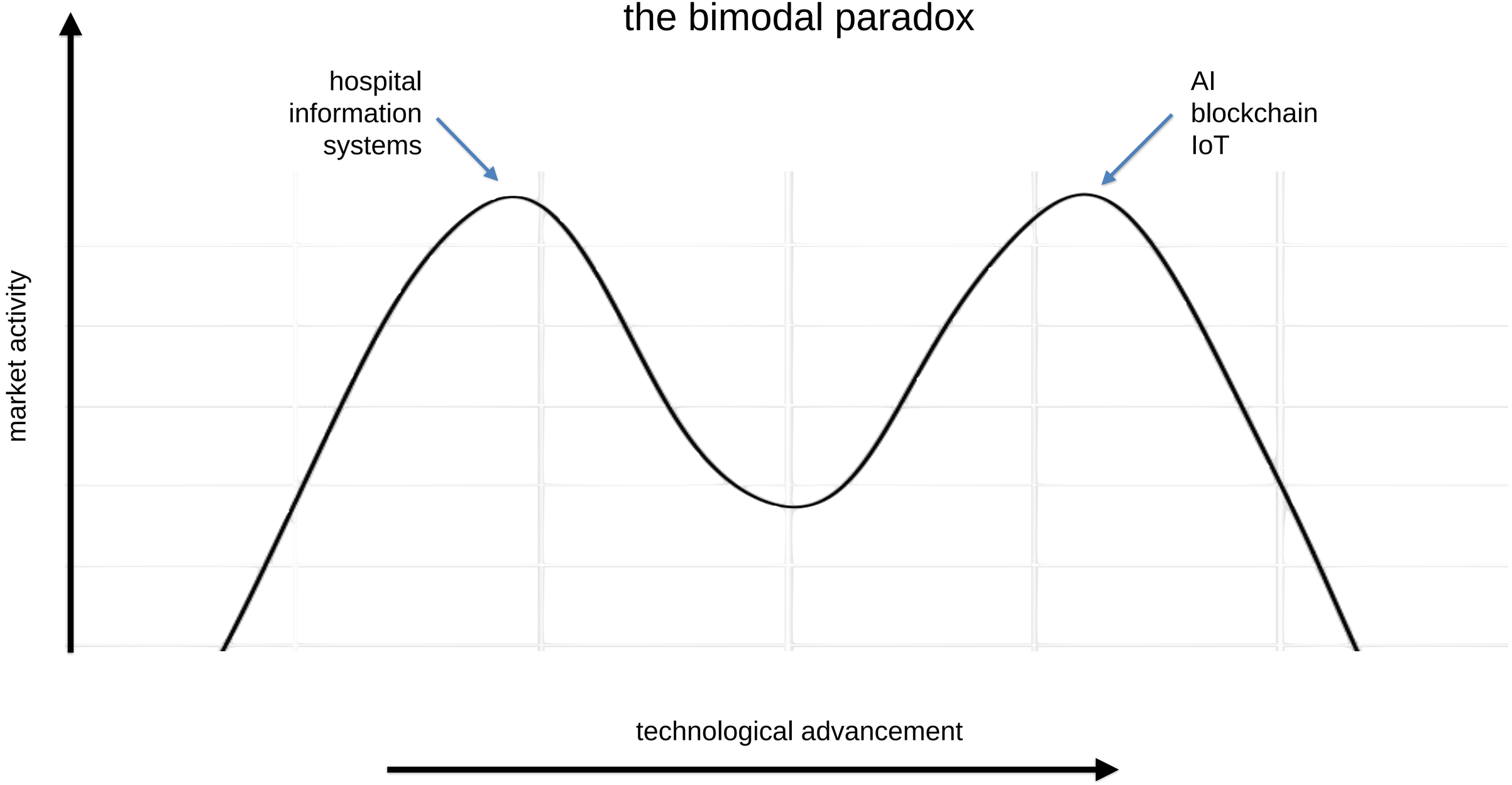
the bimodal paradox



the bimodal paradox



the bimodal paradox




ECG
10:09
Hold your finger on
the crown.


ECG
10:09
Hold your finger on
the crown.


ECG
10:09
Sinus Rhythm
76 BPM AVERAGE
This ECG does not show signs of atrial fibrillation.
ECG
10:09
Atrial Fibrillation
76 BPM AVERAGE
This ECG show signs of AFib.

No one asked for
AFib screening
at population levels

even with state-of-the-art AI,
superb sensitivity and specificity,
many people will worry unnecessarily
and be over-treated

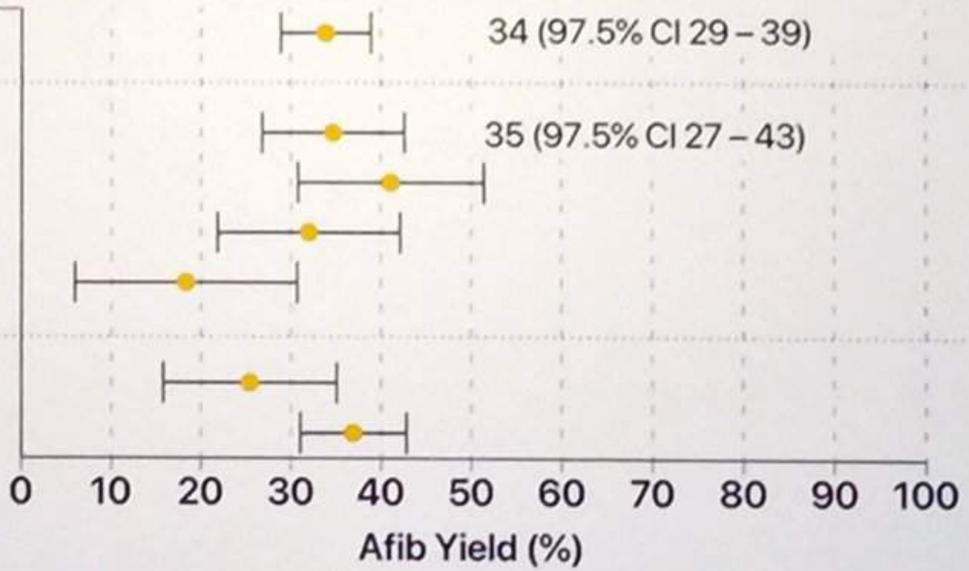
ACC 2019

Afib Yield on ECG Patch

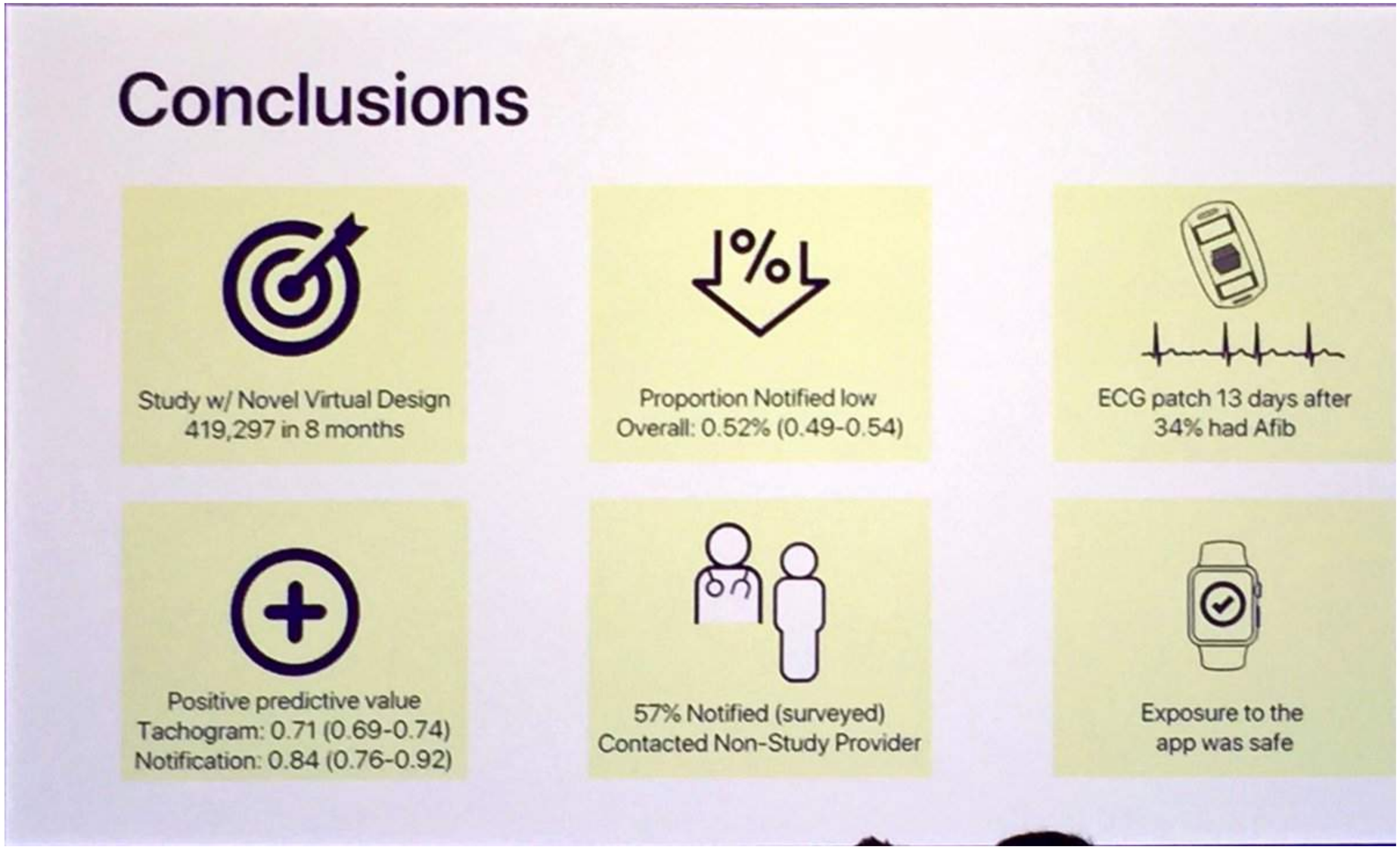
ECG Patch 450

Mean time to hookup: 13 days
Mean wear time: 6.3 days

	Grouping	Observed AF / Total	%
	Overall	153 / 450	34
Age	≥ 65	63 / 181	35
	55–64	47 / 114	41
	40–54	34 / 106	32
	22–39	9 / 49	18
Sex	Female	26 / 102	26
	Male	124 / 335	37



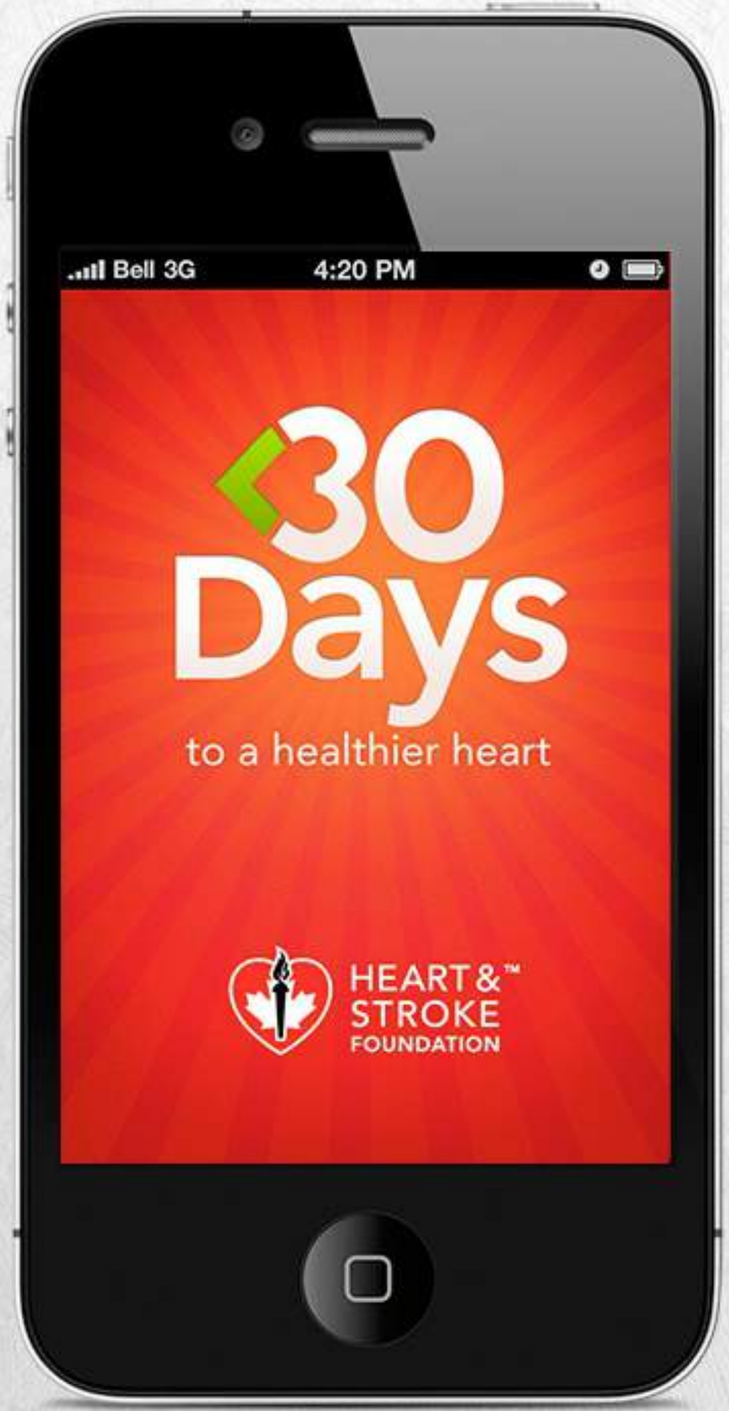
ACC 2019


Conclusions
Study w/ Novel Virtual Design
419,297 in 8 months
Proportion Notified low
Overall: 0.52% (0.49-0.54)
ECG patch 13 days after
34% had Afib
Positive predictive value
Tachogram: 0.71 (0.69-0.74)
Notification: 0.84 (0.76-0.92)
57% Notified (surveyed)
Contacted Non-Study Provider
Exposure to the
app was safe

419,297
in 8 months

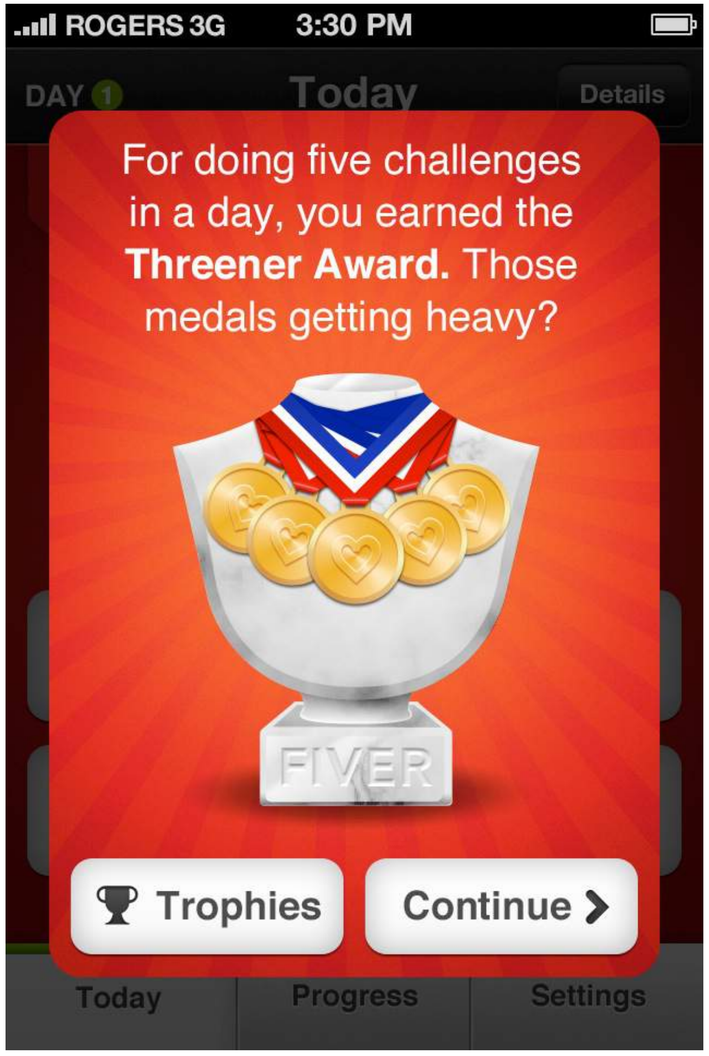
30 DAYS

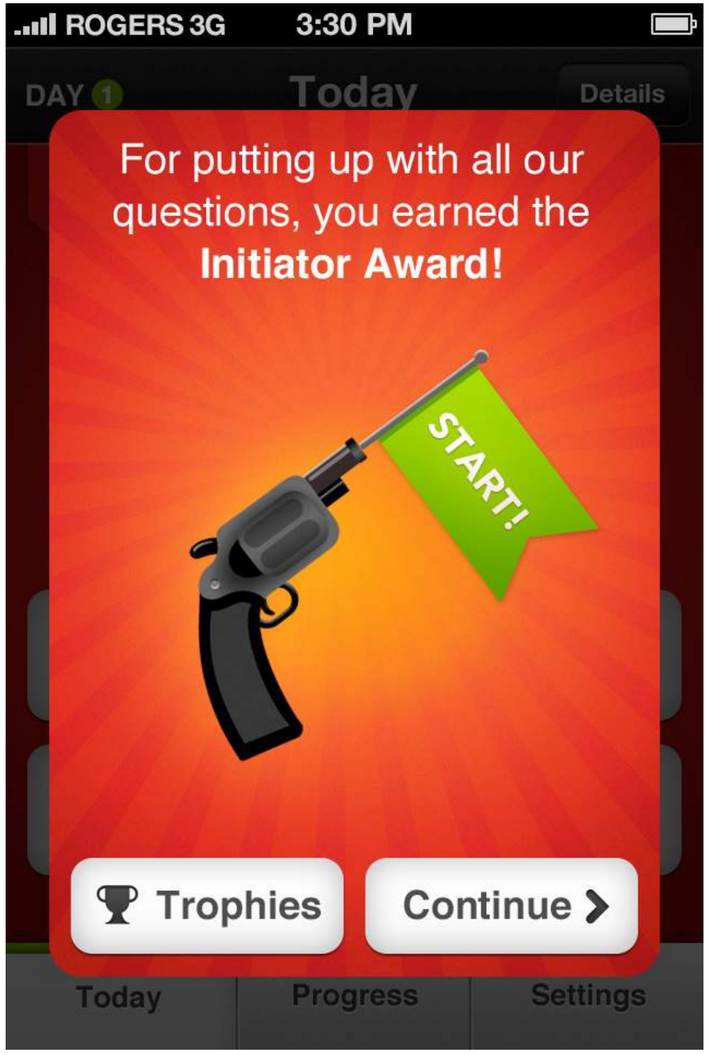
Risk assessment app for cardiovascular disease.

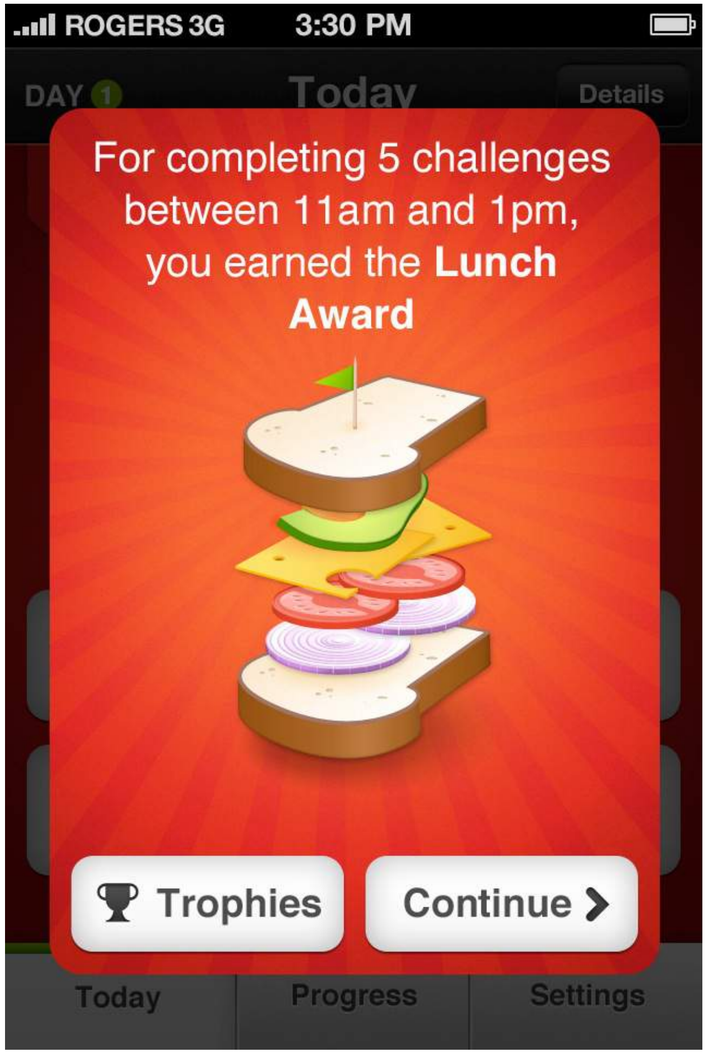

Bell 3G
4:20 PM
30 Days
to a healthier heart
HEART & STROKE FOUNDATION

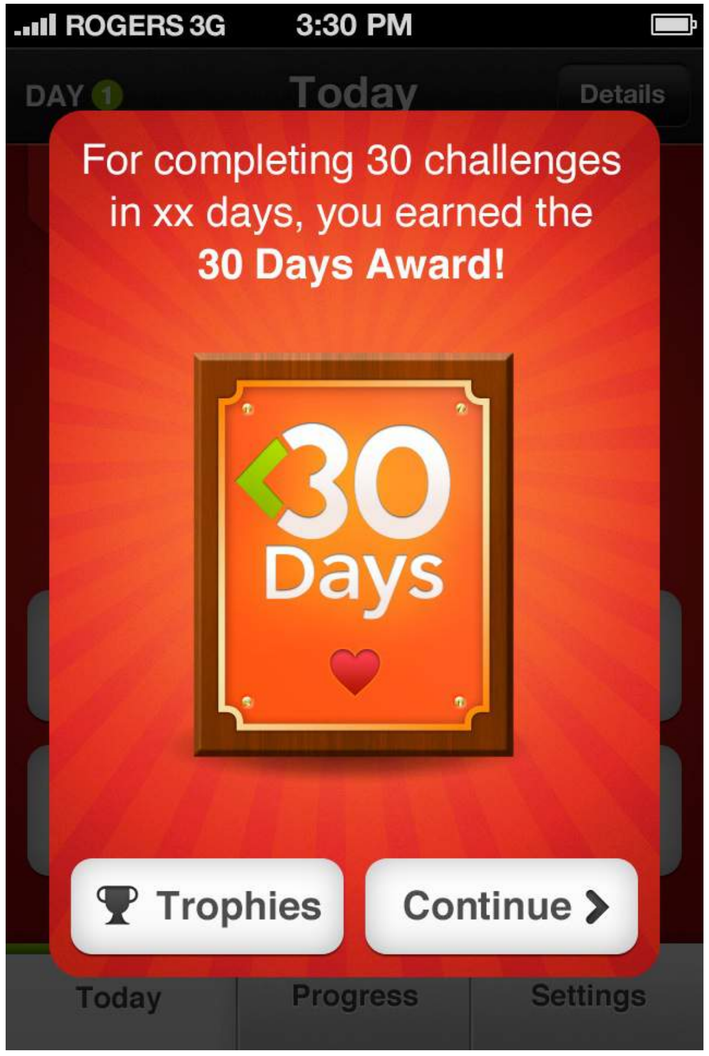

ROGERS 3G
3:30 PM
DAY 1
Today
Details
Plan to have fish for dinner tonight.
P.S. Fish and chips don't count!
I'll do it!
Pick again
Today
Progress
Settings

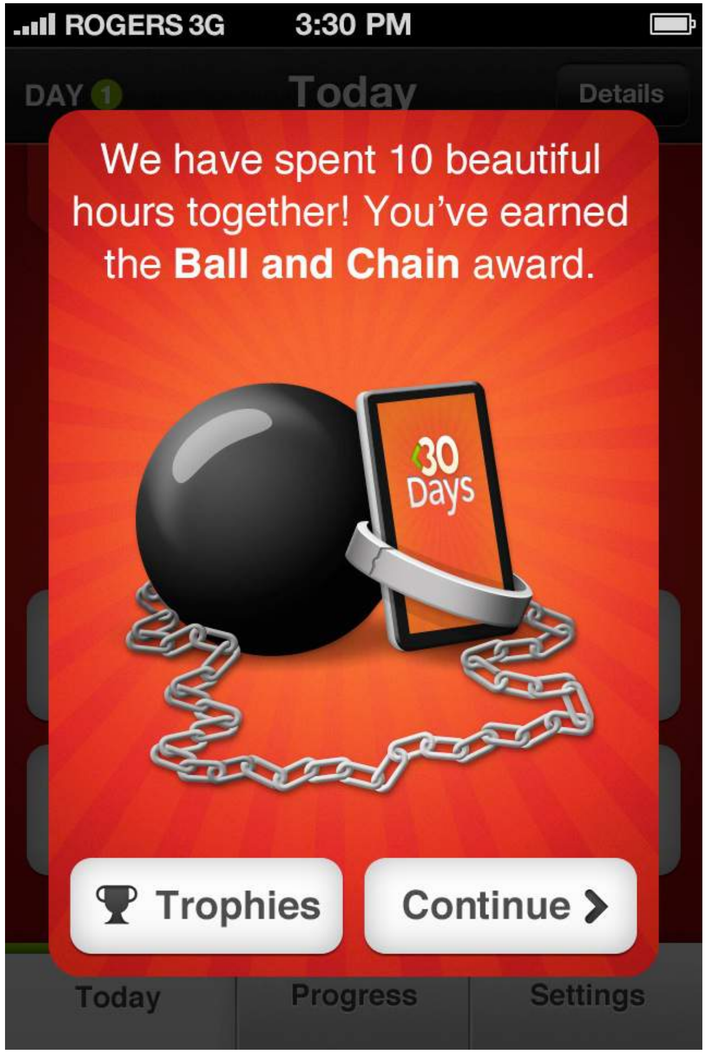

ROGERS 3G
3:30 PM
Progress
Priorities
1 Nutrition
2 Salt
3 Exercise
0
Challenges completed
1
Awards earned
30
Days to go
Today
Progress
Settings

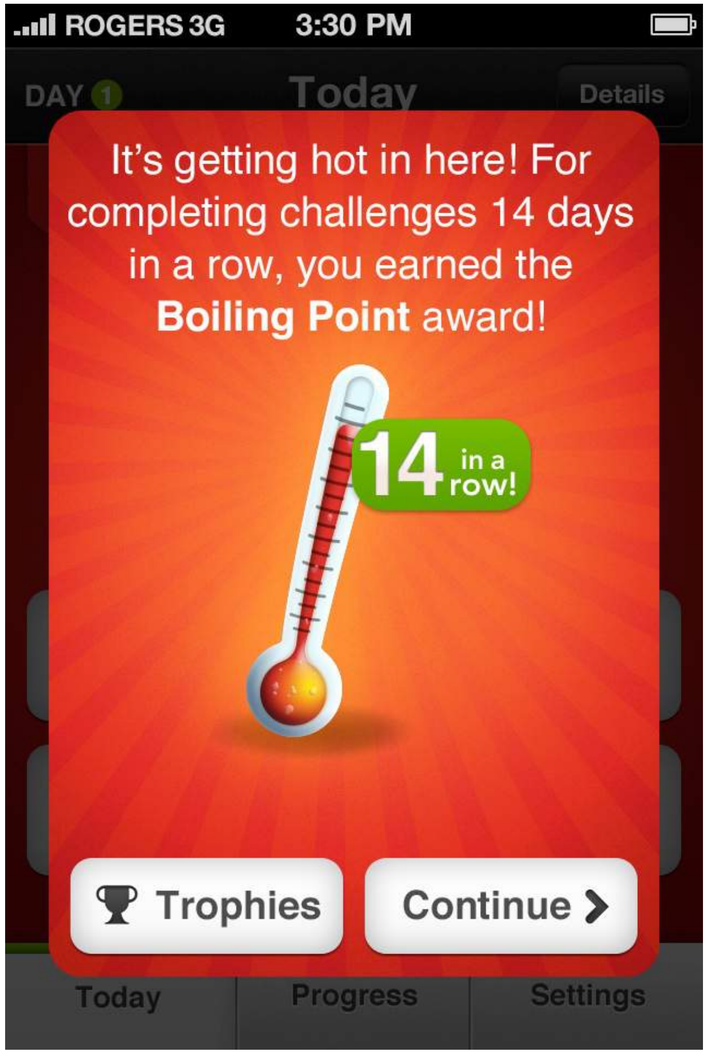

ROGERS 3G
3:30 PM
DAY 1
Today
Details
For doing five challenges in a day, you earned the **Threener Award.** Those medals getting heavy?
FIVER
Trophies
Continue
Today
Progress
Settings


ROGERS 3G
3:30 PM
DAY 1
Today
Details
For putting up with all our questions, you earned the **Initiator Award!**
START!
Trophies
Continue
Today
Progress
Settings


ROGERS 3G
3:30 PM
DAY 1
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 1
Today
Details
For completing 30 challenges in xx days, you earned the **30 Days Award!**
30 Days
Trophies
Continue
Today
Progress
Settings


ROGERS 3G
3:30 PM
DAY 1
Today
Details
We have spent 10 beautiful hours together! You've earned the **Ball and Chain** award.
30 Days
Trophies
Continue
Today
Progress
Settings


ROGERS 3G
3:30 PM
DAY 1
Today
Details
It's getting hot in here! For completing challenges 14 days in a row, you earned the **Boiling Point** award!
14 in a row!
Trophies
Continue
Today
Progress
Settings

Original Paper

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

Shivani Goyal[1,2], BEng, MASc; Plinio P Morita[1], PhD; Peter Picton[1], MASc; Emily Seto[1,3], PhD; Ahmad Zbib[4], MD; Joseph A Cafazzo[1,2,3], PhD, PEng

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[4]Heart and Stroke Foundation of Canada, Toronto, ON, Canada

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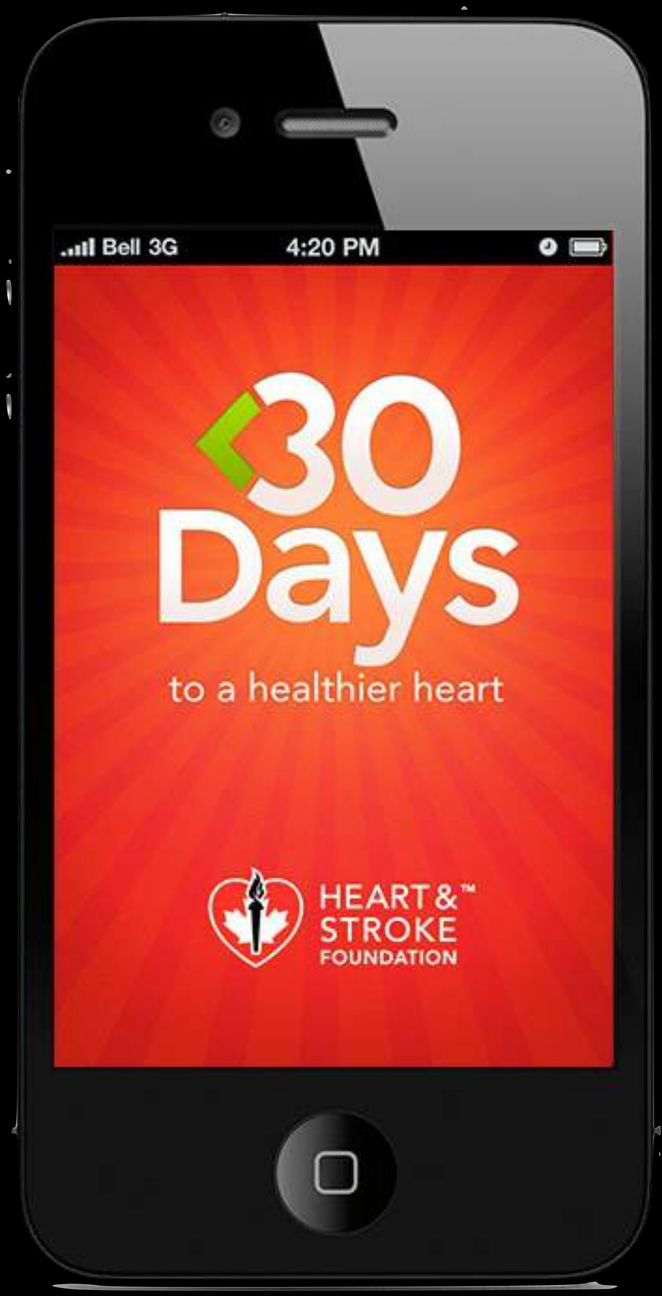
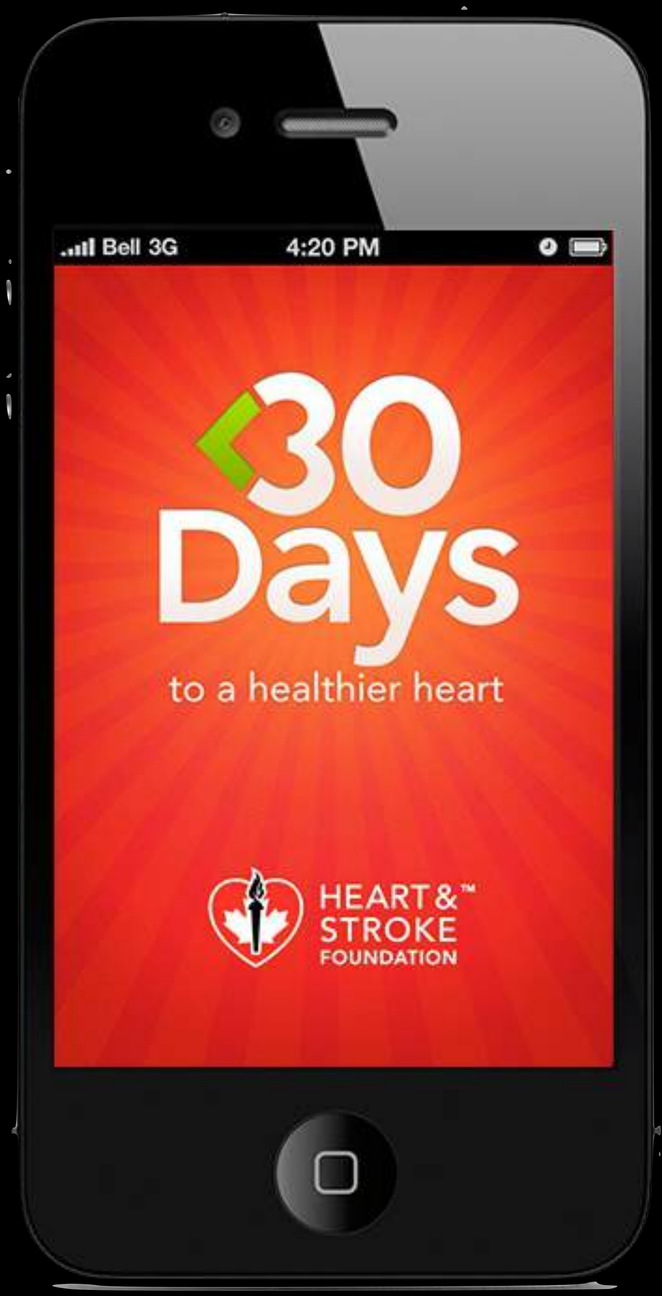


70,000 downloads

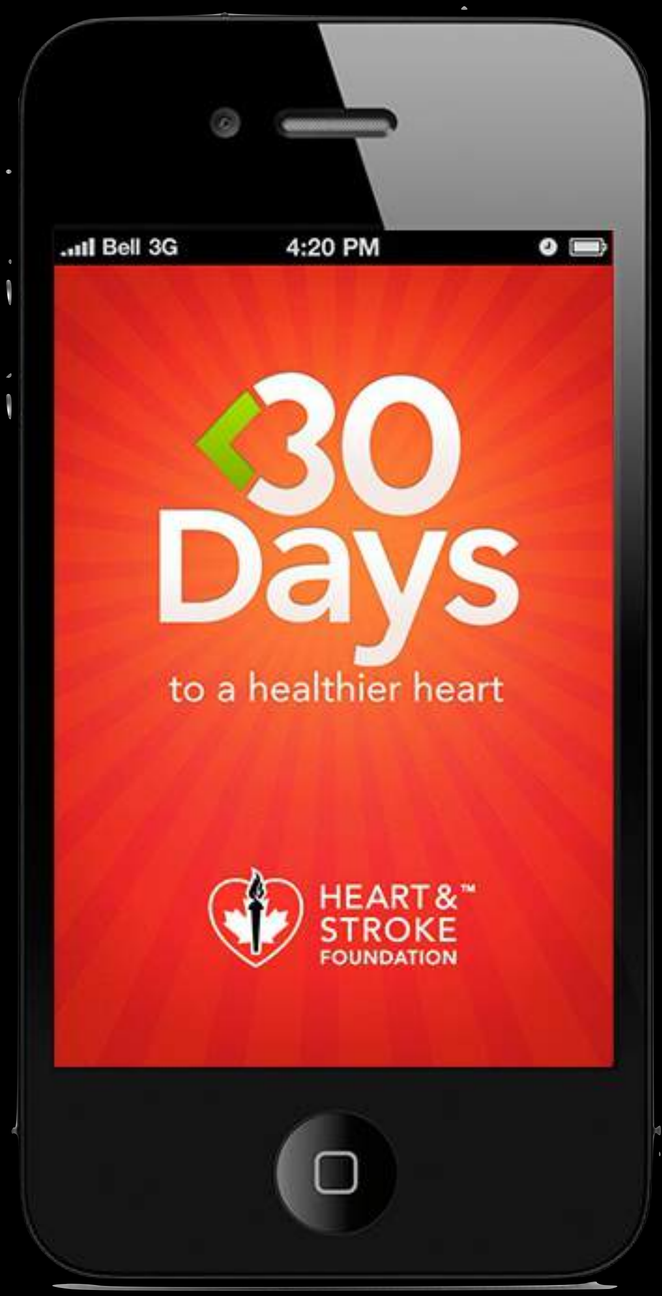
15,000 > 2 weeks

6,000 all 30 days



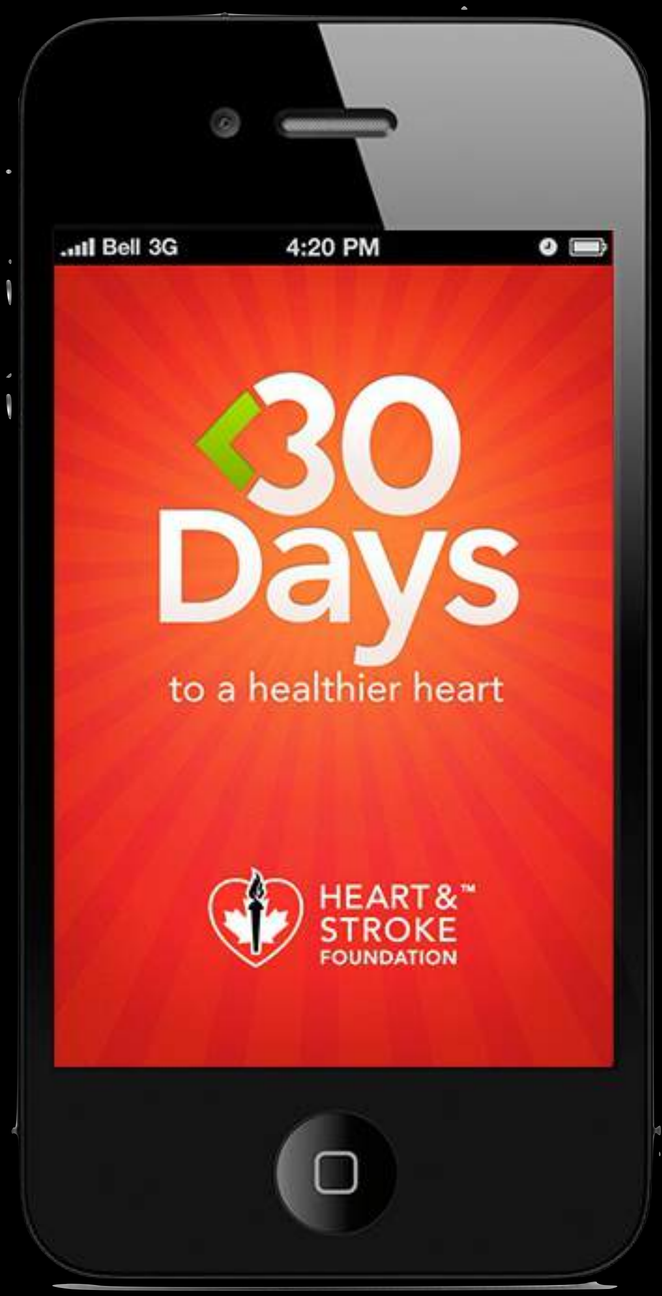
#1 downloader:

young women



most frequent user:

older woman



used the longest:

older men

30 Days

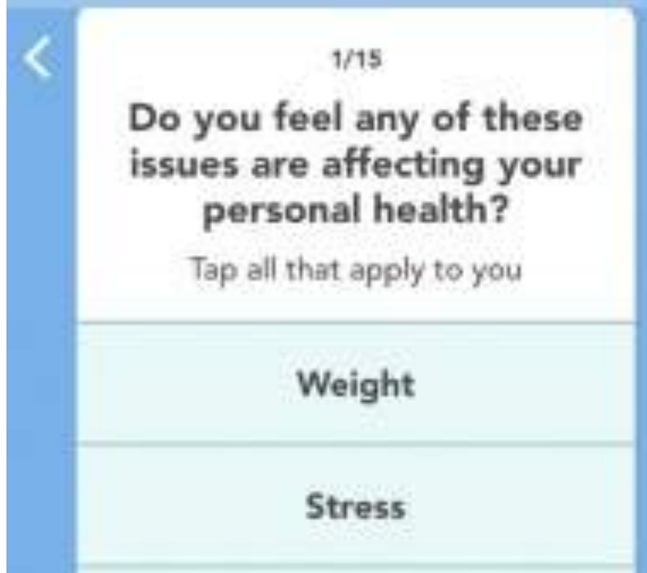
To a Healthier Heart

30 Days

To a Healthier Heart

30 Jours

Vers un cœur en santé



To a Healthier Heart

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
- Alcohol
- Smoking
- Unhealthy Diet
- Physical Activity
- None of the above

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?

Facebook Twitter

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

The *bant* Randomized Controlled Trial

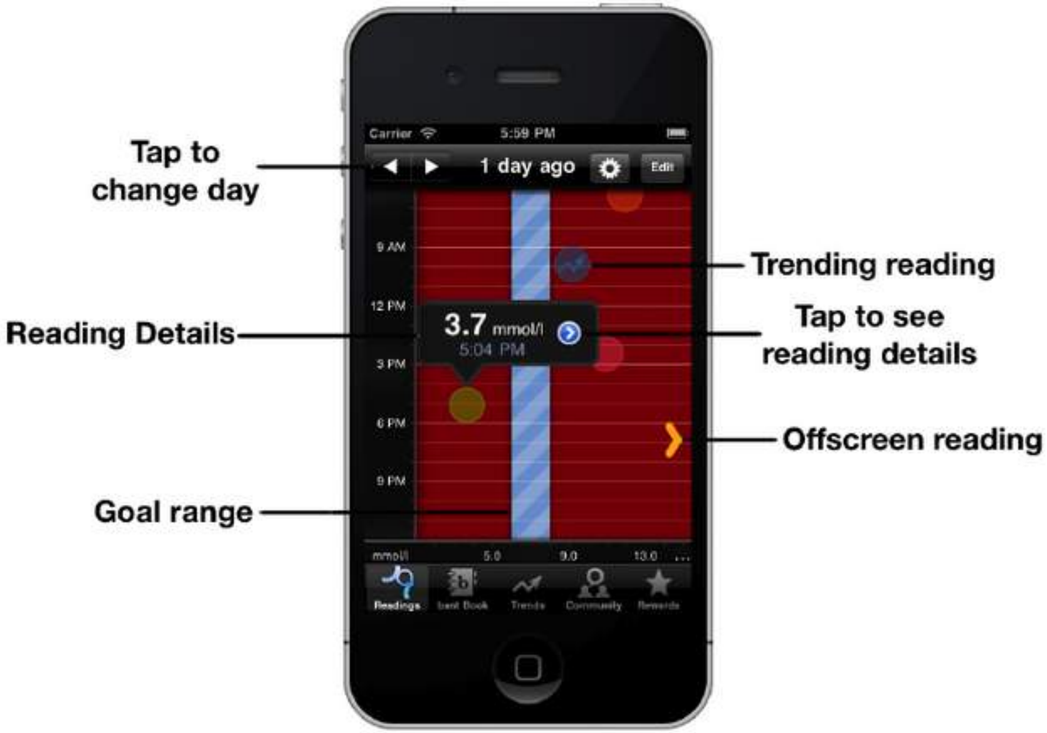
Goyal, S *et al.* A Mobile App for the Self-Management of Type 1 Diabetes Among Adolescents: A Randomized Controlled Trial. *JMIR mHealth uHealth.* 2017;5(6):e82

August 2013
Study recruitment initiated.

January 2016
Final study visit completed; n=92

June 2017
Full manuscript published.

*"Future evaluations of mHealth apps should consider more **robust research tools** and **alternative study designs** to enable more rapid and iterative evaluations, better suited to the nature of rapidly evolving consumer technology."*



The *Asthma Health* Prospective Observational Study

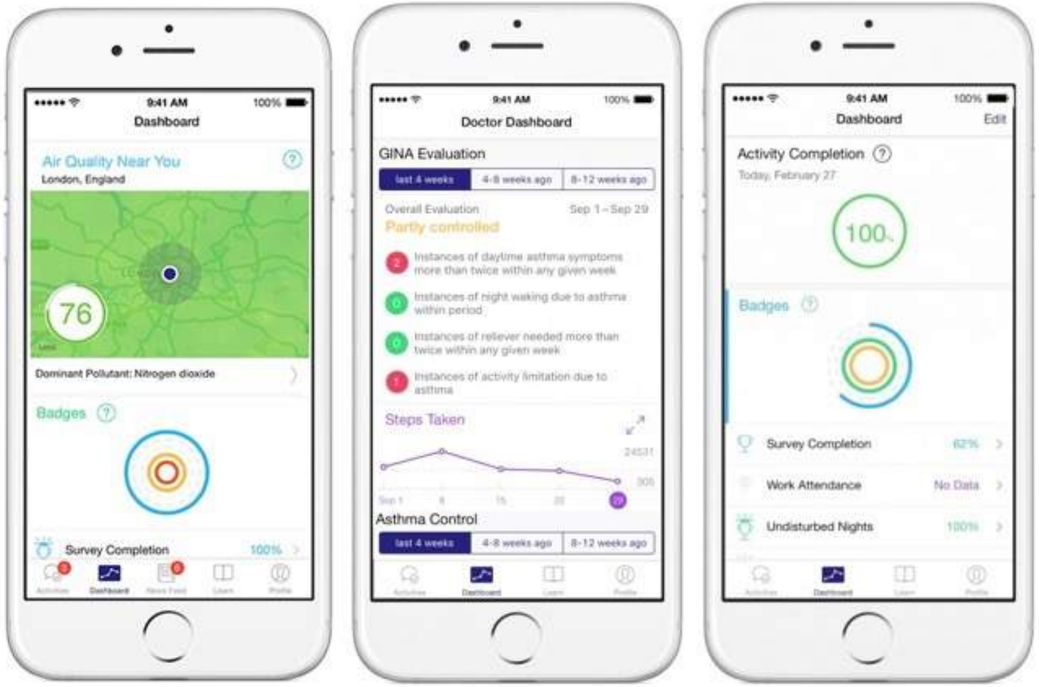
Chan, Y *et al.* The Asthma Mobile Health Study, a large-scale clinical observational study using ResearchKit. *Nat. Biotechnol*. 35, 354–362 (2017).

March 2015
Study recruitment initiated.

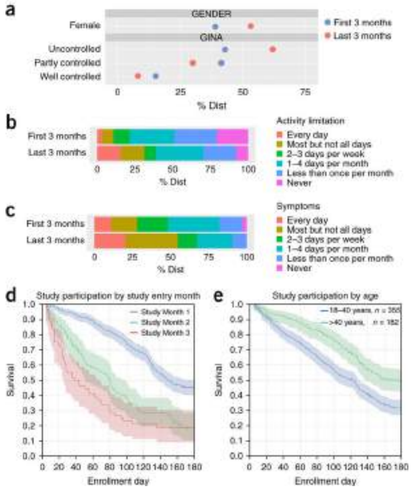
January 2016
Final study visit completed; n= 7,593

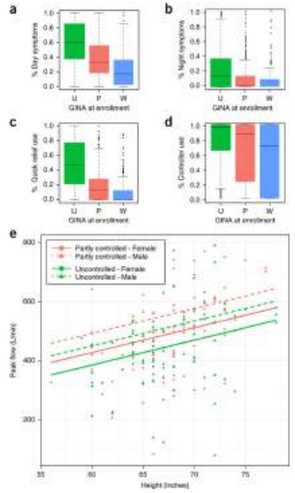
March 2017
Full manuscript published.

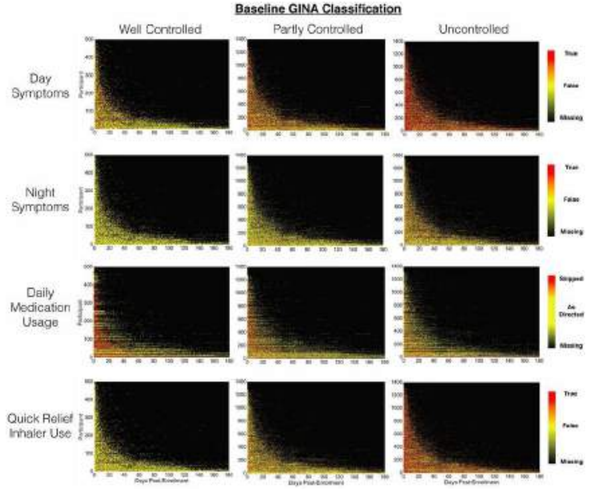
*"…a broad-scale asthma study can be conducted **in its entirety** via a smartphone application…we collected detailed, multi-dimensional, longitudinal **data more efficiently** than traditional epidemiological studies by automating, standardizing, and accelerating various costly and time-consuming processes."*

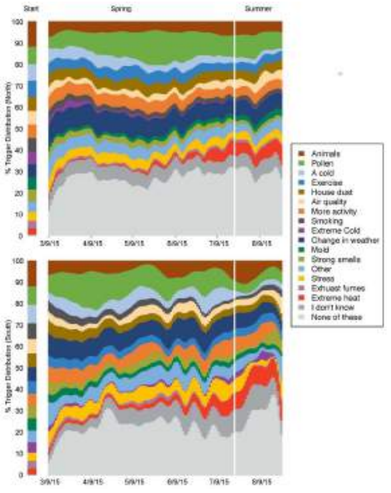


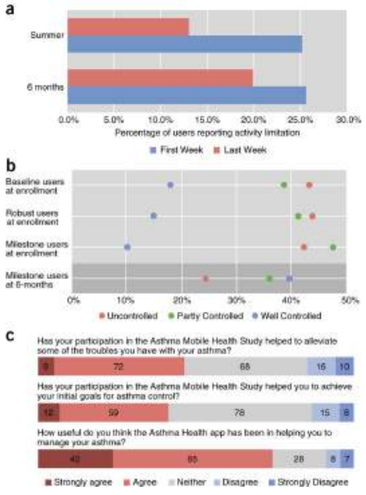
Asthma Health Engagement Analytics

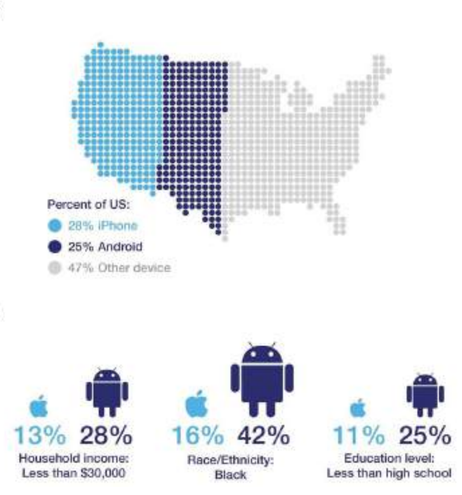


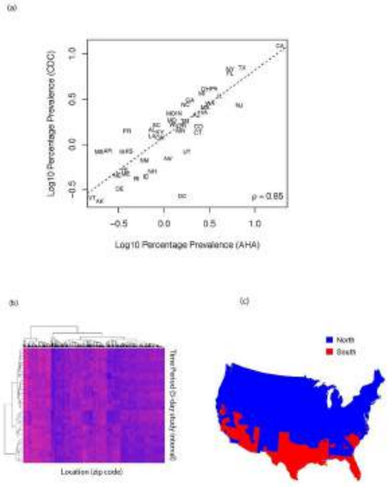


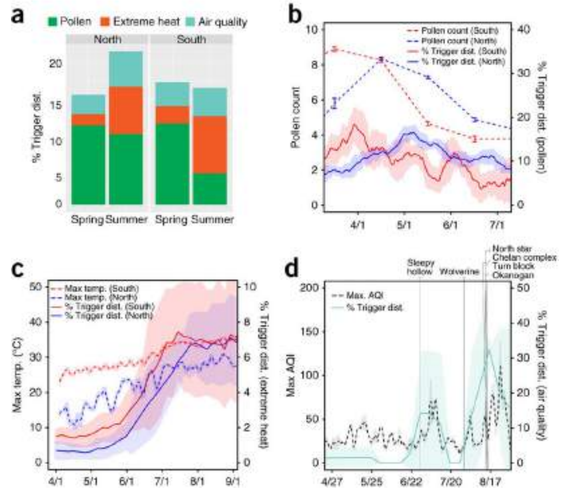




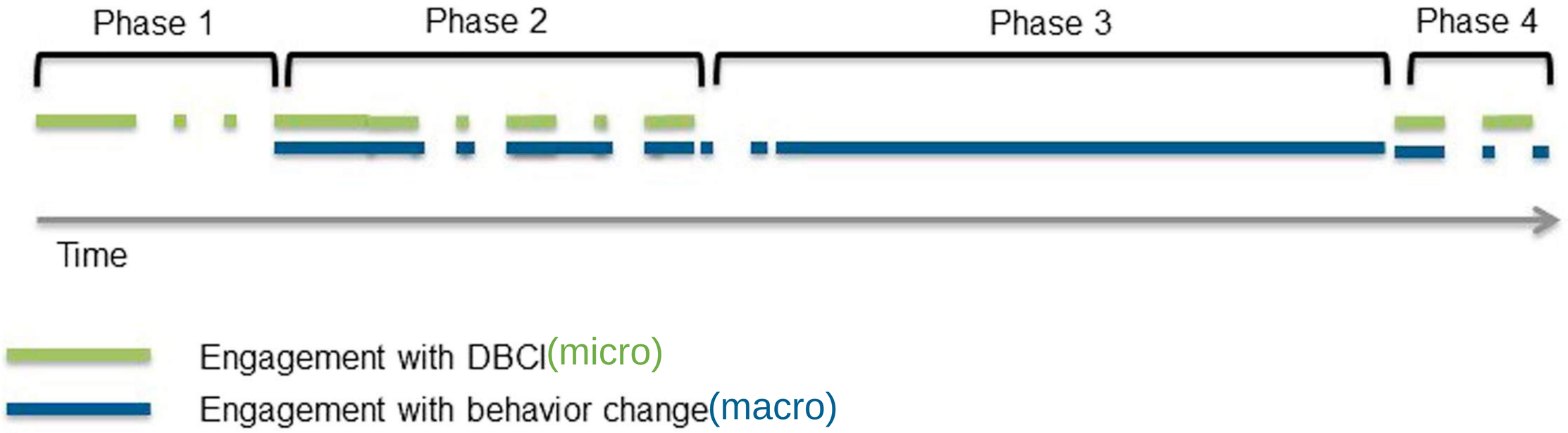








Micro and Macro Levels of Engagement



DBCI: digital behaviour change intervention

Reprinted from Yardley et al.


ECG
10:09
Hold your finger on
the crown.

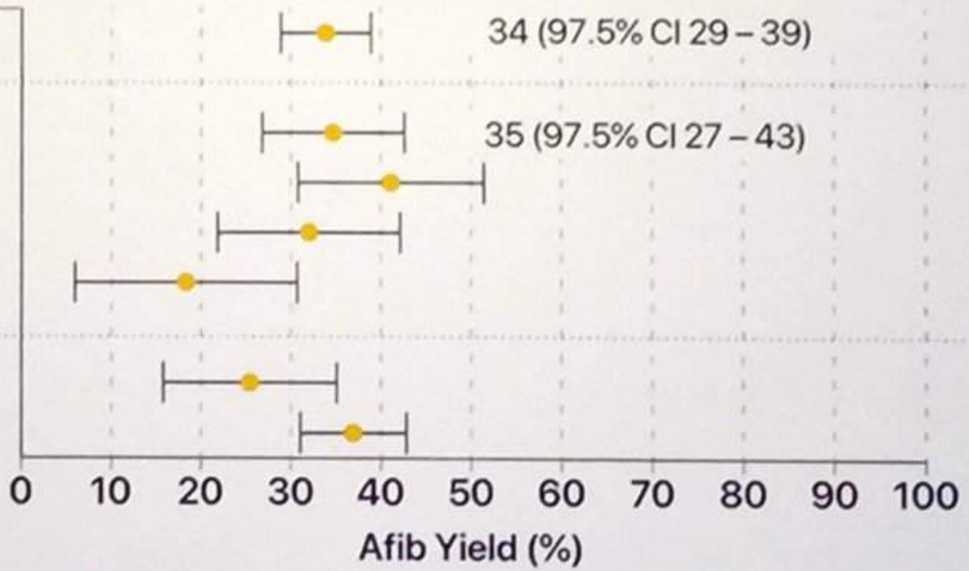
ACC 2019

Afib Yield on ECG Patch

ECG Patch 450

Mean time to hookup: 13 days
Mean wear time: 6.3 days

	Grouping	Observed AF / Total	%
	Overall	153 / 450	34
Age	≥ 65	63 / 181	35
	55–64	47 / 114	41
	40–54	34 / 106	32
	22–39	9 / 49	18
Sex	Female	26 / 102	26
	Male	124 / 335	37



CNN health

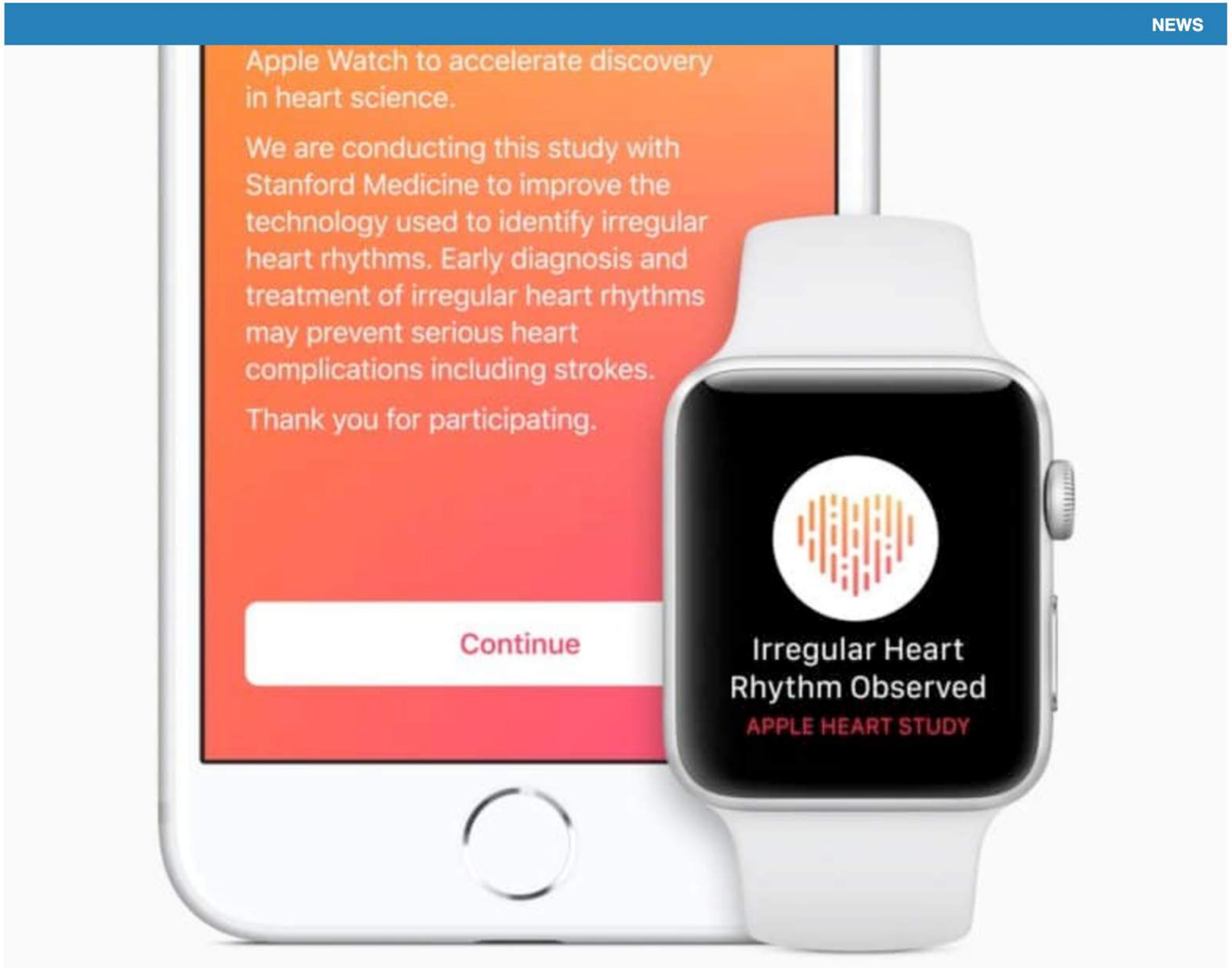
Apple Watch app could save your life by detecting irregular heartbeat, study says

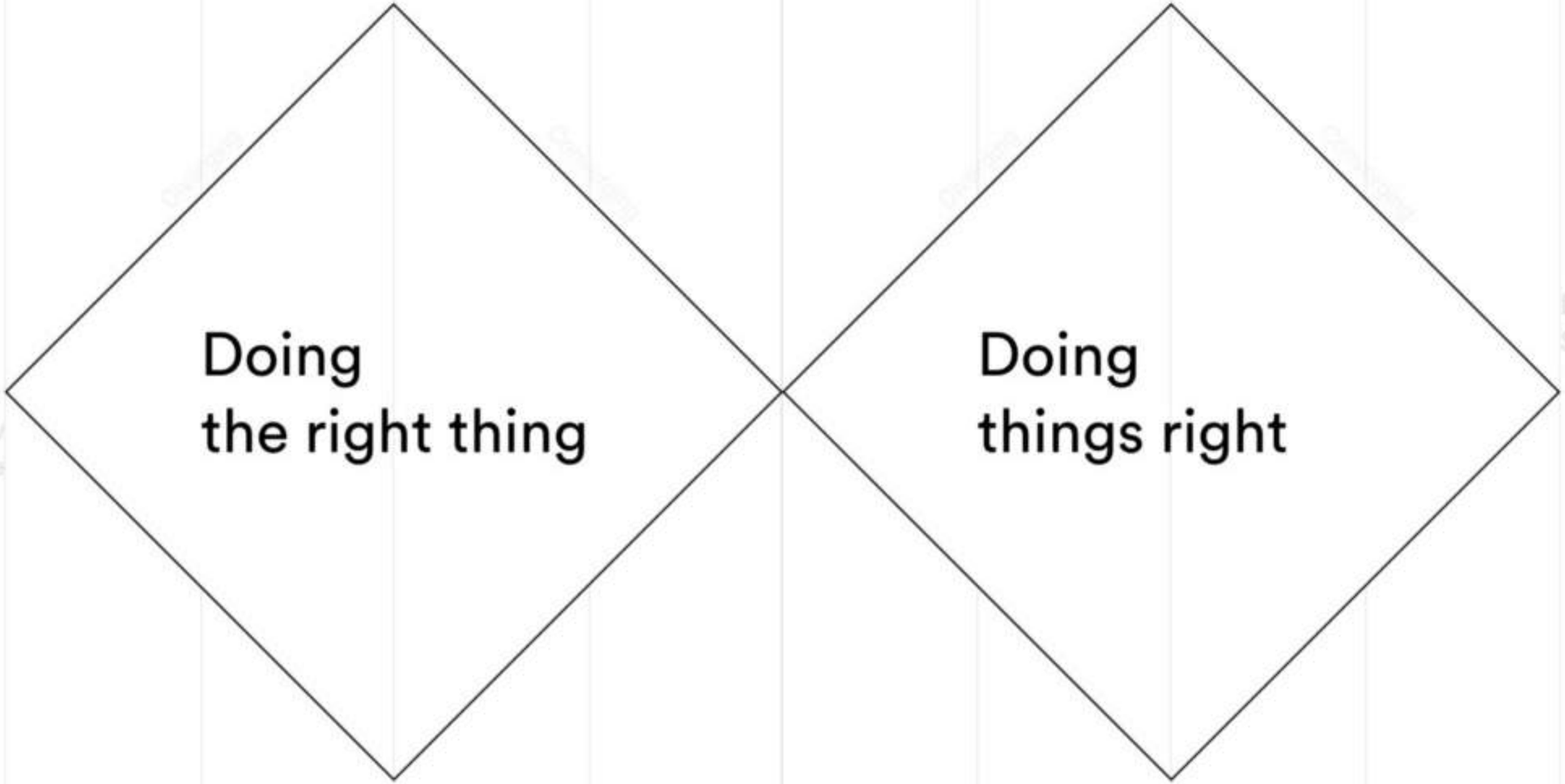
By Susan Scutti, CNN

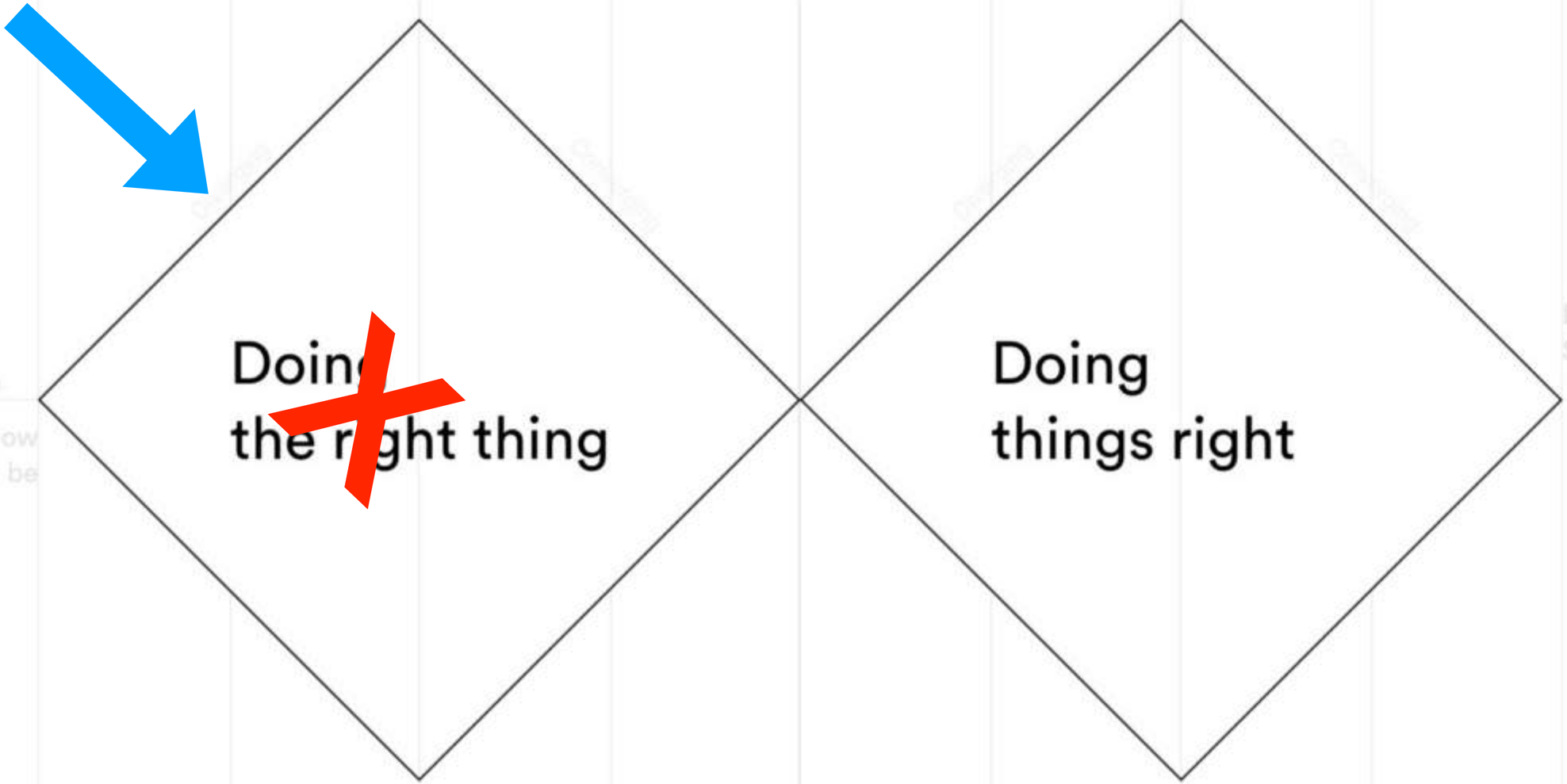
Cult of Mac

Massive study proves Apple Watch could save your life

BY LUKE DORMEHL • 6:12 AM, MARCH 18, 2019




Doing
the right thing
Doing
things right


Doing
the right thing
Doing
things right


ICANCOPE
breatheAgain
Ned
medly
SOMNI
LubDub
<30 Days
bant


EMERGENCY


HOSPITAL
QUIET


University of Toronto Exam Centre
Faculty
Ferguson Block
Whitney Block, Queen's Park
Ministry of Transportation
Ontario Fire Fighters Memorial
Ministry of Finance
Mowat Blo
The Banting and Best Department of...
Surrey Place Centre
Princess Margaret Hospital
Mt Sinai Hospital
Women's College Hospital
The Michener Institute of Education at UHN
Toronto General Hospi...
Toronto General Hospital -Peter Munk...
College of Physicians and Surgeons of Ontario
The Hospital for Sick Children
University of Toronto, Faculty of Dentistry
LSC - Toronto

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Alison Bisson
Research/Lab Coordinator

Joseph Cafazzo
Executive Director

Anjum Chagpar
Managing Director

Jess Fifield
Marketing & Communications Coordinator

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Associate Director, MedTech

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Ryan Cheng
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Lauren Ip
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Mikael Ragbar
Human Factors Specialist

Athina Santaguida
Human Factors Designer

Ashleigh Shier
Human Factors Specialist

Neil Sokol
Human Factors Specialist

Odelia Lee
Human Factors Design Intern

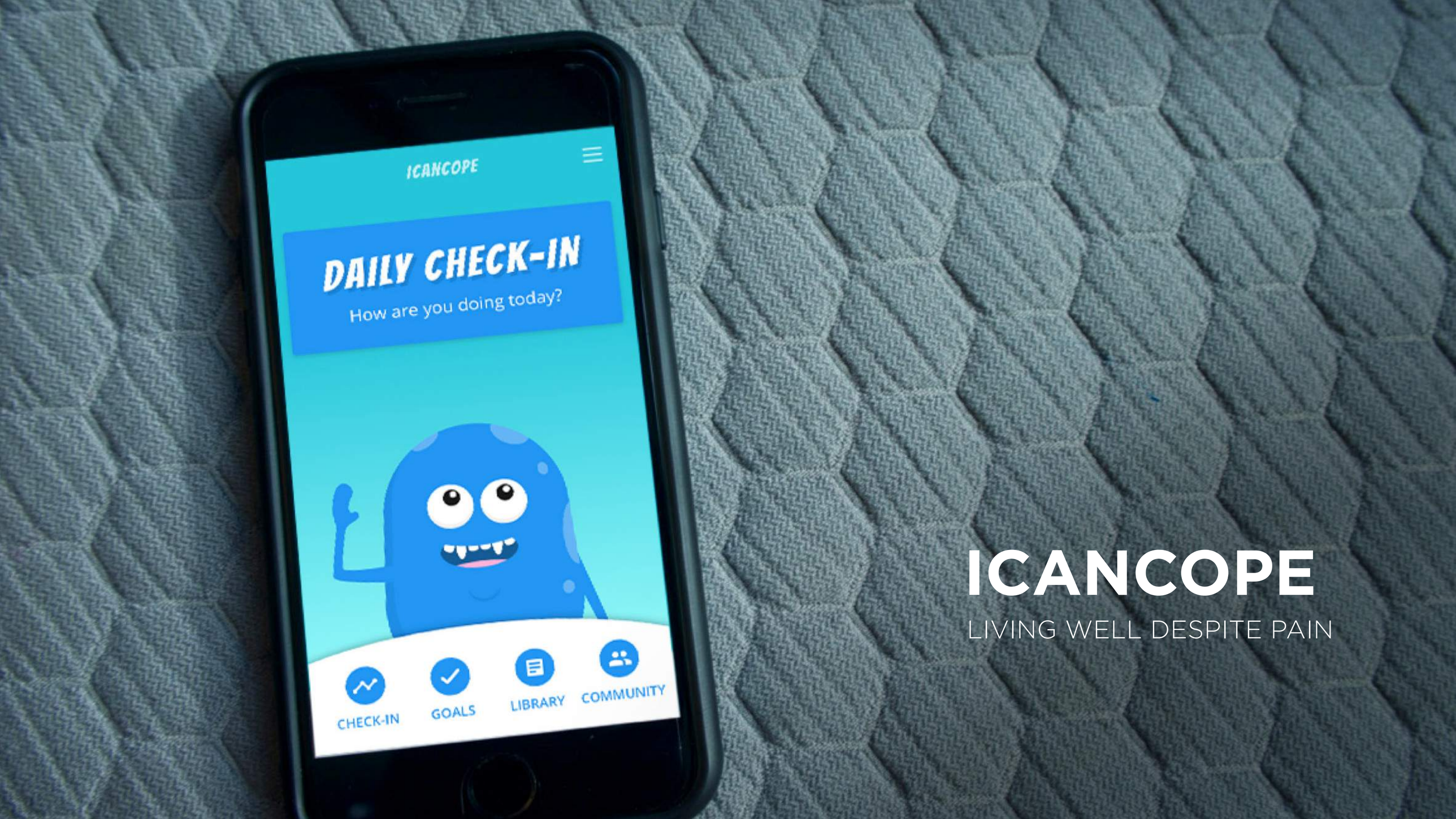
HEALTHcare HumanFACTORS

a proud partner of UHN

- 35 staff and graduate students dedicated to the design of safe and effective systems. Includes human factors engineers, cognitive psychologists, and designers

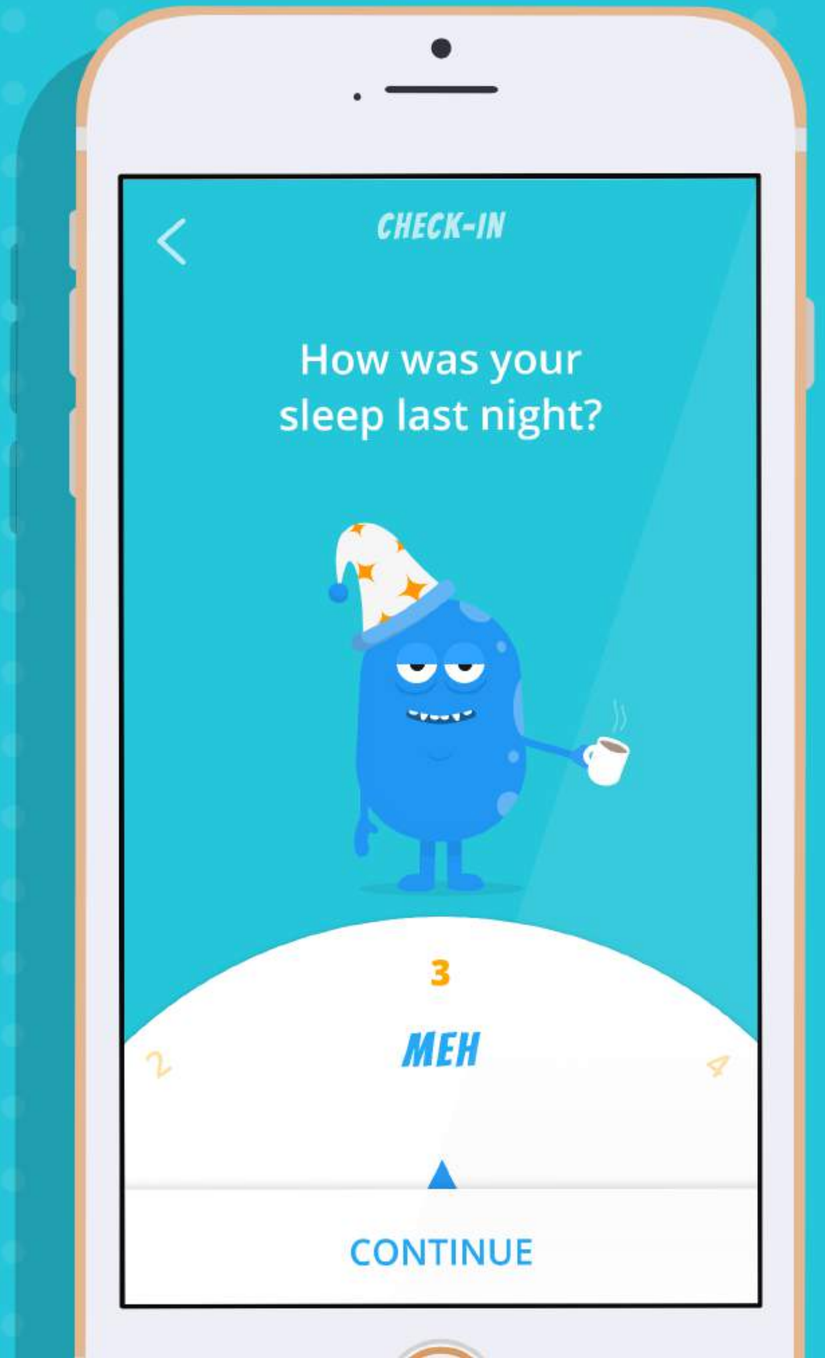
- Hospital safety initiatives on designing resilient solutions to cognitive, behavioural, and environmental challenges

- Work with private sector companies to design safer products



ICANCOPE

LIVING WELL DESPITE PAIN



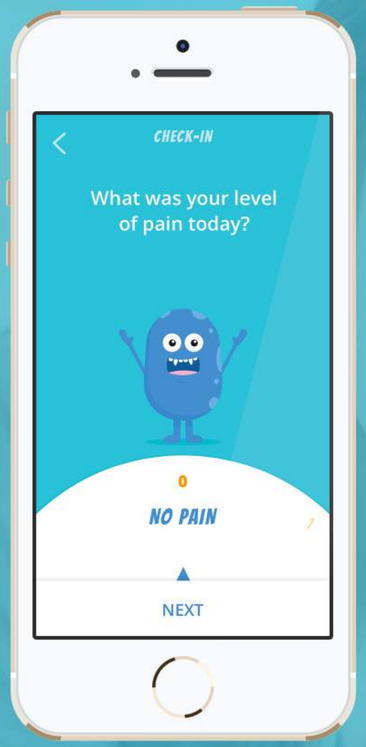
ICANCOPE

Living well, despite pain

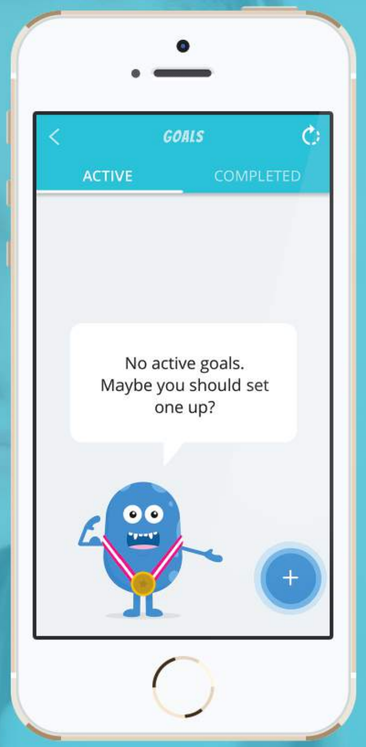
ICANCOPE

A Pain Management Platform for Kids

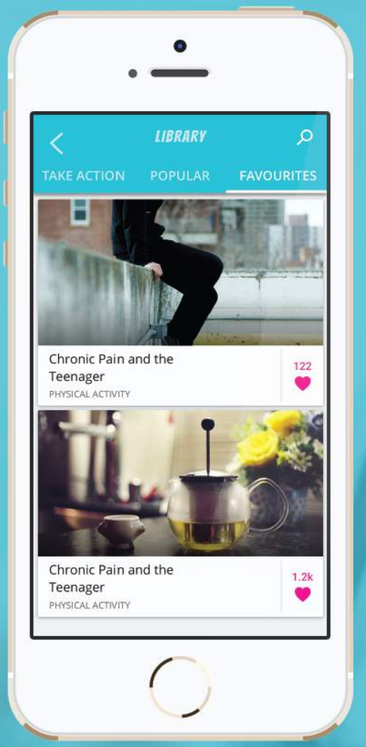
ICANCOPE



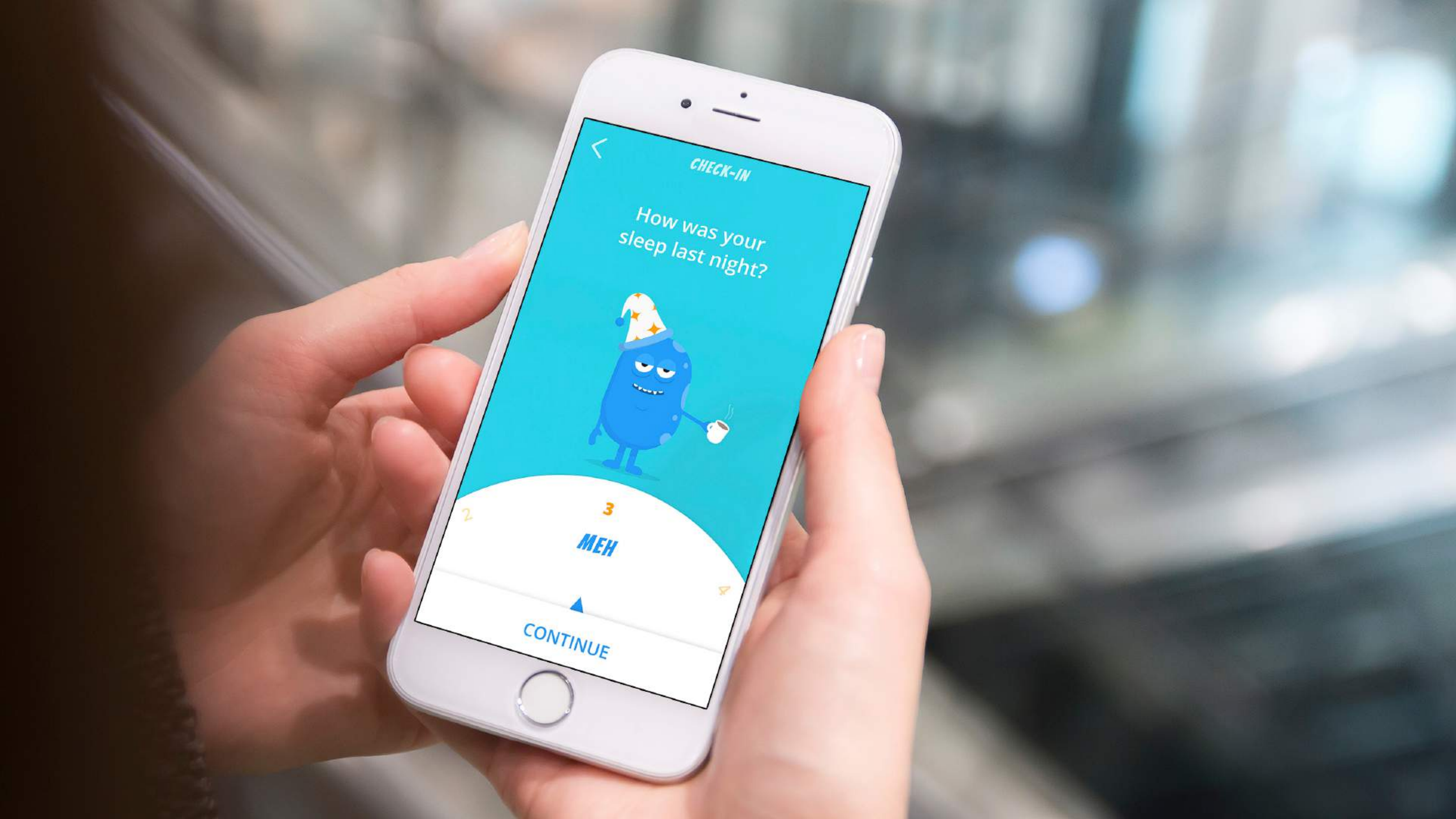
Daily Reminders



Goal Setting



Community Library

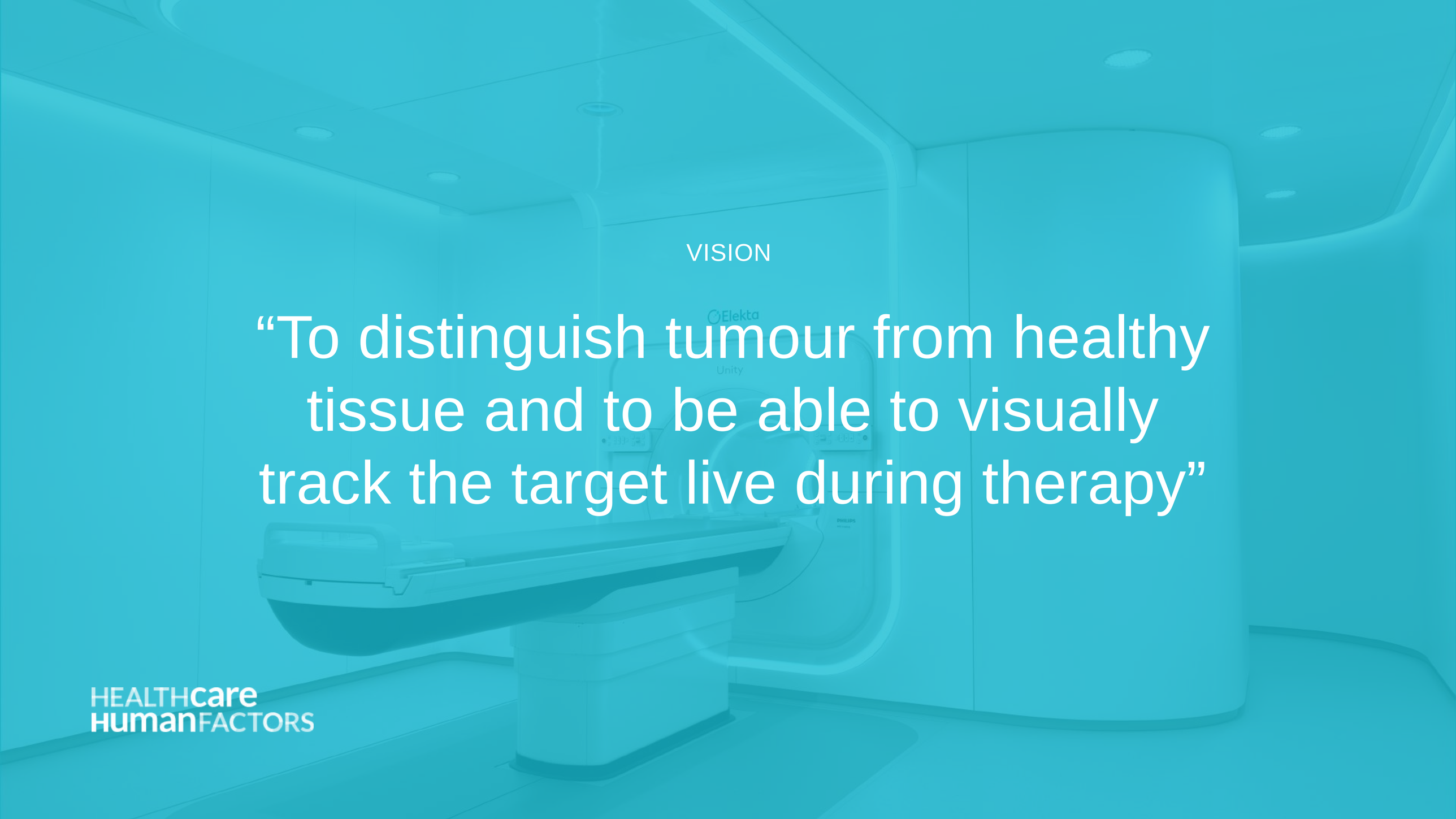

CHECK-IN
How was your sleep last night?
2
3
MEH
4
CONTINUE

HEALTHcare
HumanFACTORS

WHAT IS ELEKTA UNITY?

Elekta Unity is the world’s first high-field MR-Linac, enabling real-time viewing of diagnostic quality images

HEALTHcare
HUMANFACTORS



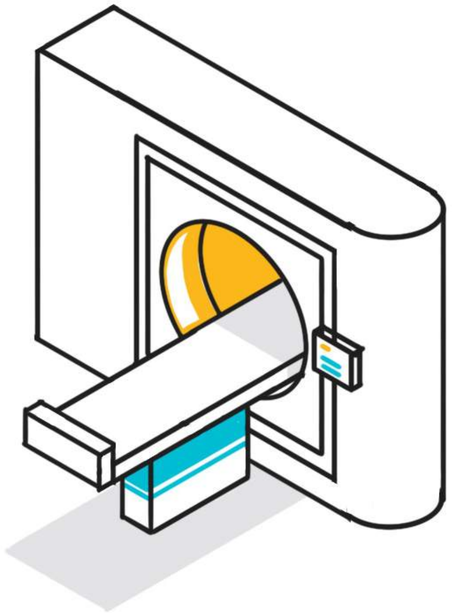
VISION

“To distinguish tumour from healthy tissue and to be able to visually track the target live during therapy”

HEALTHcare
HUMANFACTORS

ELEKTA UNITY

MR-Linac and Supporting Software



Brand New Linac Hardware
+ Infrastructure

Treatment Control
System, TCS
Adapted from Existing Product

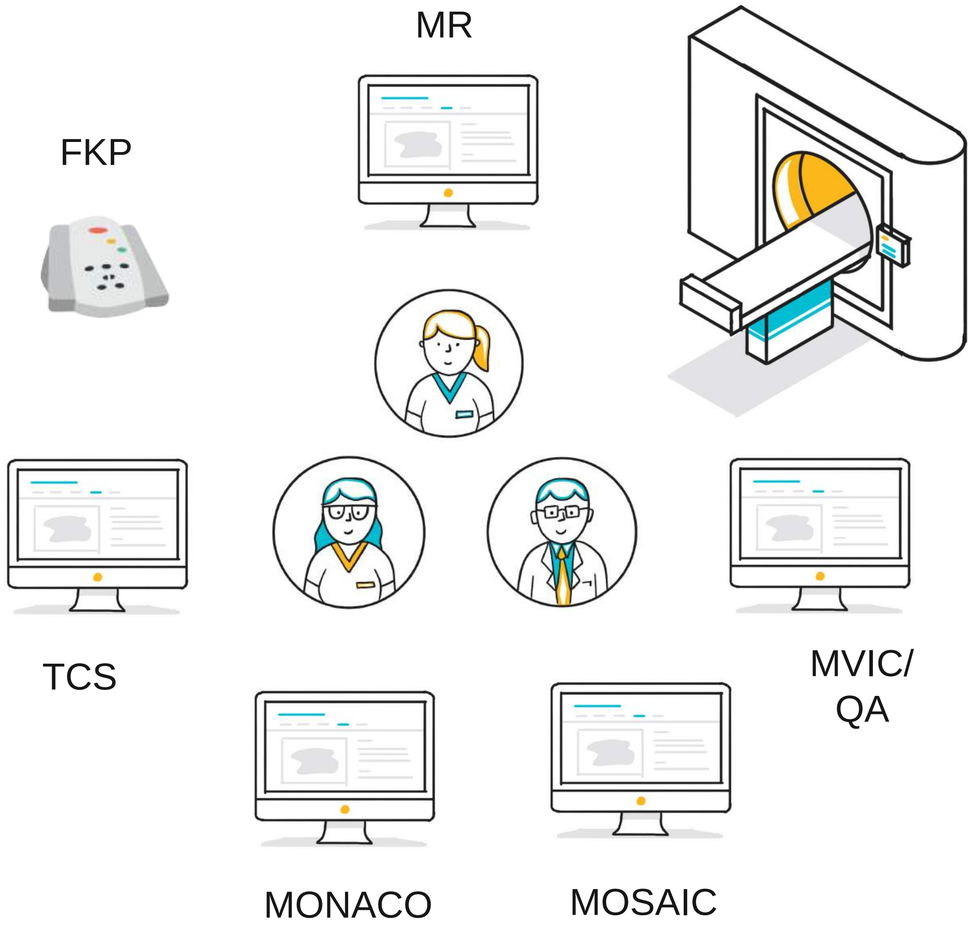
Philips MRI
Adapted from Existing Product

MOSAIQ

MONACO

HEALTHcare
HumanFACTORS

Full System Evaluation



HEALTHcare
HumanFACTORS

CHALLENGE

Who Are the Users?

Primary Clinical Users

Radiation Therapist (RTT)

Medical Dosimetrist (Dosi.)

Medical Physicist (MP)

Secondary Clinical Users

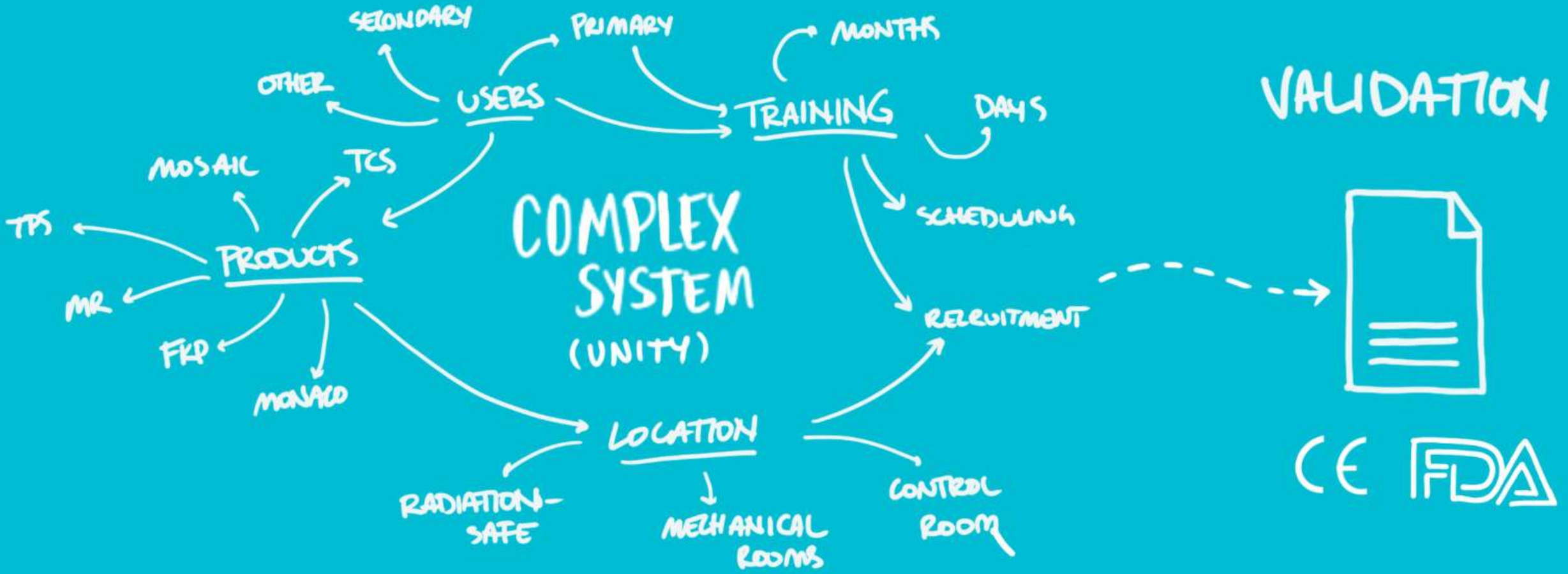
Radiation Oncologist (RO)

Service Engineer

Non-Clinical Users

Cleaners

HEALTHcare HumanFACTORS



HEALTHcare
HumanFACTORS

HEALTHcare HumanFACTORS

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Human Factors Design Intern

eHealth INNOVATION

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DR. JOSEPH CAFAZZO
Executive Director

AKIB UDDIN
Manager

HARRY QIU
Hardware Developer

ANNA YUAN
Office Coordinator & Assistant to the Executive Director

MAX FRATTOLIN
Software Developer

SEAN WATSON
Software Developer

MELANIE YEUNG
Manager

DR. SHIVANI GOYAL
Lead, Strategy & Research

CAITLIN NUNN
Research Analyst

ANTHONY MEI
Software Developer

ALANA TIBBLES
Research Analyst

KUO-CHENG TONG
Software Developer

DAVID NGO
Quality Assurance Analyst

SHEENA MELWANI
Product Manager

JAMES AGNEW
Technical Manager

KEVIN TALLEVI
Hardware Developer

RACHEL WALTON
Project Manager

AMEEN DEMIDEM
Software Developer

ADRIAN DE ALMEIDA
Software Developer

RON MARANGWANDA
Quality Assurance Analyst

DR. PETER ROSSOS
Chief Medical Information Officer

EMILY SETO
Assistant Professor

KEVIN LEUNG
Software Developer

DAVID THAI
Software Developer

QUYNH PHAM
PhD Candidate

PATRICK WARE
PhD Candidate

MARIA AQUINO
Research Analyst Student

AARTI MATHUR
Chief of Staff

MALA DORAI
Product Manager

GARY GRAHAM
Software Developer

JESS FIFIELD
Communications Coordinator

LILY ALEXANDER
Quality System Manager

VLAD VOLOSHYN
System Administrator

RYAN HO
Project Analyst Student

KAYLEIGH GORDON
PhD Candidate

SAHR WALI
PhD Student

DIANE DE SOUSA
Project Manager

LAUREN RIBEIRO
Project Analyst

JASON MOORE
Software Developer

MYLES RESNICK
Tier 2 Site Coordinator

JEREMY JURKSZTOWICZ
Software Developer

ABOOD MUFTI
Software Developer

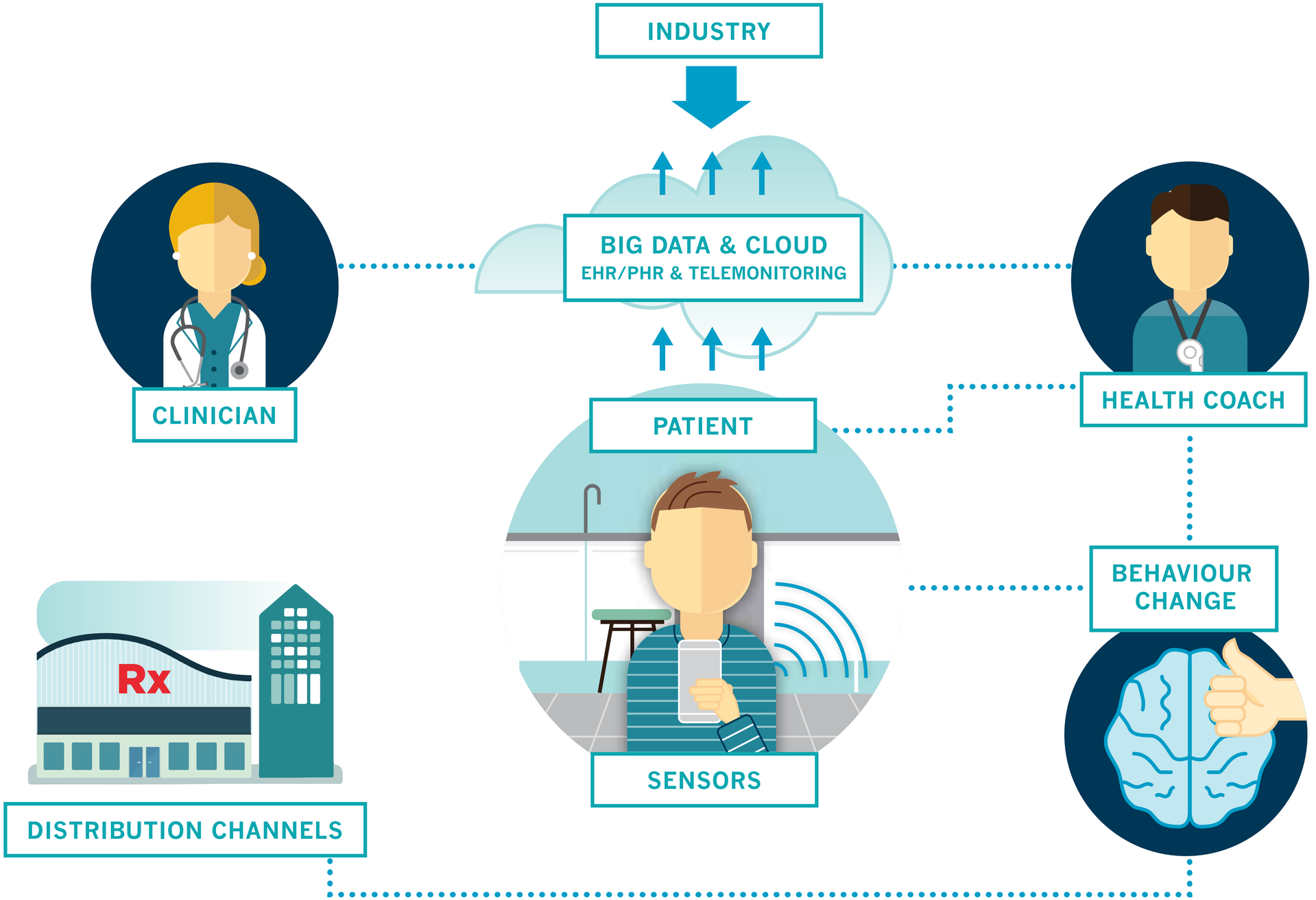
NEW SPACES

YOUR HOME

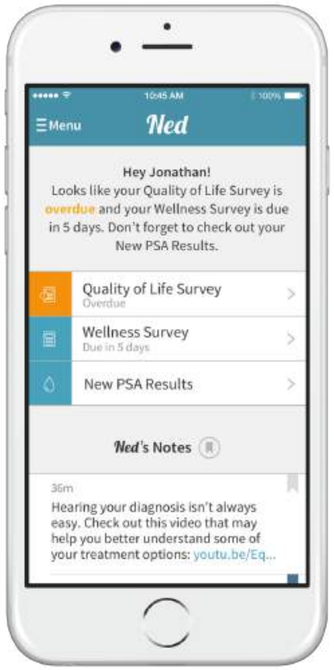
PHARMACIES

REMOTE COMMUNITIES

SCHOOL & WORK


INDUSTRY
BIG DATA & CLOUD
EHR/PHR & TELEMONITORING
CLINICIAN
HEALTH COACH
PATIENT
SENSORS
BEHAVIOUR CHANGE
Rx
DISTRIBUTION CHANNELS

Ned

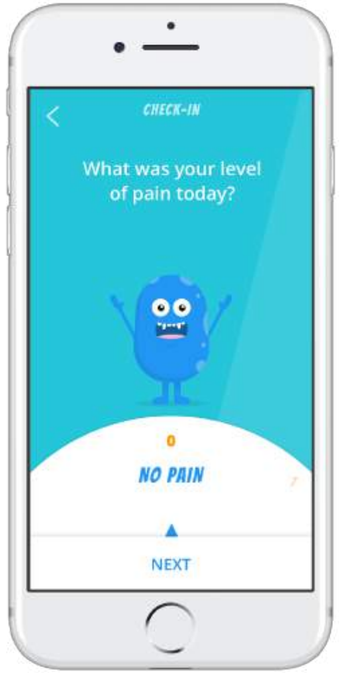


breathe

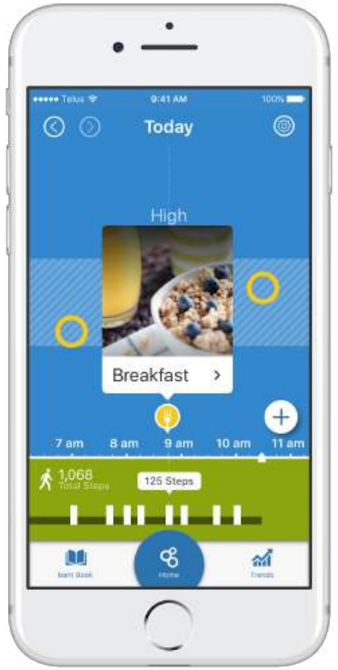
for asthma & COPD

medly

ICANCOPE

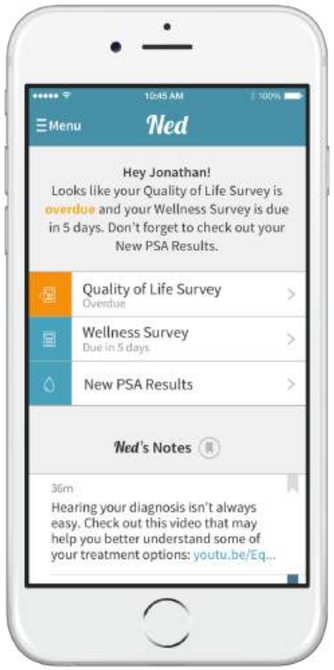


bant



DIGITAL THERAPEUTICS

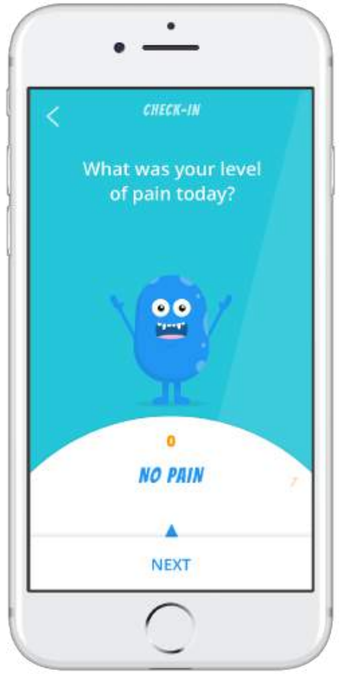
Ned



breathe
for asthma & COPD

medly

ICANCOPE



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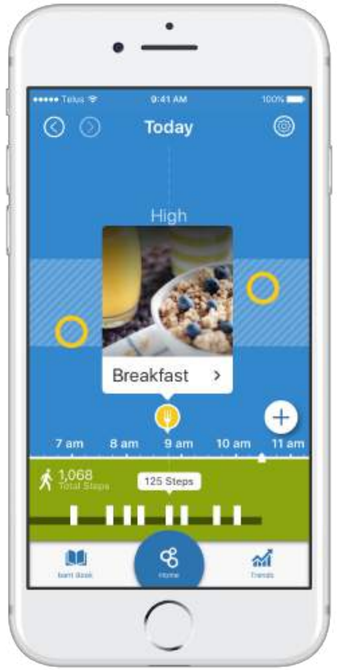
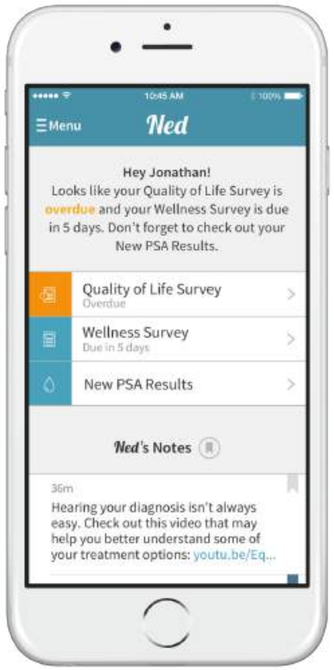


DIGITAL THERAPEUTICS

QMS : ISO 13485

Ned

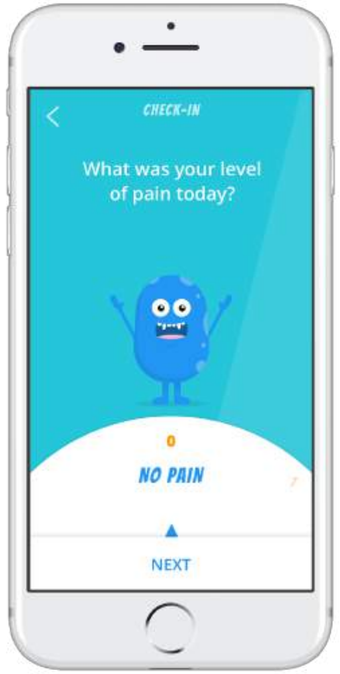


breathe

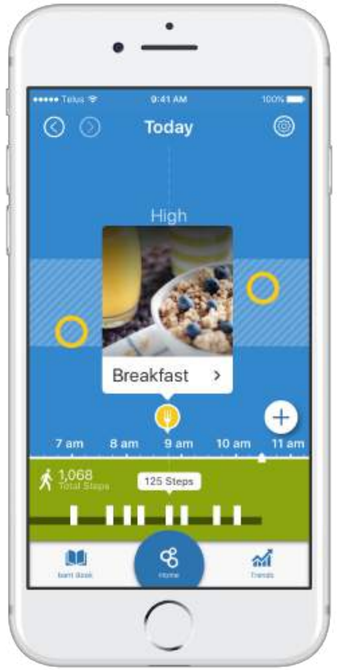
for asthma & COPD

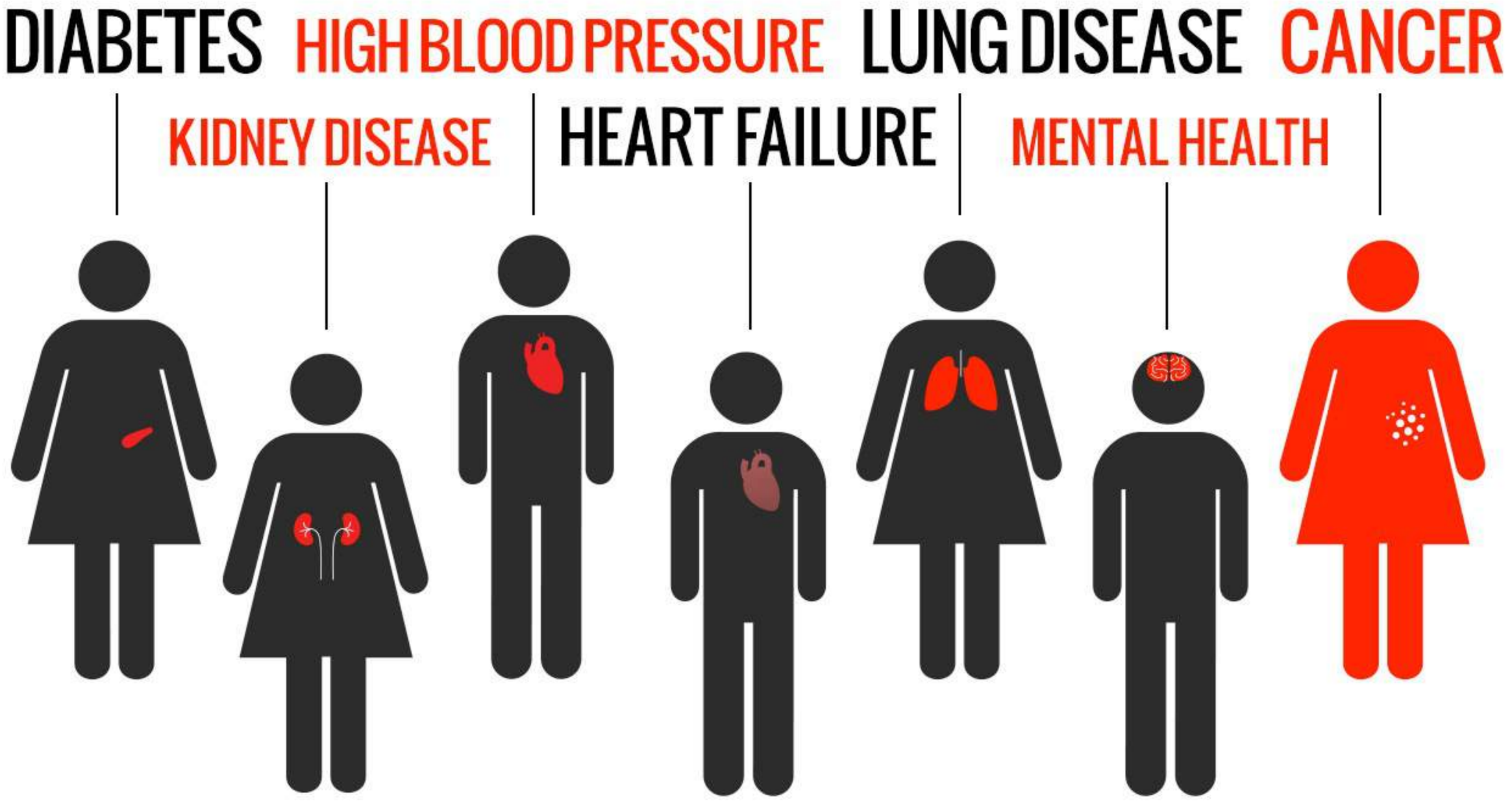
medly

ICANCOPE



bant

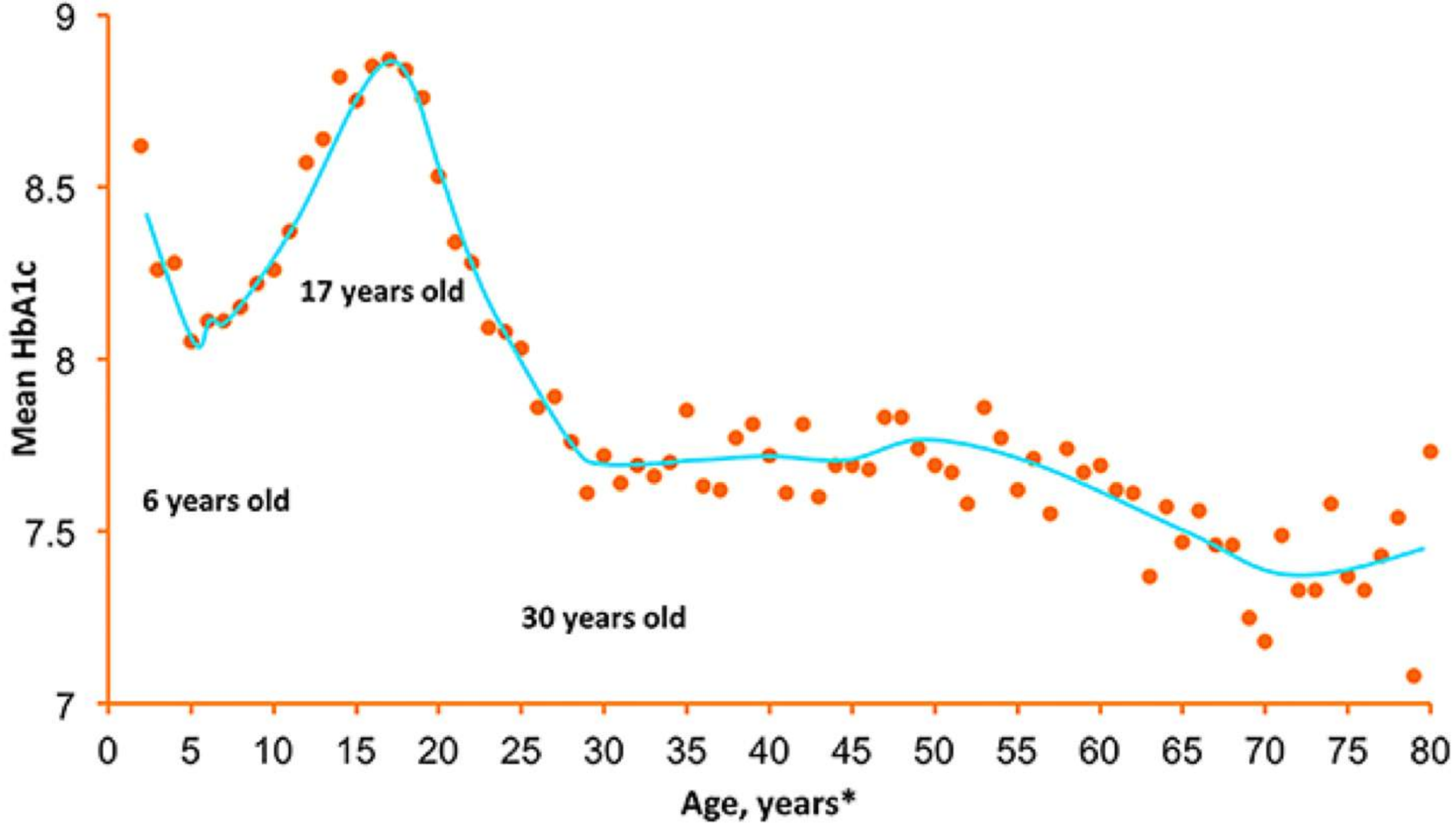



DIABETES
HIGH BLOOD PRESSURE
LUNG DISEASE
CANCER
KIDNEY DISEASE
HEART FAILURE
MENTAL HEALTH

DIABETES


Temple Run
WhatsApp
iTunes
Clock
<30 Days
Subway Surf
bant
bant
You Tube
YouTube
Facebook
Breathe
Angry Birds
Fruit Ninja

IMAGE: SHUTTERSTOCK


9
8.5
8
7.5
7
Mean HbA1c
17 years old
6 years old
30 years old
0
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75
80
Age, years*

npr.org

How Smartphones Are Making Kids Unhappy

By Audie Cornish | Aug. 7th, 2017

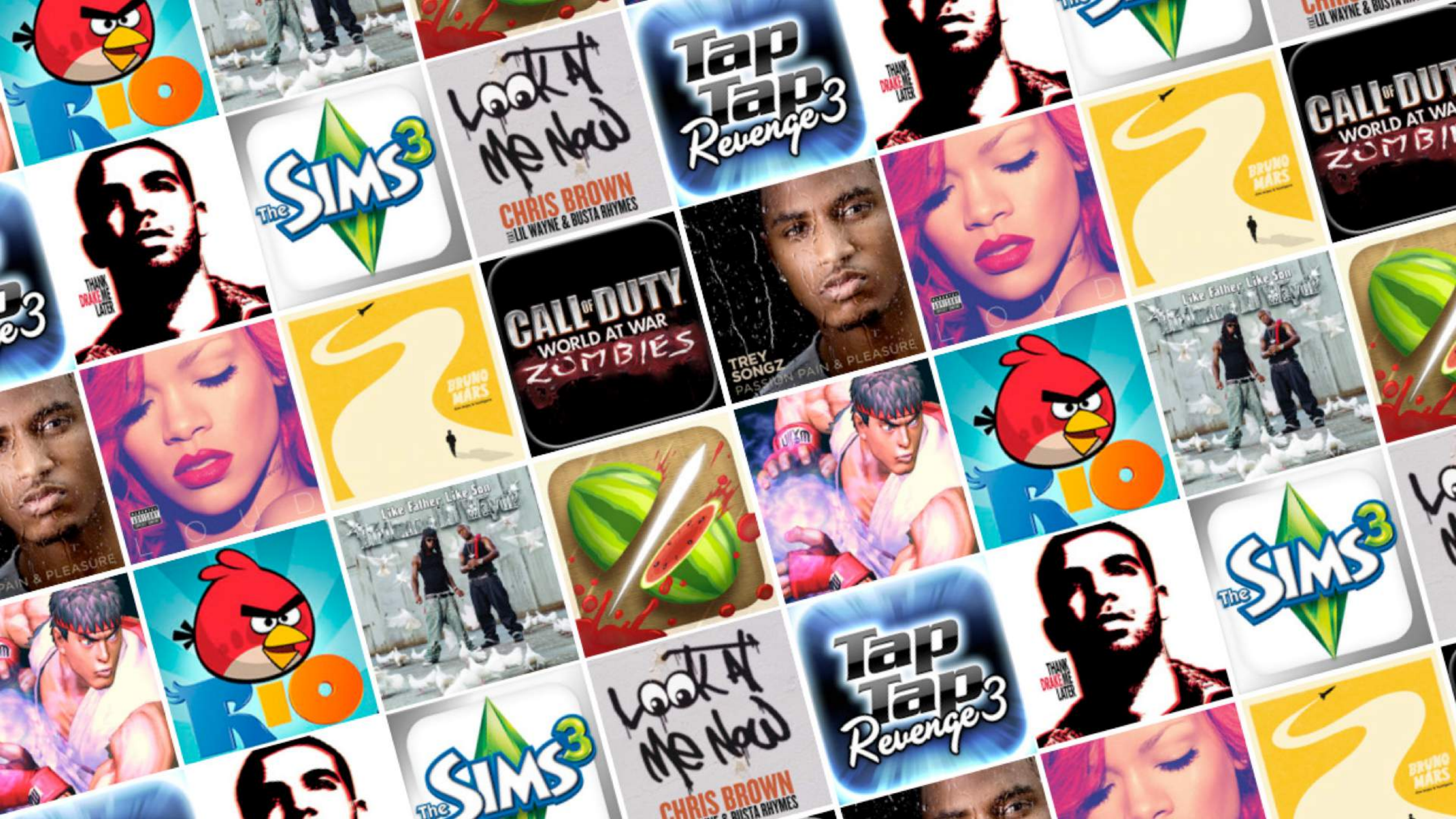

Today
8.4 mmol/l
7:45 PM
3 PM
6 PM
9 PM
mmol/l
5.0
10.0

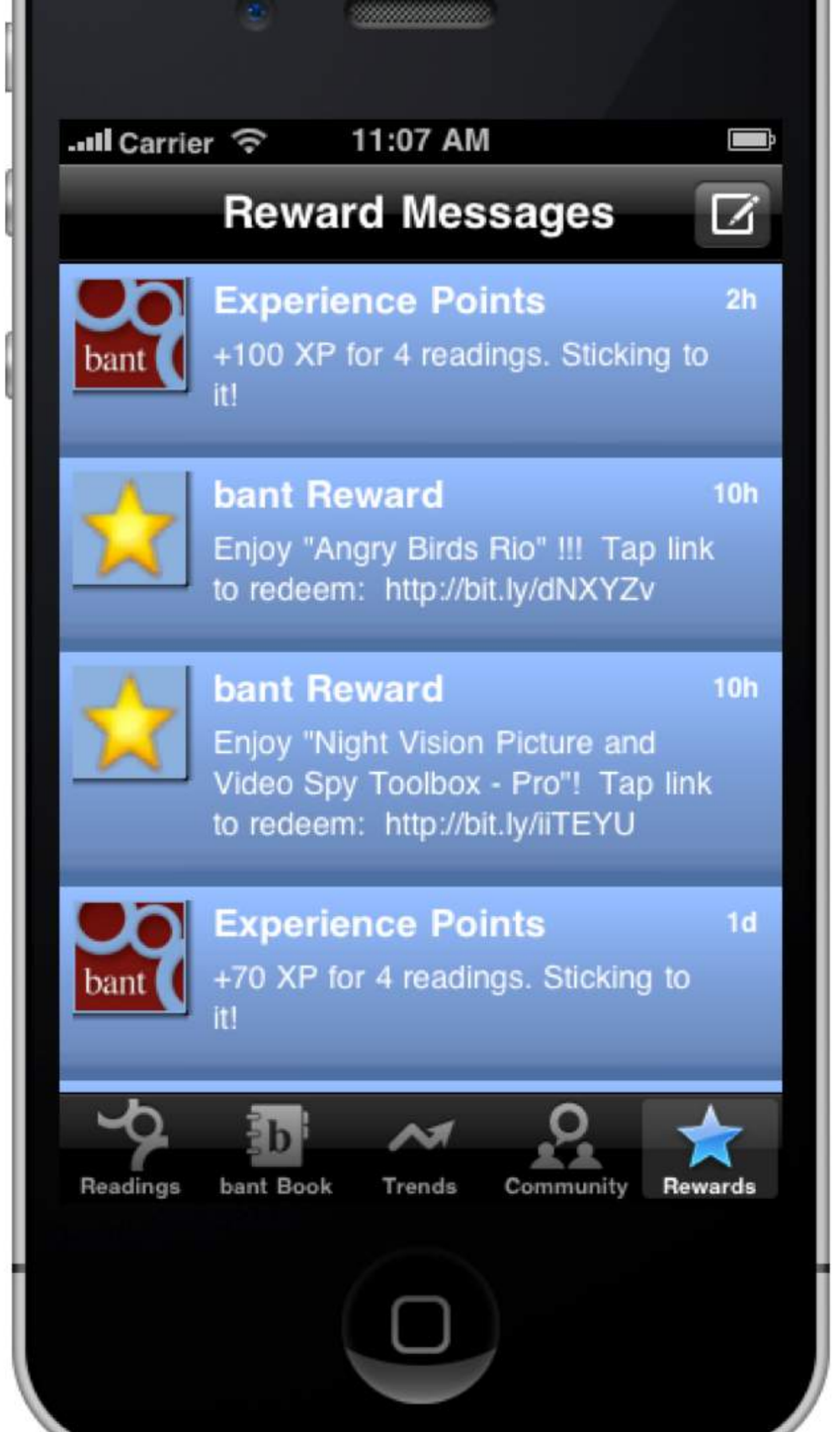

LIFESCAN
TELUS
9:11 PM
bant


bant


bant Reward
10h
Enjoy "Angry Birds Rio" !!! Tap link to redeem: http://bit.ly/dNXYZv
bant Reward
10h
Enjoy "Night Vision Picture and Video Spy Toolbox - Pro"! Tap link to redeem: http://bit.ly/iiTEYU
Experience Points
1d
+70 XP for 4 readings. Sticking to it!
bant
Readings
bant Book
Trends
Community
Rewards

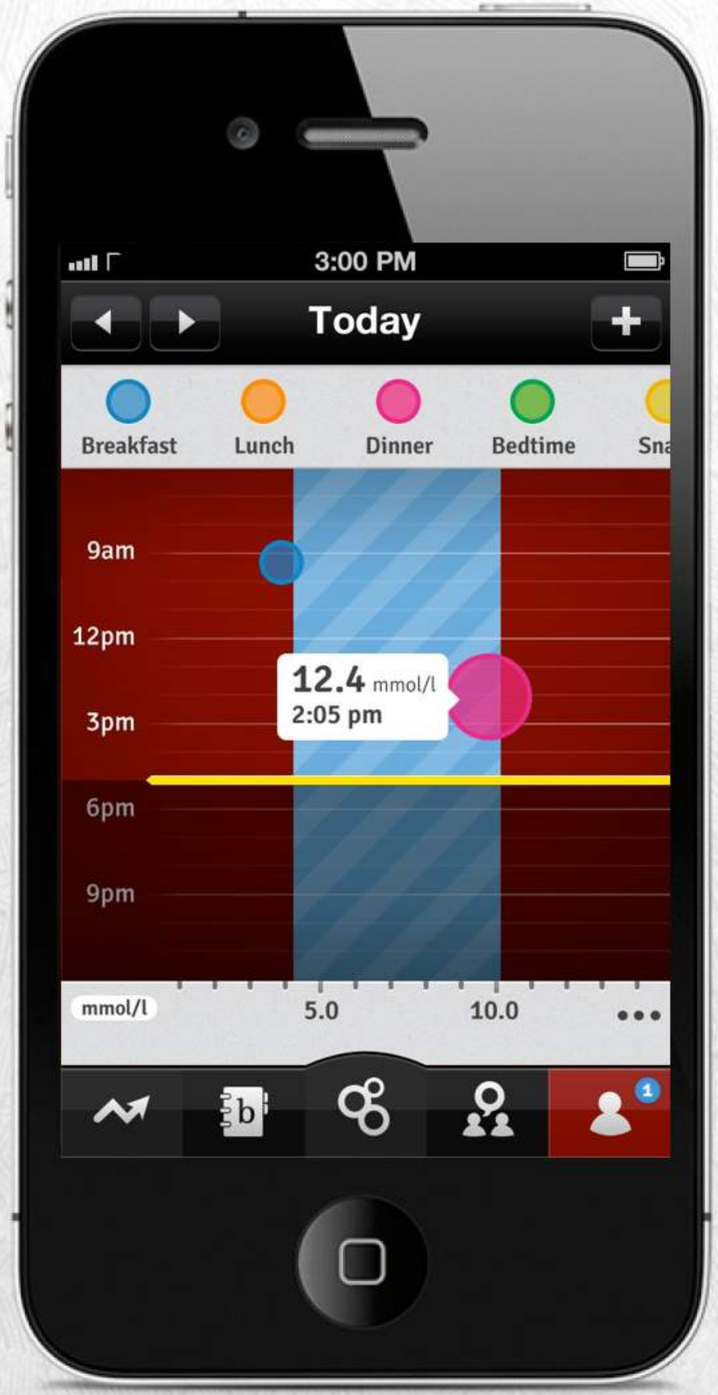
REWARDS


Rio
The Sims 3
Look At Me Now
Chris Brown
Lil Wayne & Busta Rhymes
Tap Tap Revenge 3
Thank Me Later
Bruno Mars
Call of Duty
World at War
Zombies
Trey Songz
Passion Pain & Pleasure
Like Father Like Son

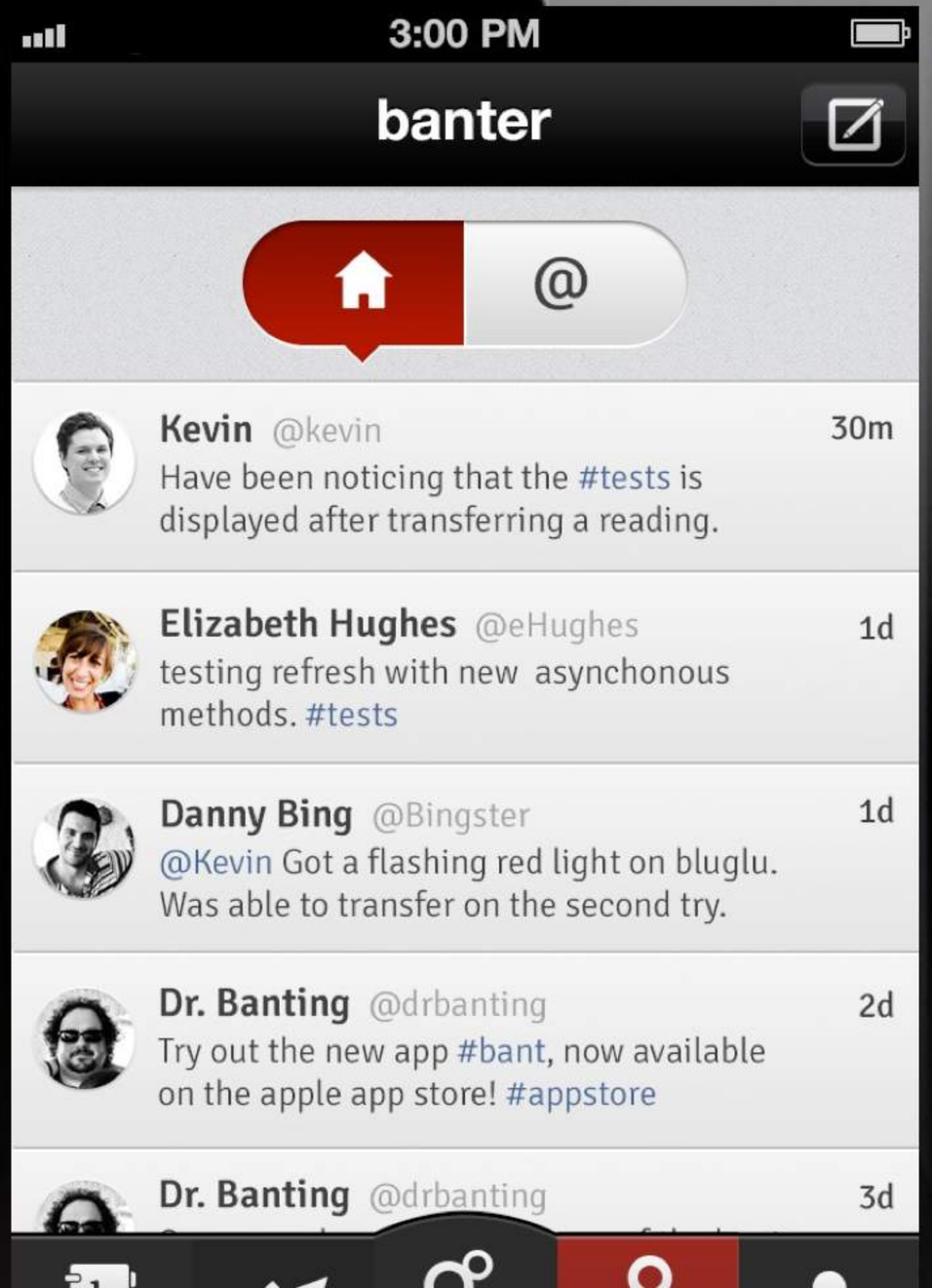

Carrier
11:07 AM
Reward Messages
Experience Points
2h
+100 XP for 4 readings. Sticking to it!
bant Reward
10h
Enjoy "Angry Birds Rio" !!! Tap link to redeem: http://bit.ly/dNXYZv
bant Reward
10h
Enjoy "Night Vision Picture and Video Spy Toolbox - Pro"! Tap link to redeem: http://bit.ly/iiTEYU
Experience Points
1d
+70 XP for 4 readings. Sticking to it!
Readings
bant Book
Trends
Community
Rewards

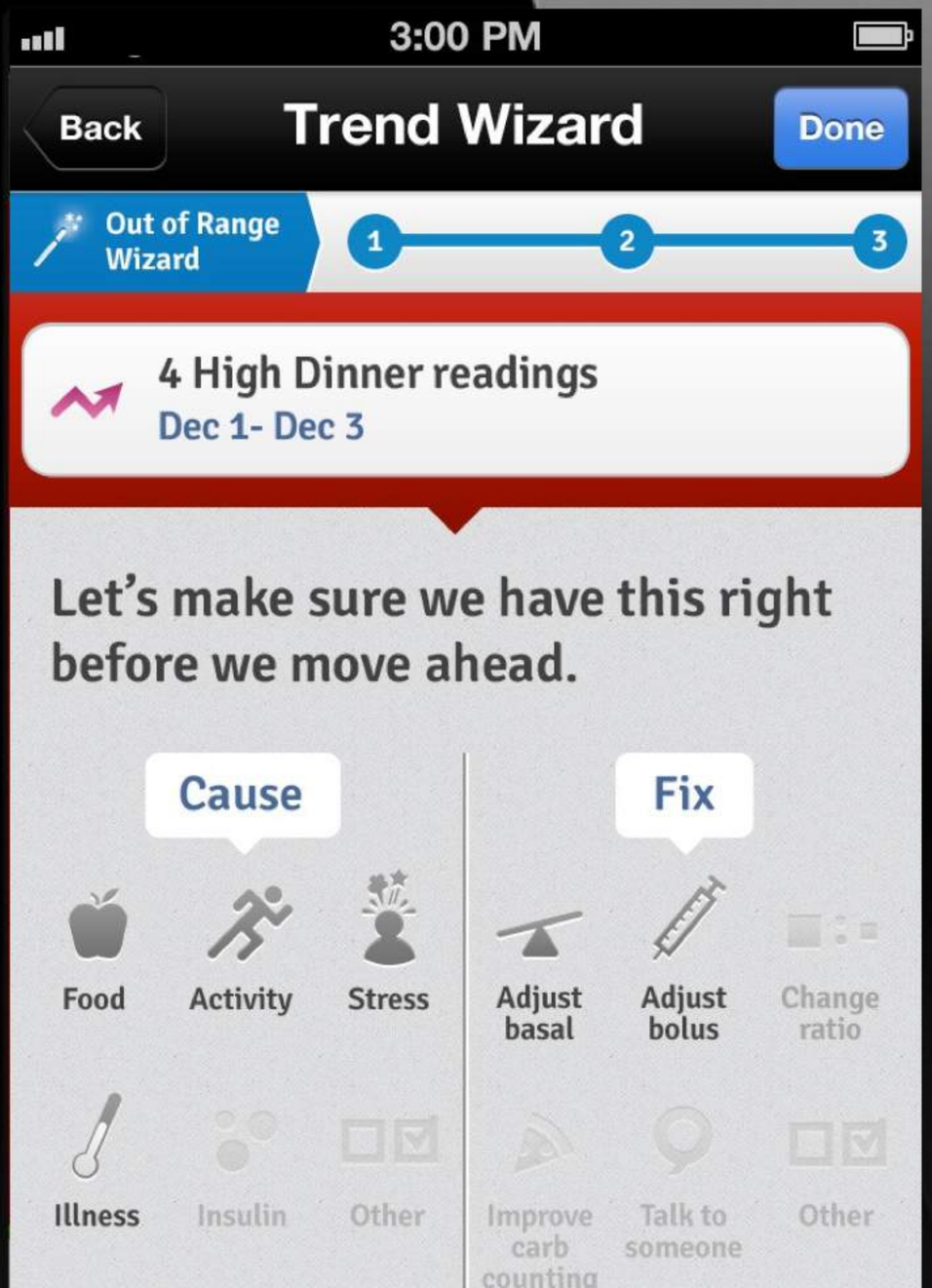

49.6%
DAILY TESTING FREQUENCY

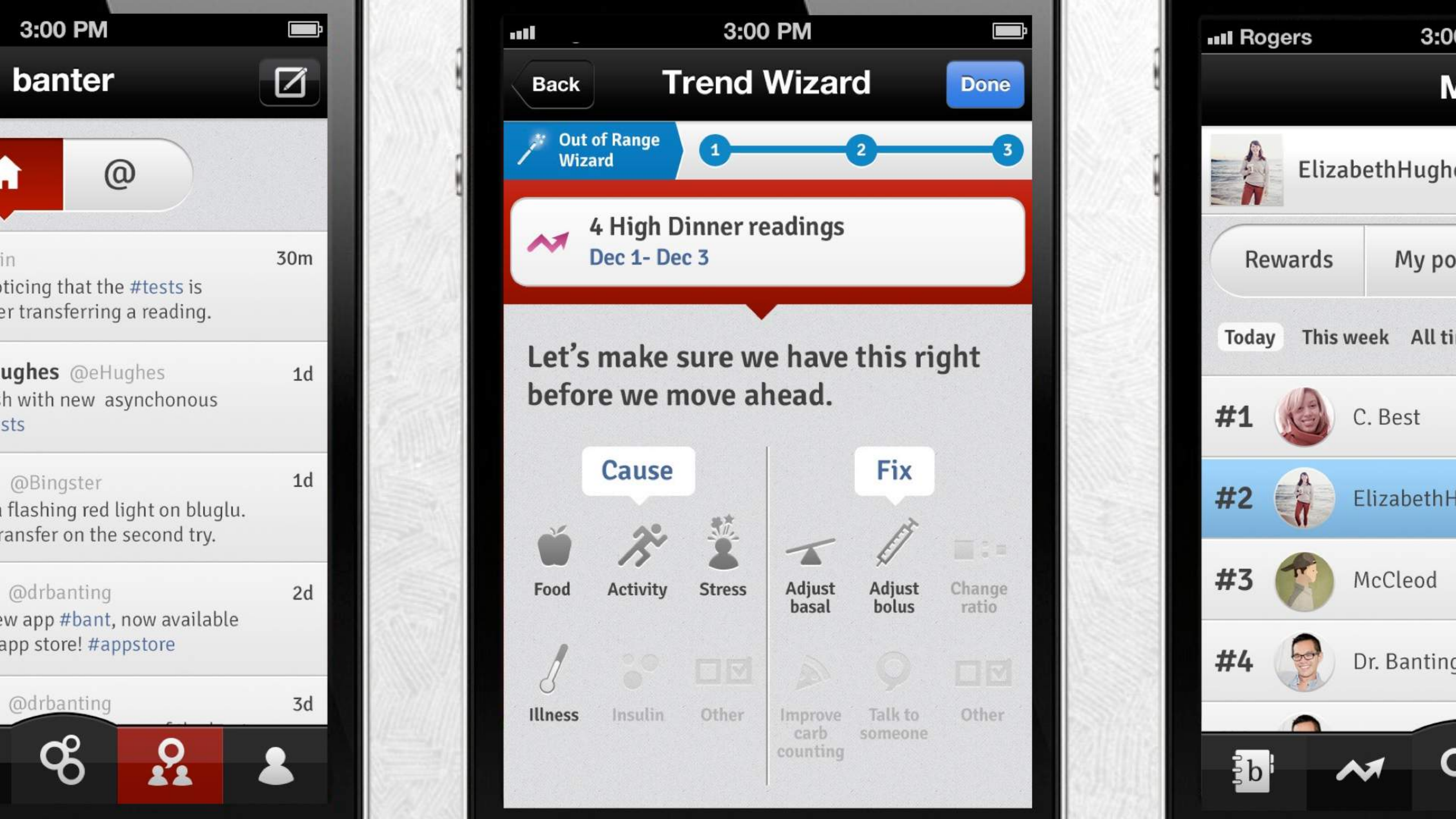

3:00 PM
bant

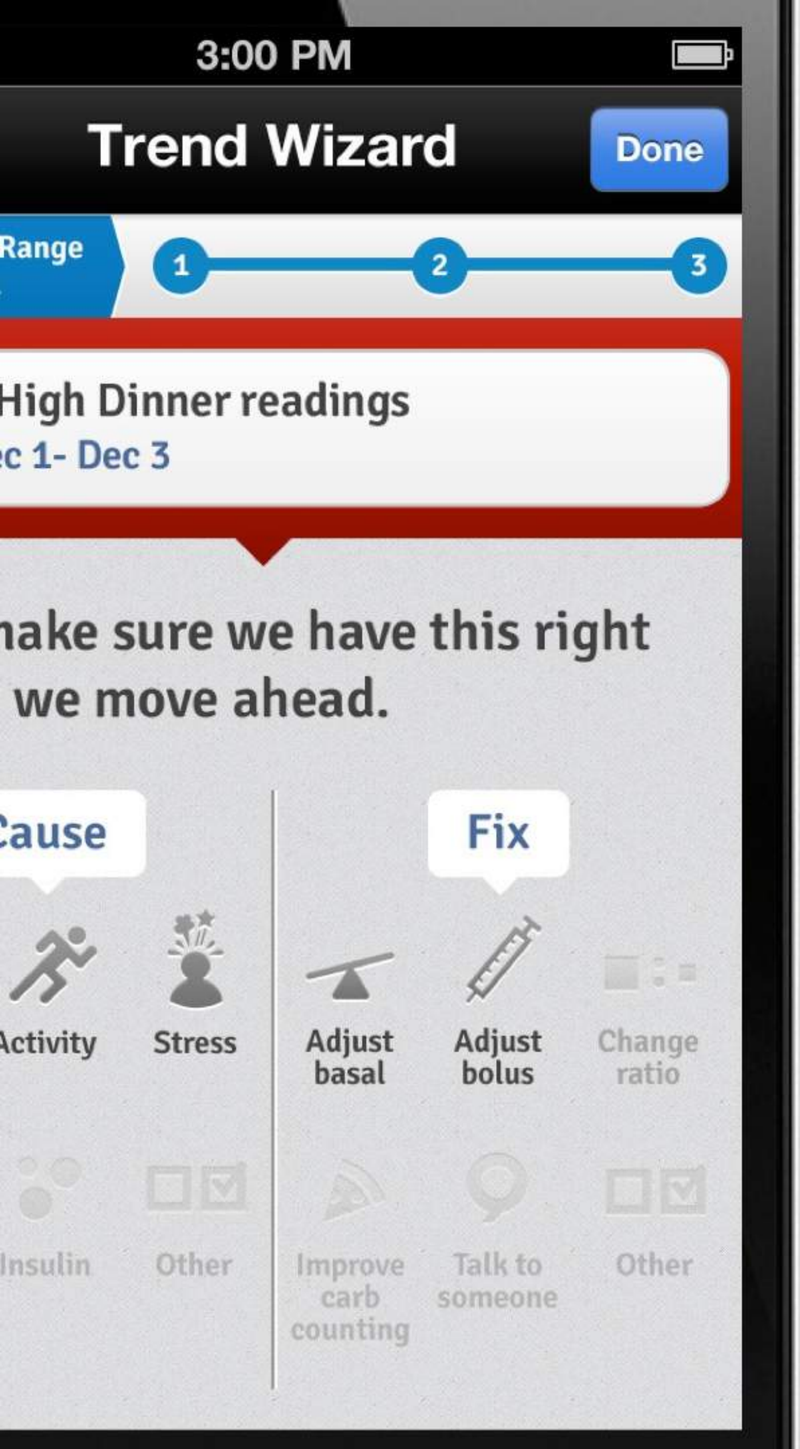

3:00 PM
Today
Breakfast
Lunch
Dinner
Bedtime
9am
12pm
3pm
6pm
9pm
12.4 mmol/l
2:05 pm
mmol/l
5.0
10.0

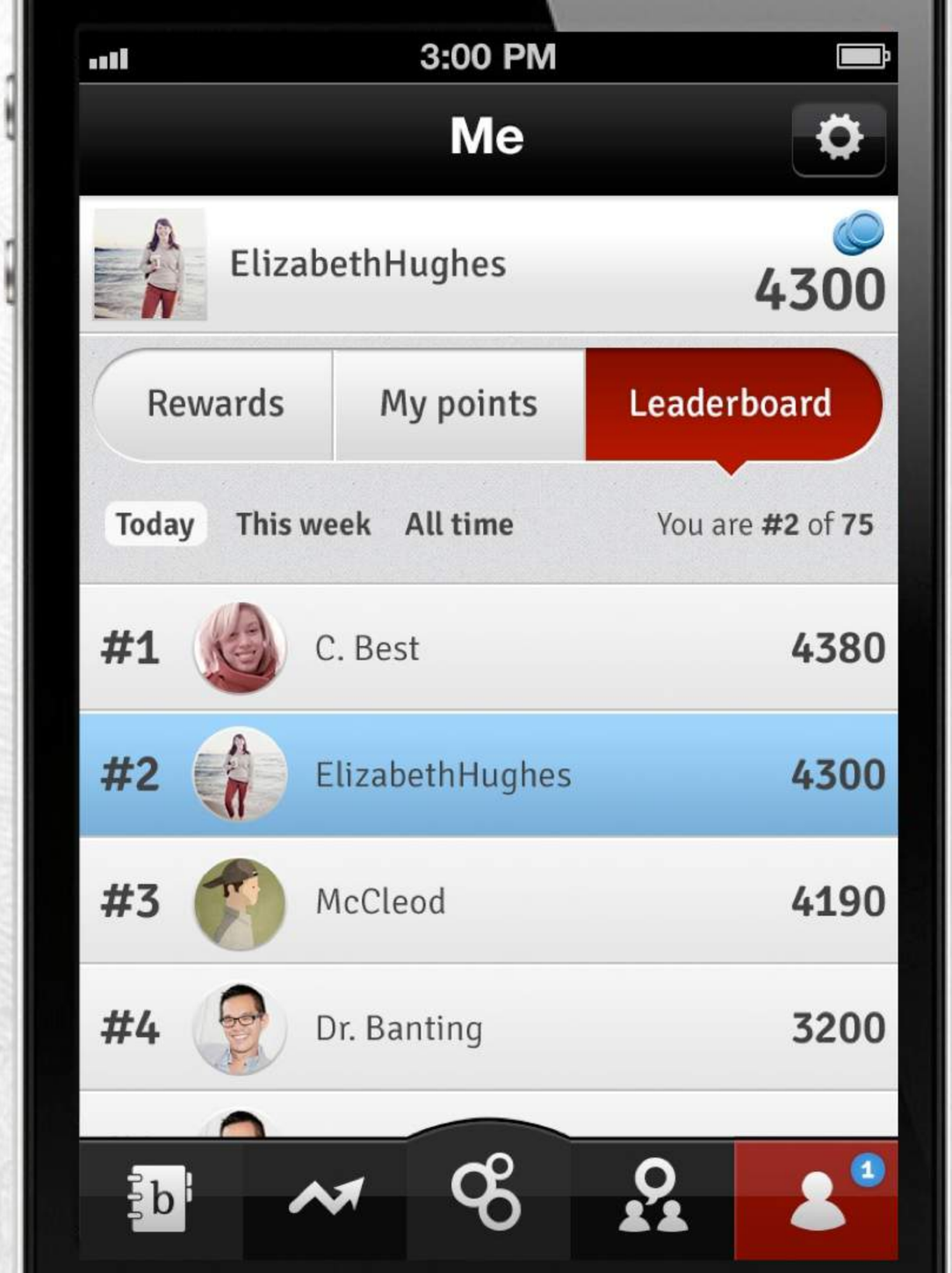

3:00 PM
Me
Settings
TELUS health space
Email
About bant
Tutorial
Feedback
Legal and disclaimer

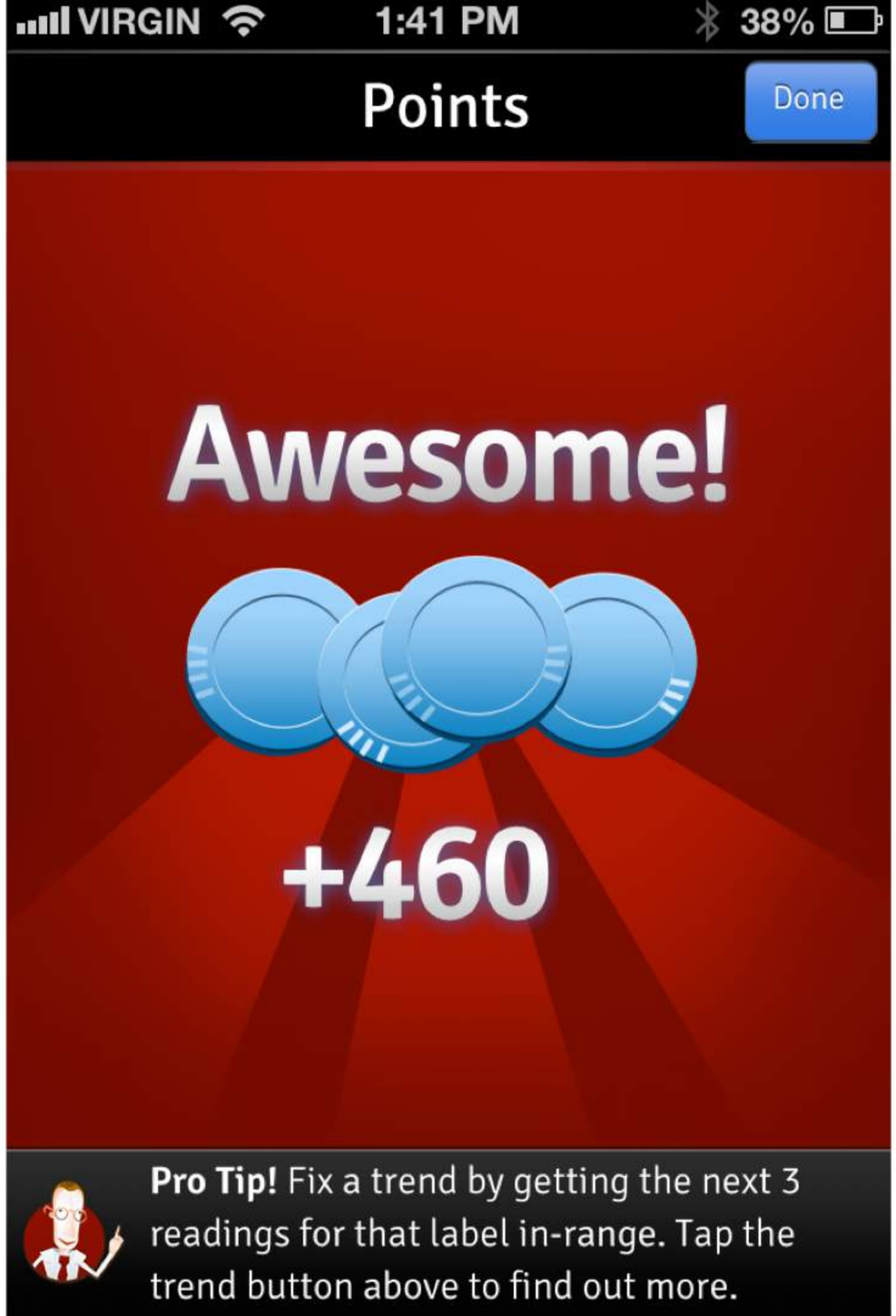

3:00 PM
banter
@
Kevin @kevin 30m
Have been noticing that the #tests is displayed after transferring a reading.
Elizabeth Hughes @eHughes 1d
testing refresh with new asynchonous methods. #tests
Danny Bing @Bingster 1d
@Kevin Got a flashing red light on bluglu. Was able to transfer on the second try.
Dr. Banting @drbanting 2d
Try out the new app #bant, now available on the apple app store! #appstore
Dr. Banting @drbanting 3d

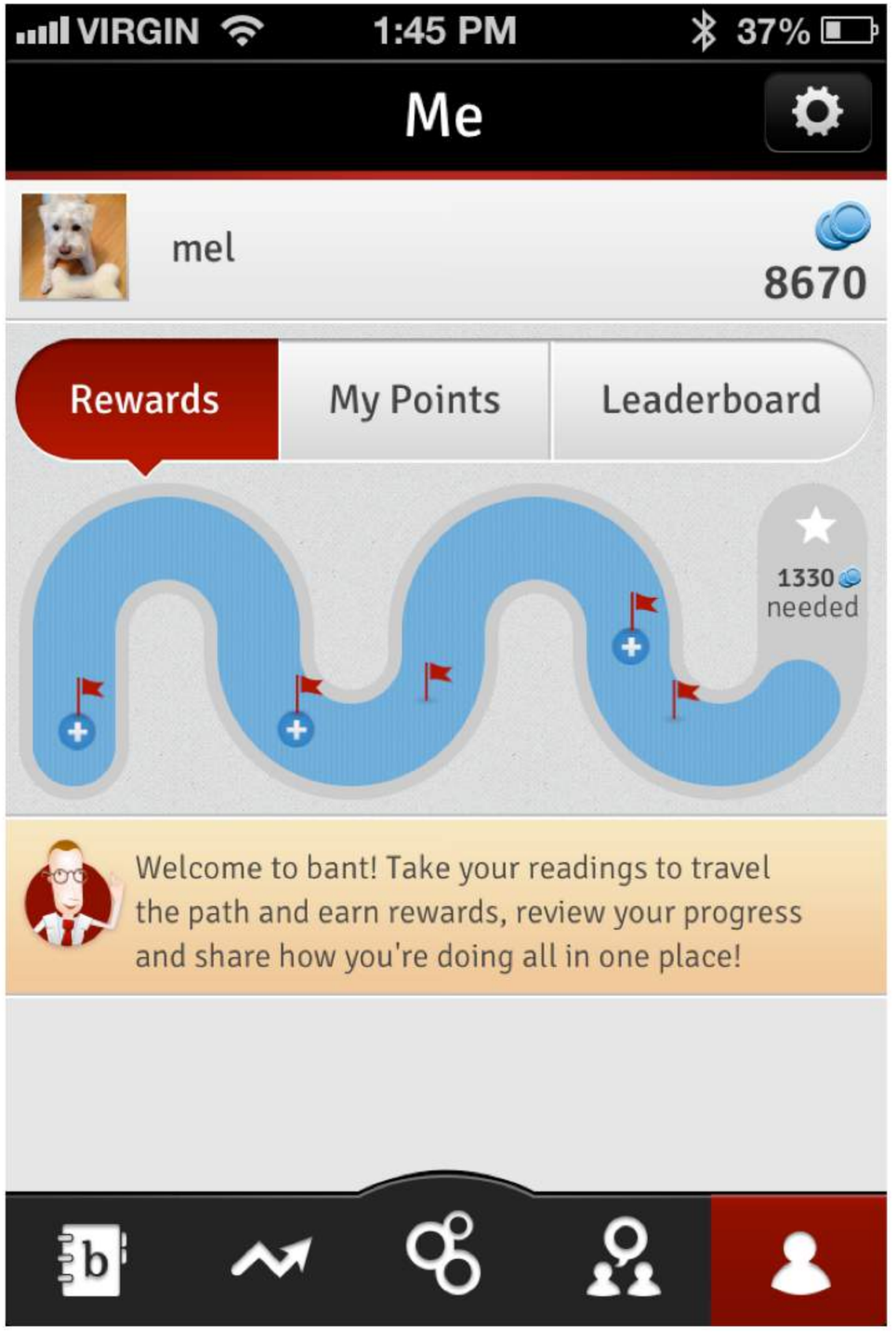

3:00 PM
Back
Trend Wizard
Done
Out of Range Wizard
1
2
3
4 High Dinner readings
Dec 1- Dec 3
Let's make sure we have this right before we move ahead.
Cause
Fix
Food
Activity
Stress
Adjust basal
Adjust bolus
Change ratio
Illness
Insulin
Other
Improve carb counting
Talk to someone
Other


3:00 PM
banter
@
30m
ticing that the #tests is
er transferring a reading.
ughes @eHughes
1d
h with new asynchonous
sts
@Bingster
1d
flashing red light on bluglu.
ransfer on the second try.
@drbanting
2d
ew app #bant, now available
app store! #appstore
@drbanting
3d
3:00 PM
Back
Trend Wizard
Done
Out of Range Wizard
1
2
3
4 High Dinner readings
Dec 1- Dec 3
Let's make sure we have this right before we move ahead.
Cause
Fix
Food
Activity
Stress
Adjust basal
Adjust bolus
Change ratio
Illness
Insulin
Other
Improve carb counting
Talk to someone
Other
Rogers
3:0
ElizabethHugh
Rewards
My po
Today
This week
All ti
#1
C. Best
#2
ElizabethH
#3
McCleod
#4
Dr. Banting


3:00 PM
Trend Wizard
Done
Range
1
2
3
High Dinner readings
ec 1- Dec 3
nake sure we have this right
we move ahead.
Cause
Fix
Activity
Stress
Adjust basal
Adjust bolus
Change ratio
Insulin
Other
Improve carb counting
Talk to someone
Other


3:00 PM
Me
ElizabethHughes
4300
Rewards
My points
Leaderboard
Today
This week
All time
You are #2 of 75
#1
C. Best
4380
#2
ElizabethHughes
4300
#3
McCleod
4190
#4
Dr. Banting
3200
1


VIRGIN
1:41 PM
38%
Points
Done
Awesome!
+460
Pro Tip! Fix a trend by getting the next 3 readings for that label in-range. Tap the trend button above to find out more.


VIRGIN
1:45 PM
37%
Me
mel
8670
Rewards
My Points
Leaderboard
1330
needed
Welcome to bant! Take your readings to travel the path and earn rewards, review your progress and share how you're doing all in one place!

Original Paper

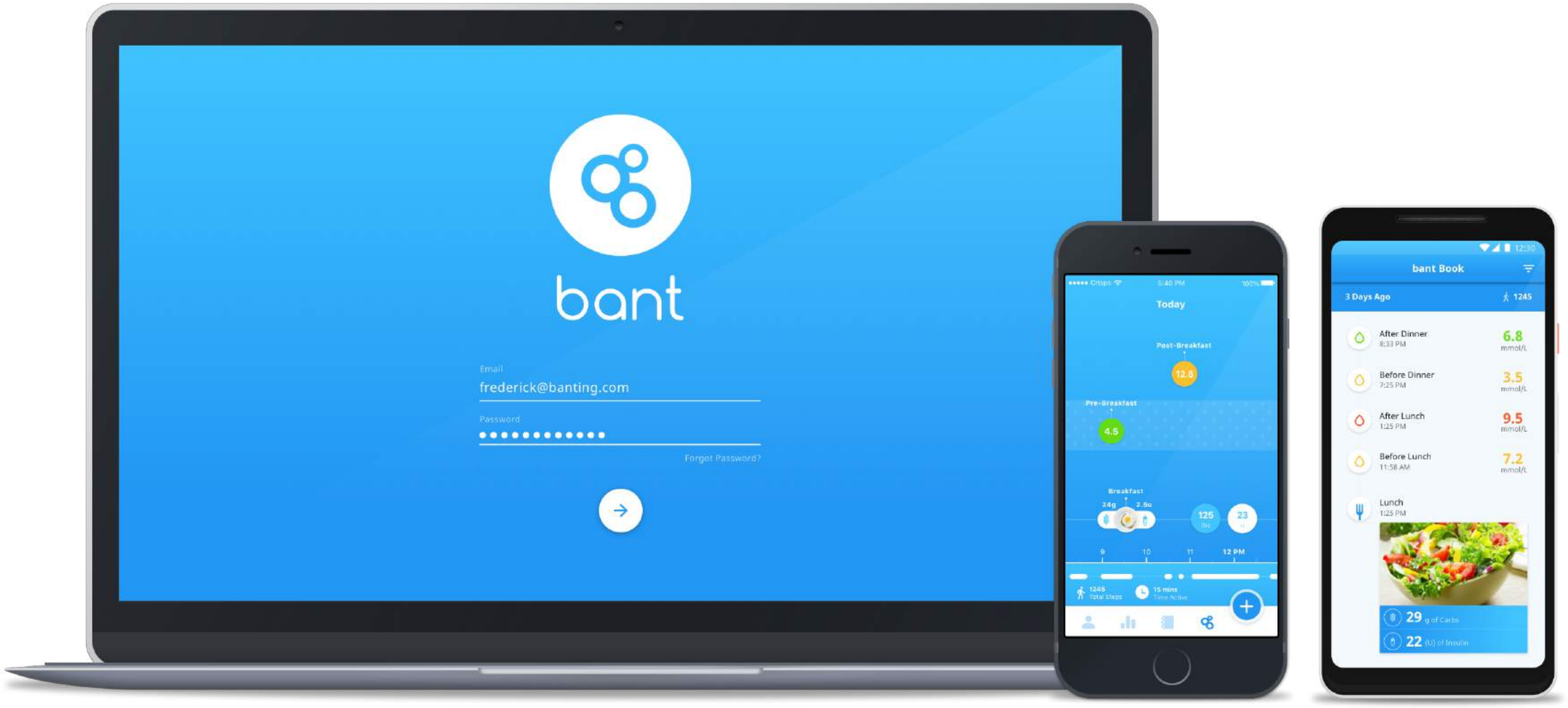
A Mobile App for the Self-Management of Type 1 Diabetes Among Adolescents: A Randomized Controlled Trial

Shivani Goyal[1,2*], BEng, MSc, PhD; Caitlin A Nunn[3*], MSc; Michael Rotondi[4], PhD; Amy B Couperthwaite[4], MSc; Sally Reiser[5], RD; Angelo Simone[5], MD; Debra K Katzman[6,7], MD, FRCP(C); Joseph A Cafazzo[1,2,8], PhD, PEng; Mark R Palmert[3,6,9], MD, PhD

[1]Centre for Global eHealth Innovation, Techna Institute, University Health Network, Toronto, ON, Canada
[2]Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, ON, Canada
[3]Division of Endocrinology, The Hospital for Sick Children, Toronto, ON, Canada
[4]School of Kinesiology & Health Science, York University, Toronto, ON, Canada
[5]Trillium Health Partners, Toronto, ON, Canada
[6]Research Institute, The Hospital for Sick Children, Toronto, ON, Canada
[7]Division of Adolescent Medicine, Department of Pediatrics, The Hospital for Sick Children, Toronto, ON, Canada
[8]Institute of Health Policy, Management and Evaluation, Dalla Lana School of Public Health, University of Toronto, Toronto, ON, Canada
[9]Departments of Paediatrics and Physiology, University of Toronto, Toronto, ON, Canada
[*]these authors contributed equally

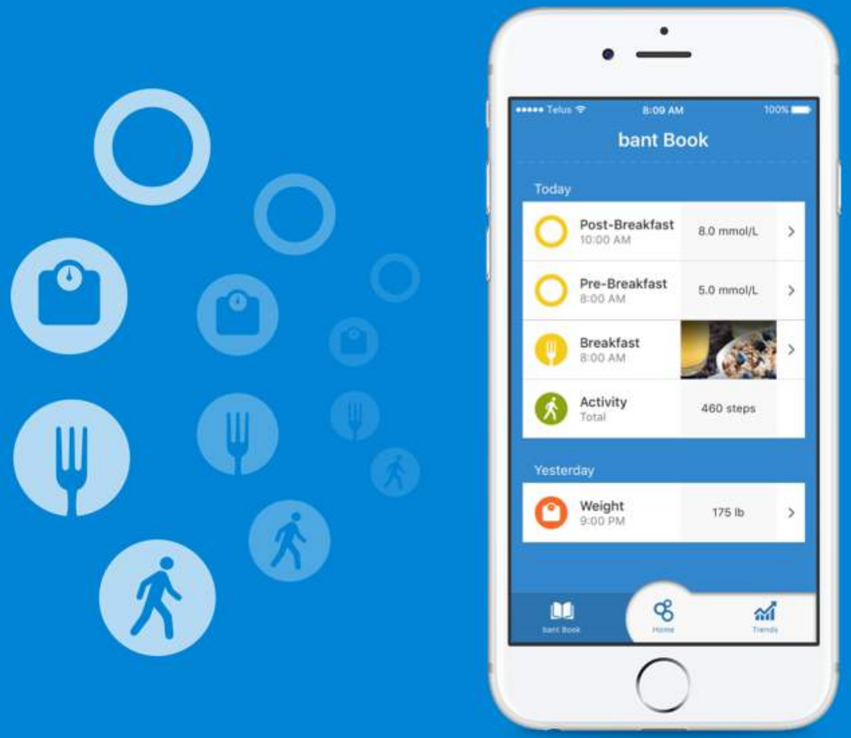
bant

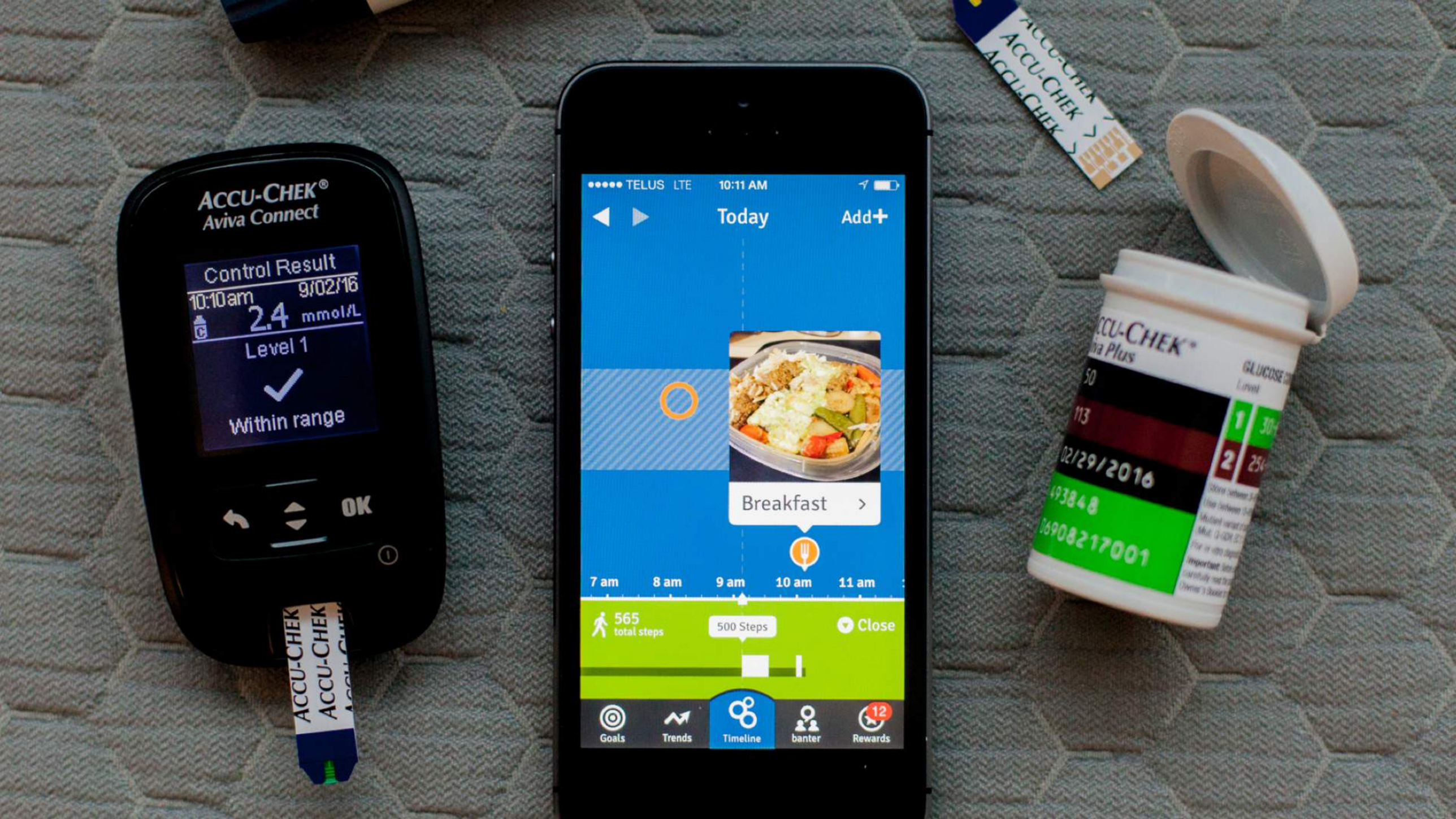
Simplifying Diabetes


bant
Email
frederick@banting.com
Password
Forgot Password?
Today
Post-Breakfast
12.8
Pre-Breakfast
4.5
Breakfast
24g
2.5u
125
23
9
10
11
12 PM
1245
Total Steps
15 mins
Time Active
bant Book
3 Days Ago
1245
After Dinner
8:33 PM
6.8
mmol/L
Before Dinner
7:25 PM
3.5
mmol/L
After Lunch
1:25 PM
9.5
mmol/L
Before Lunch
11:58 AM
7.2
mmol/L
Lunch
1:25 PM
29 g of Carbs
22 (U) of Insulin

bant

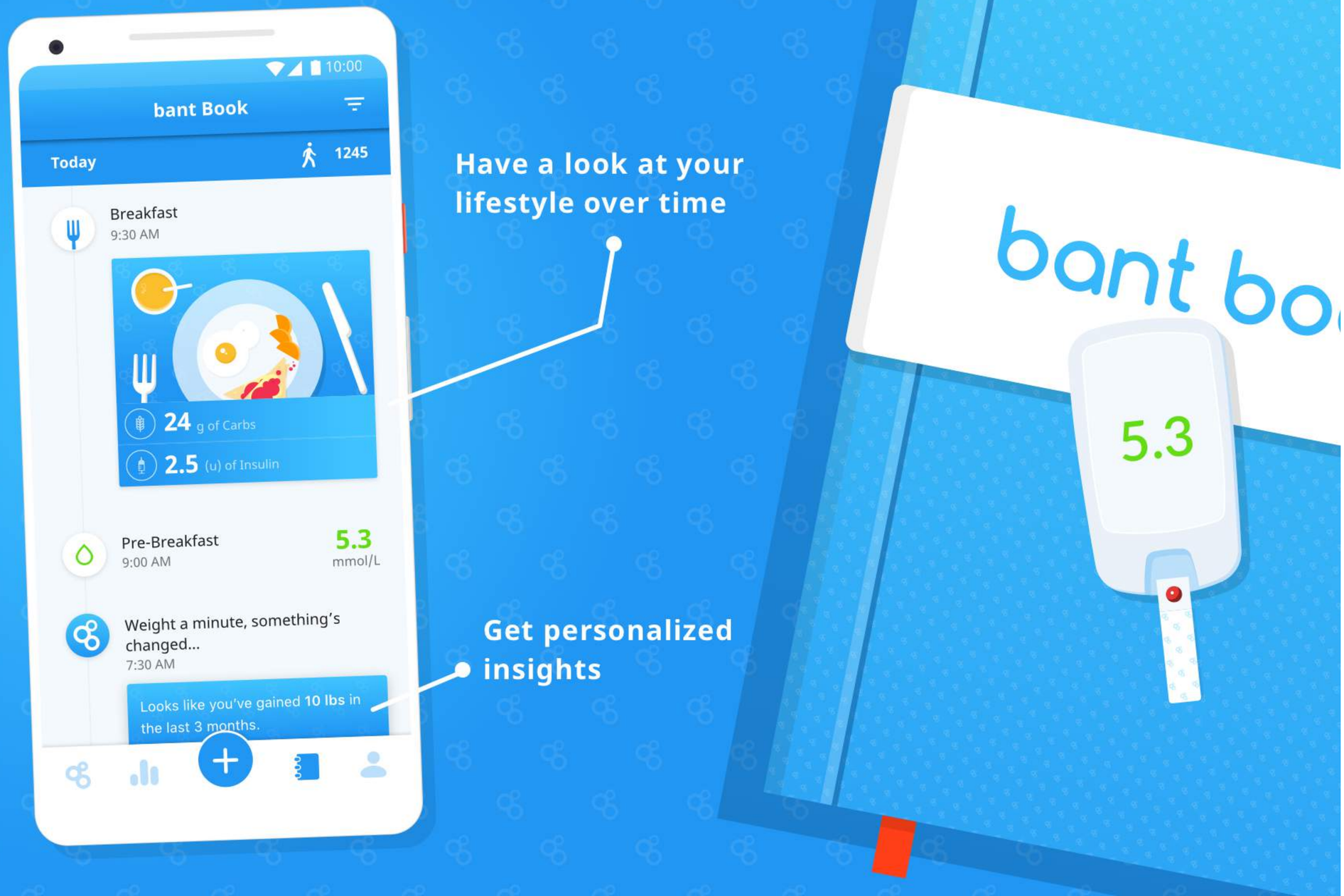
Simplifying Diabetes



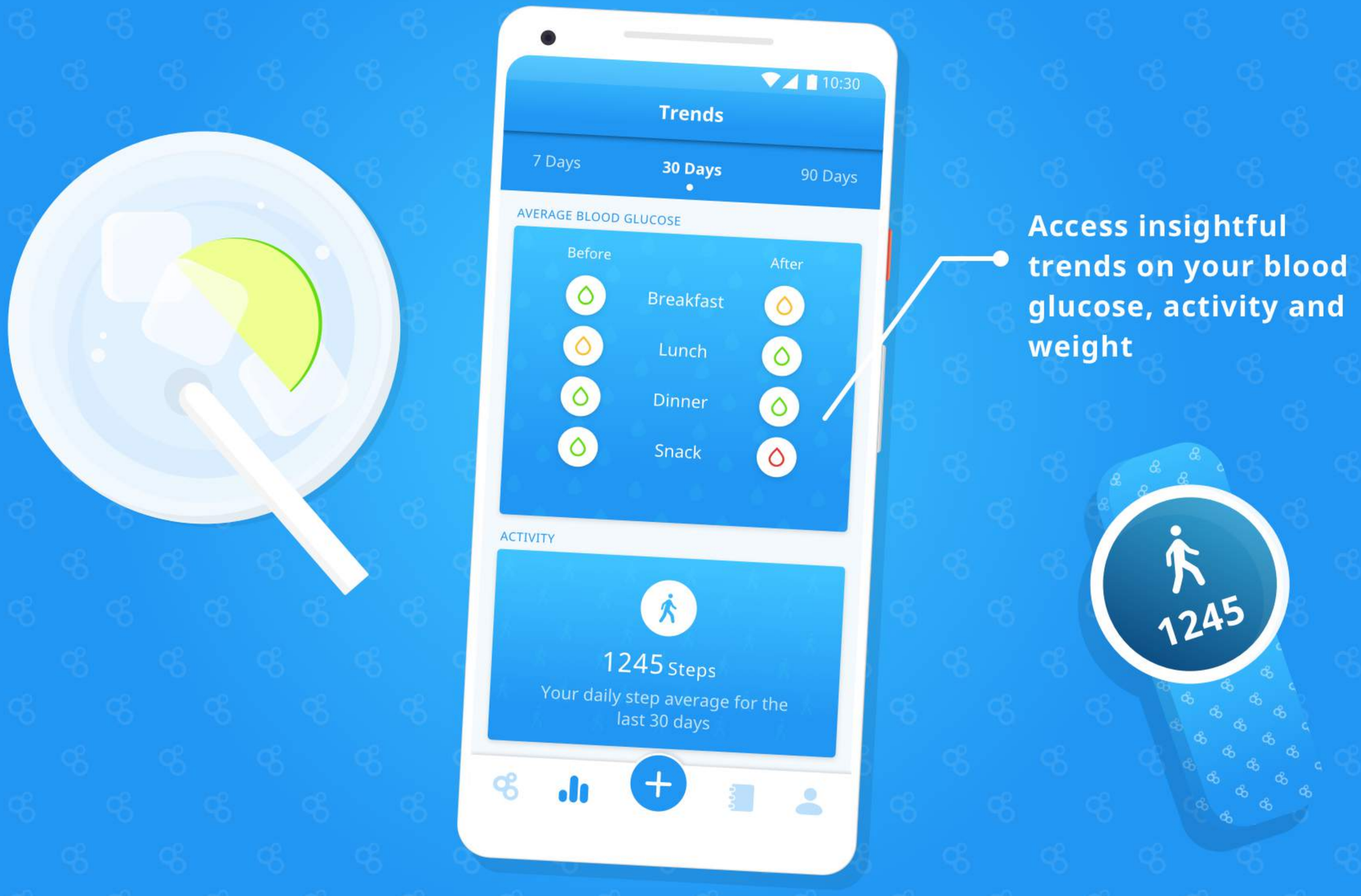

ACCU-CHEK®
Aviva Connect
Control Result
10:10 am
9/02/16
2.4
mmol/L
Level 1
Within range
OK
ACCU-CHEK
ACCU-CHEK
ACCU-CHEK
ACCU-CHEK
ACCU-CHEK
TELUS LTE
10:11 AM
Today
Add+
Breakfast
7 am
8 am
9 am
10 am
11 am
565
total steps
500 Steps
Close
Goals
Trends
Timeline
banter
Rewards
12
ACCU-CHEK®
50
113
02/29/2016
493848
06908217001

Be reminded to take your blood glucose readings and track your meals

See your unique diabetes story

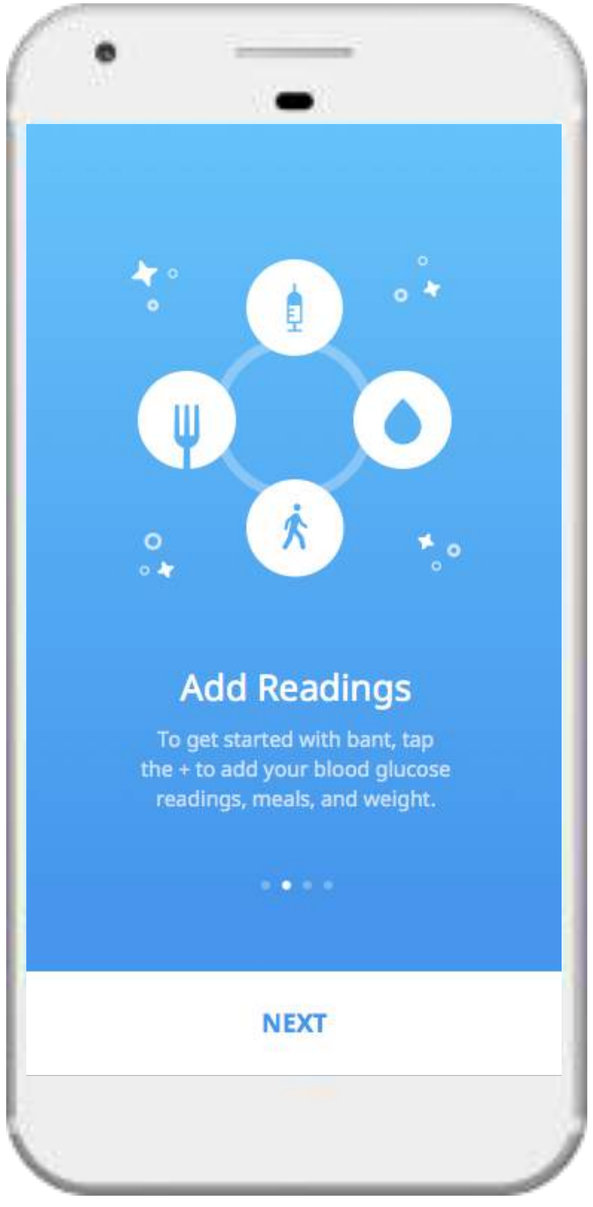


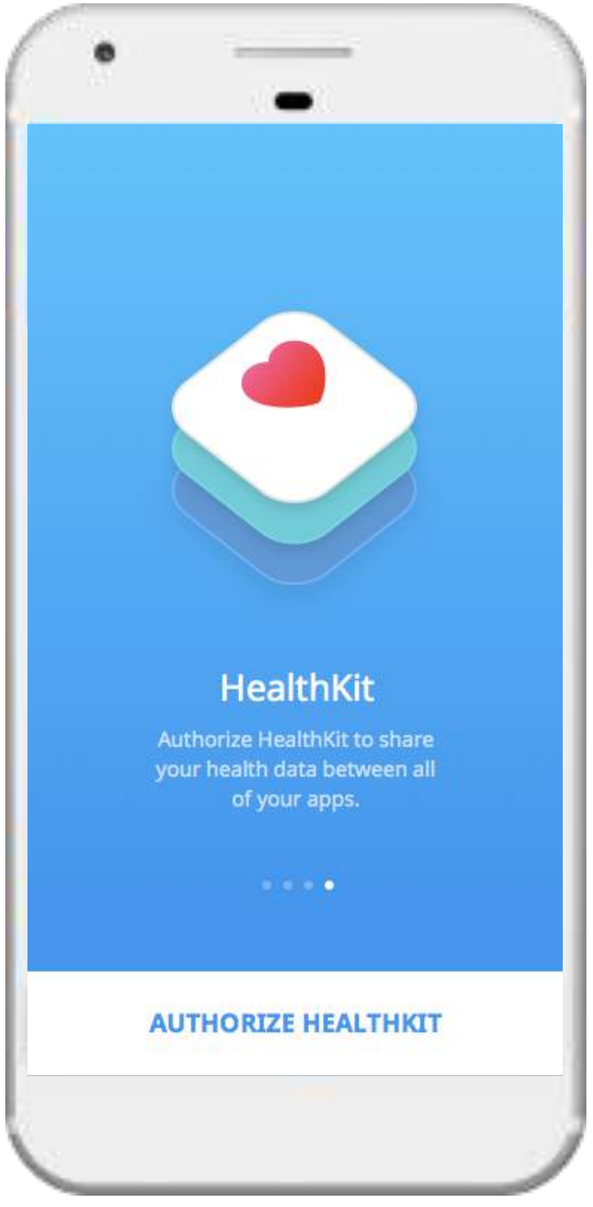
Get a quick glance at how you're doing

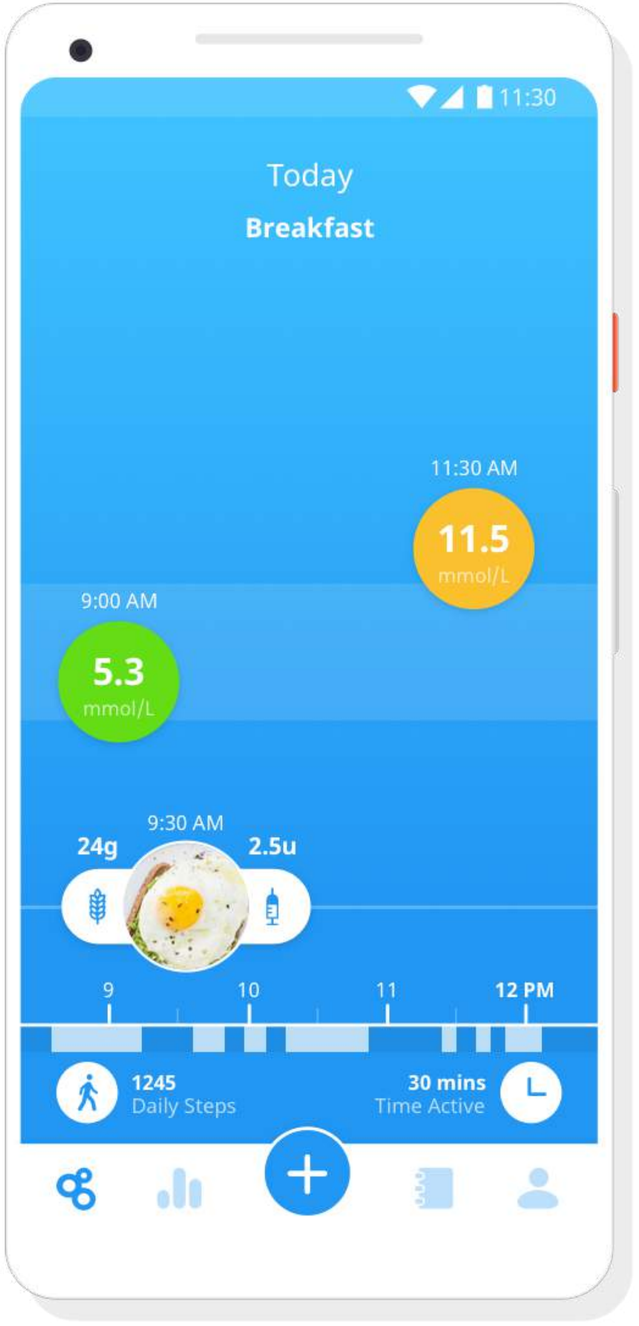


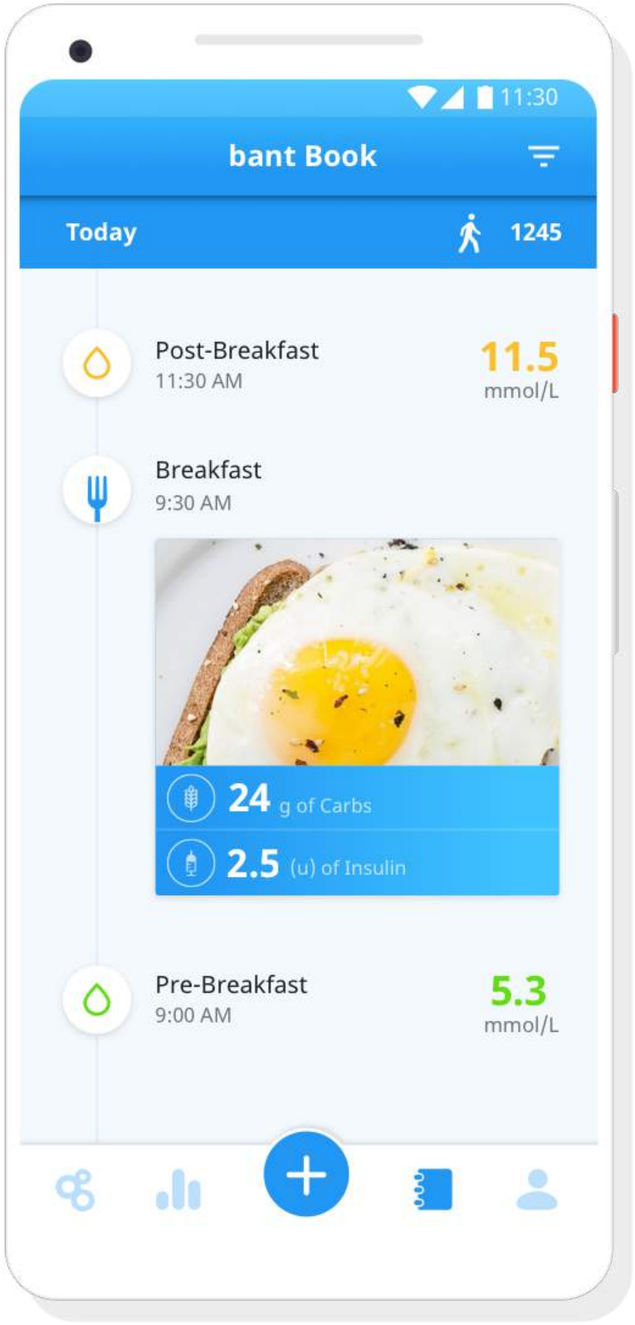
Access insightful trends on your blood glucose, activity and weight

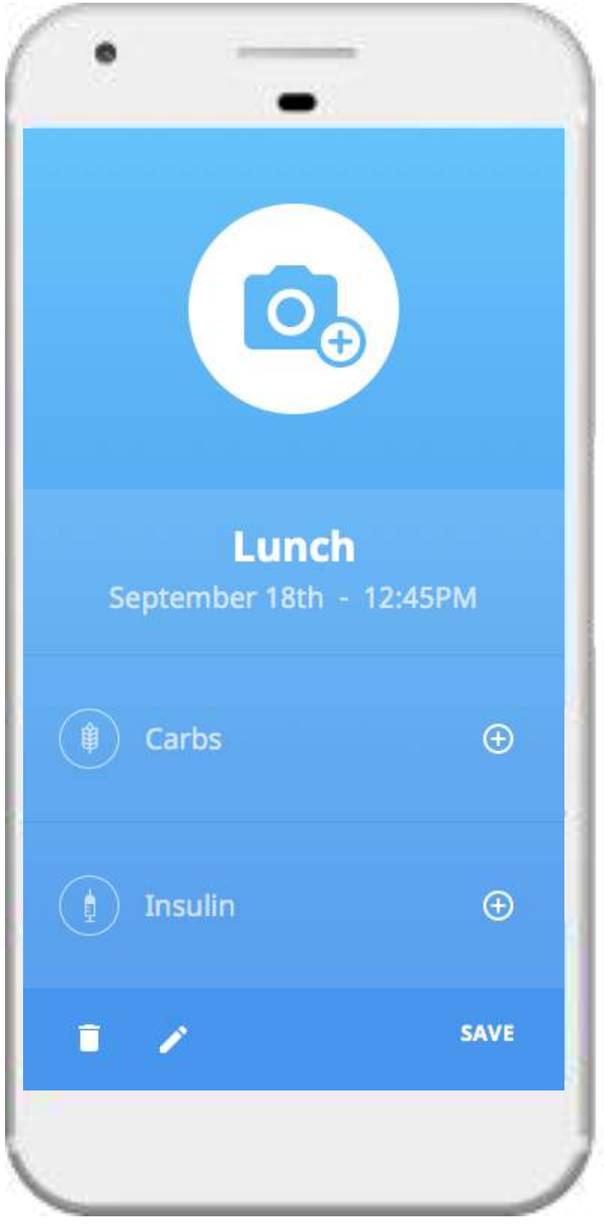

bant
CREATE ACCOUNT
LOG IN

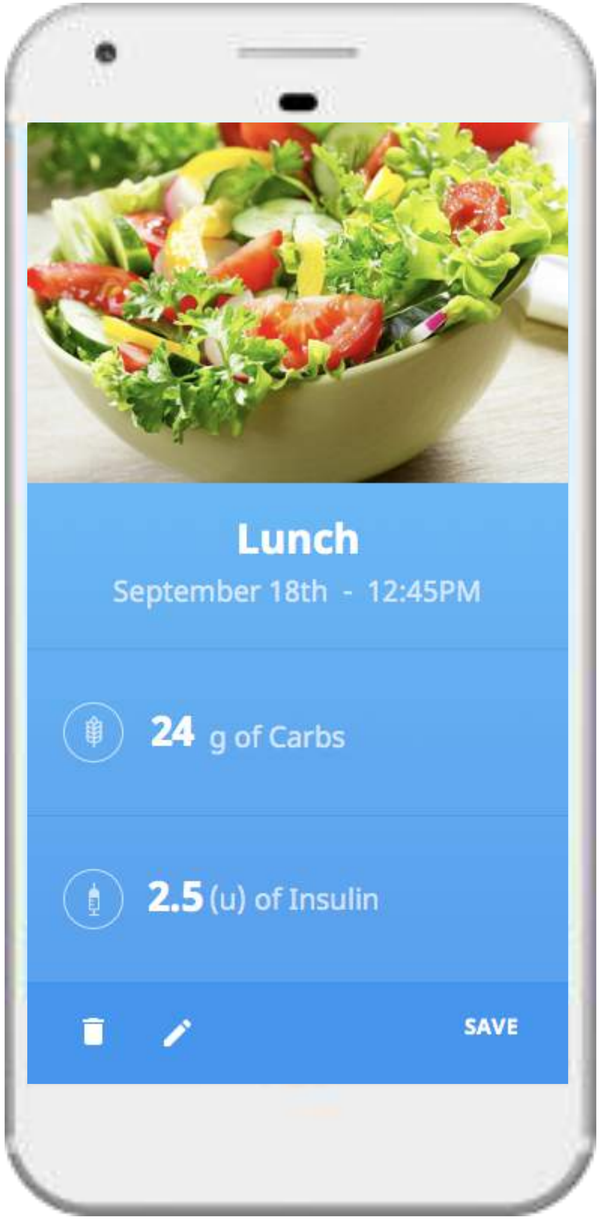

Add Readings
To get started with bant, tap the + to add your blood glucose readings, meals, and weight.
NEXT

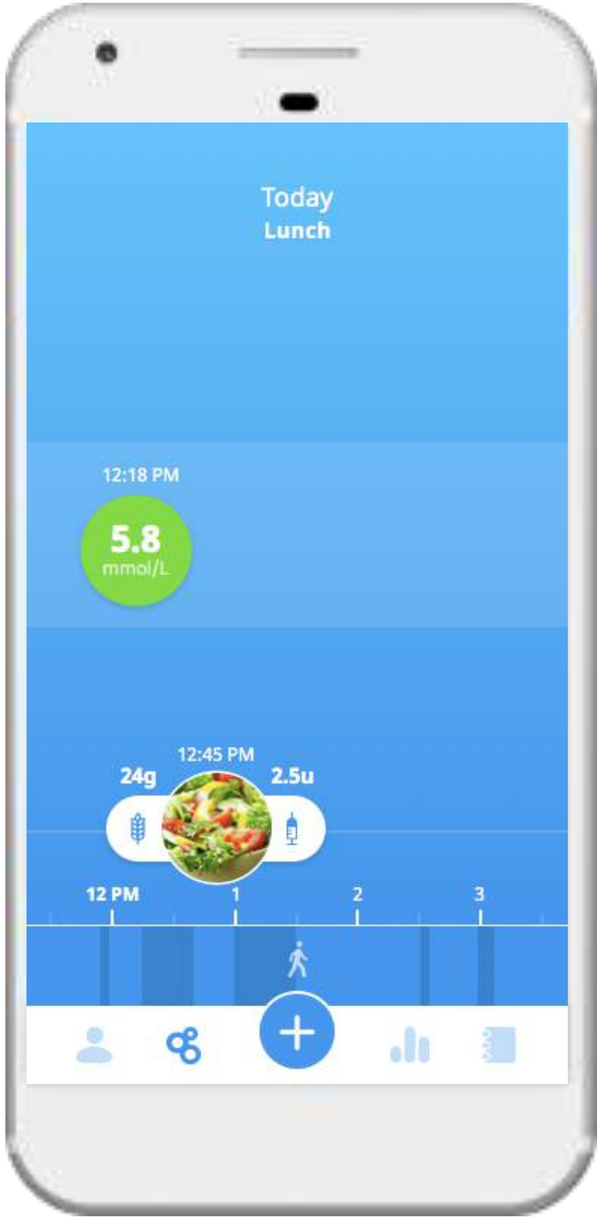

HealthKit
Authorize HealthKit to share your health data between all of your apps.
AUTHORIZE HEALTHKIT


11:30
Today
Breakfast
11:30 AM
11.5
mmol/L
9:00 AM
5.3
mmol/L
9:30 AM
24g
2.5u
9
10
11
12 PM
1245
Daily Steps
30 mins
Time Active

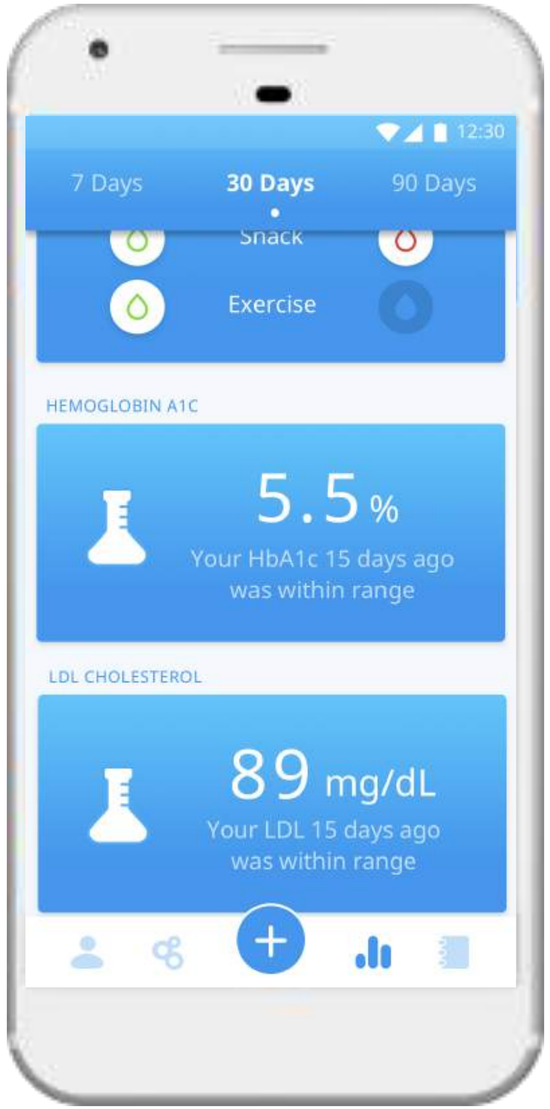

11:30
bant Book
Today
1245
Post-Breakfast
11:30 AM
11.5
mmol/L
Breakfast
9:30 AM
24 g of Carbs
2.5 (u) of Insulin
Pre-Breakfast
9:00 AM
5.3
mmol/L

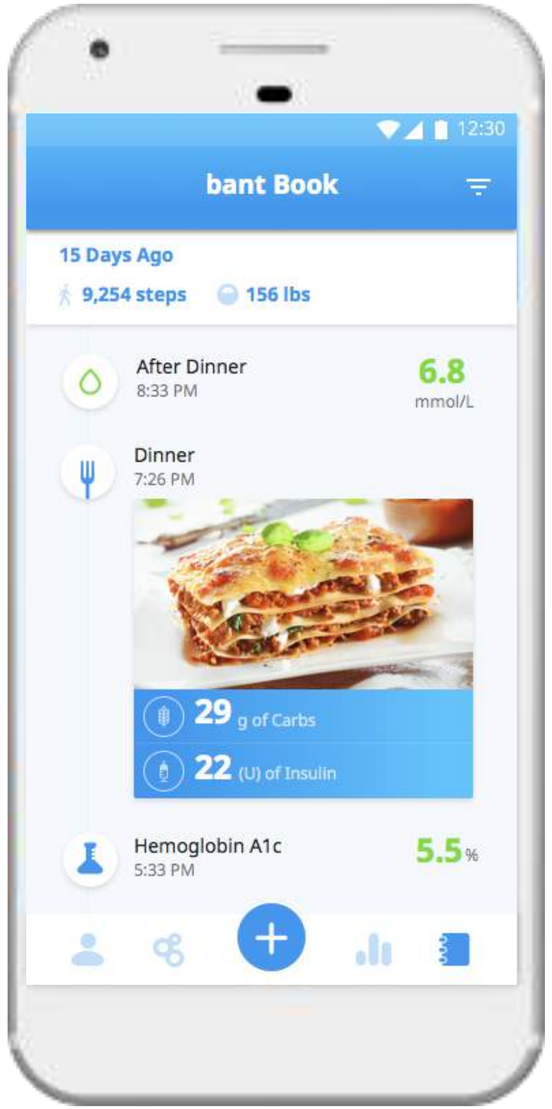

Lunch
September 18th - 12:45PM
Carbs
Insulin
SAVE

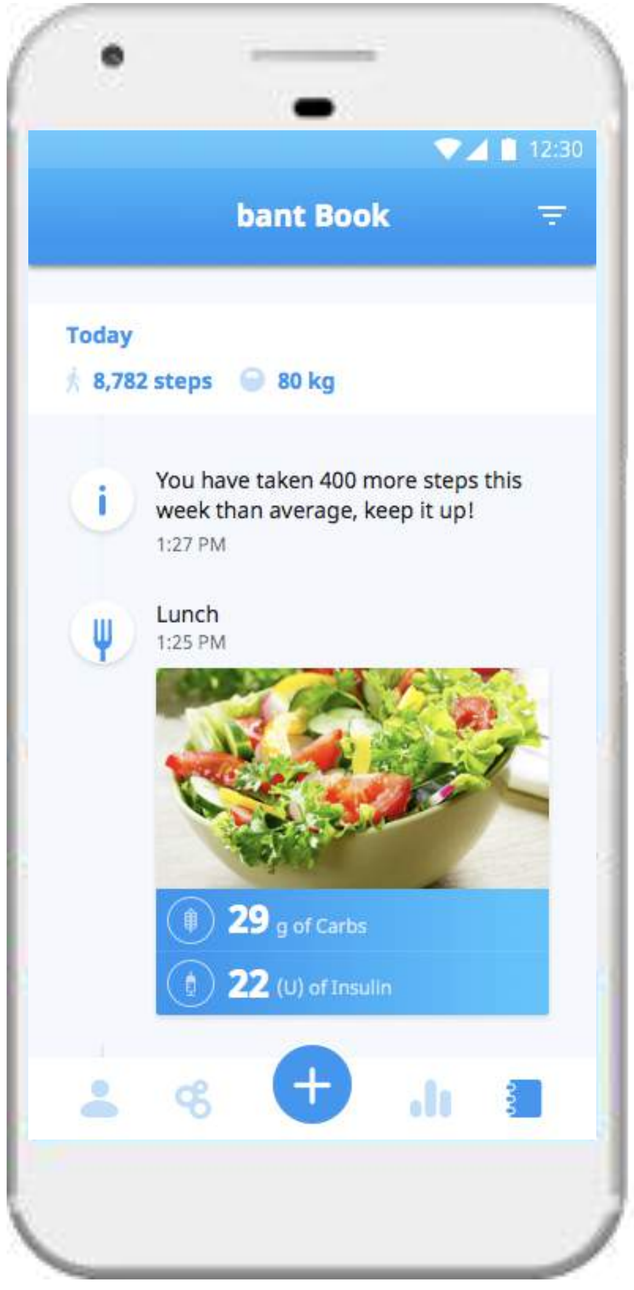

Lunch
September 18th - 12:45PM
24 g of Carbs
2.5 (u) of Insulin
SAVE

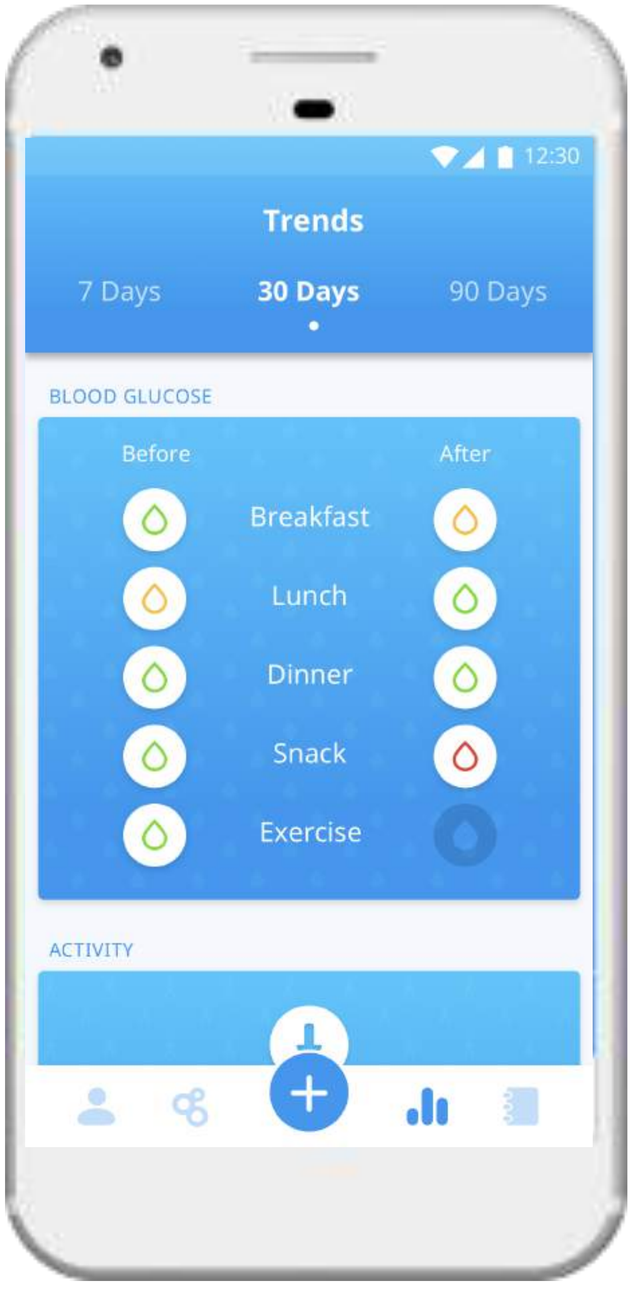

Today
Lunch
12:18 PM
5.8
mmol/L
12:45 PM
24g
2.5u
12 PM
1
2
3

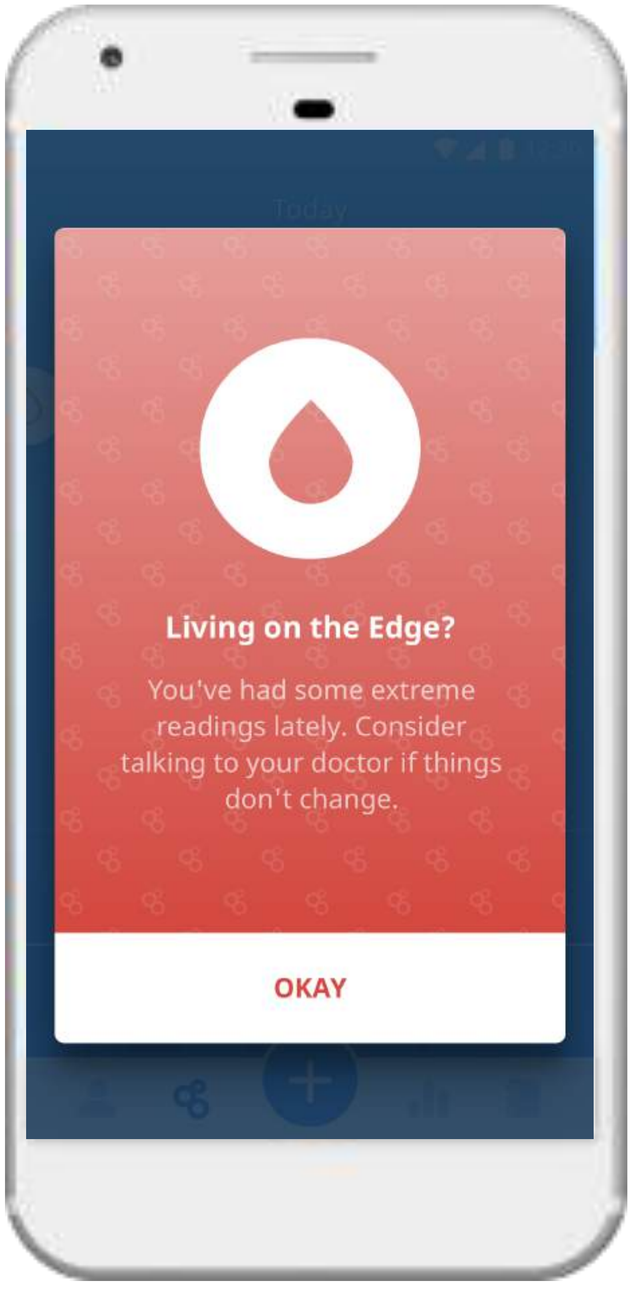
LAB RESULTS IN BANT

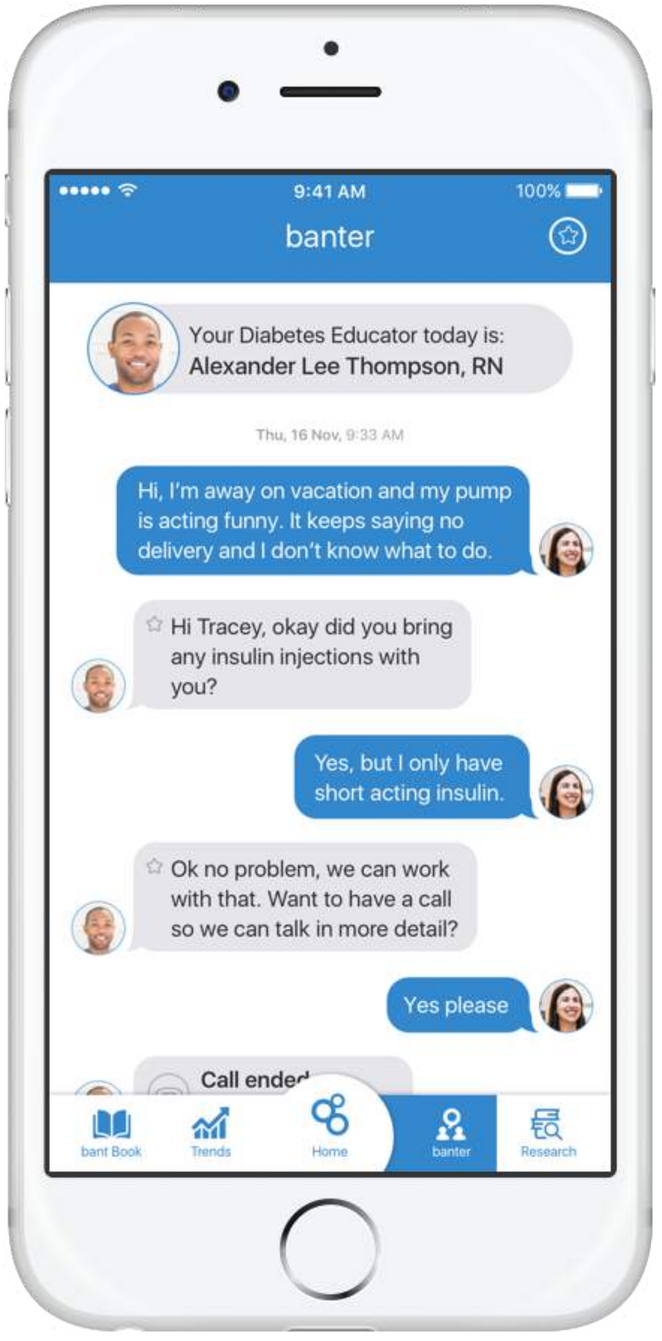


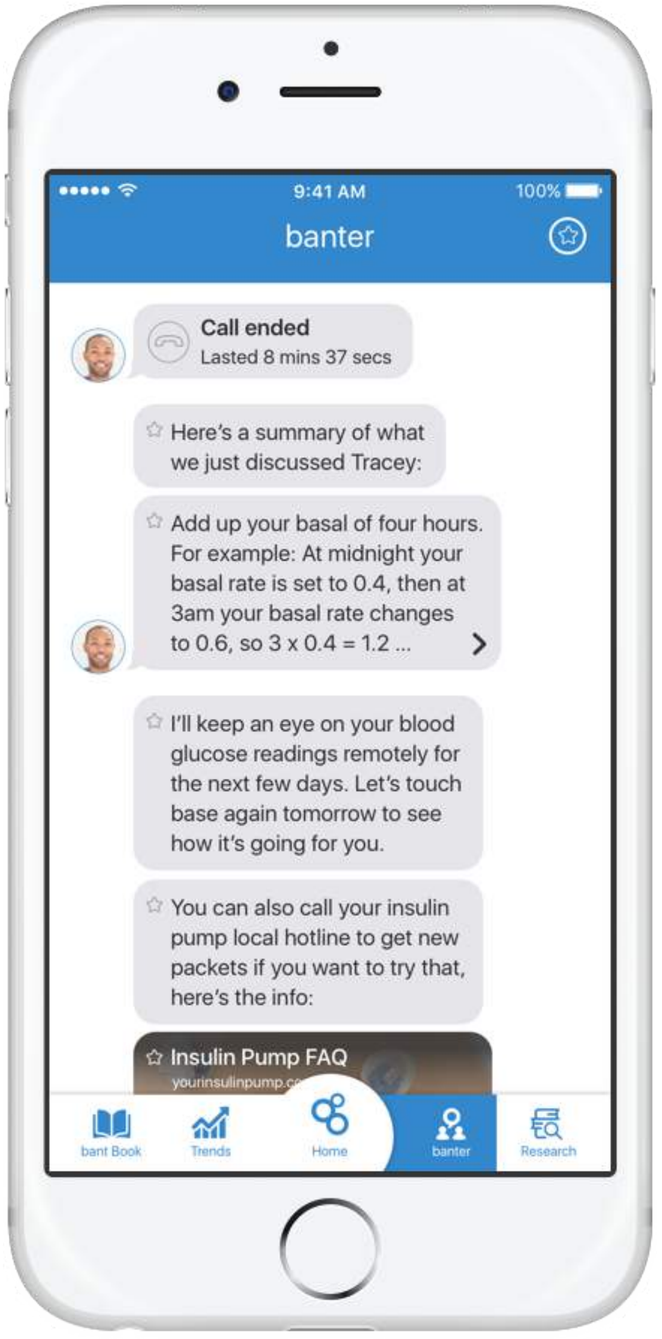


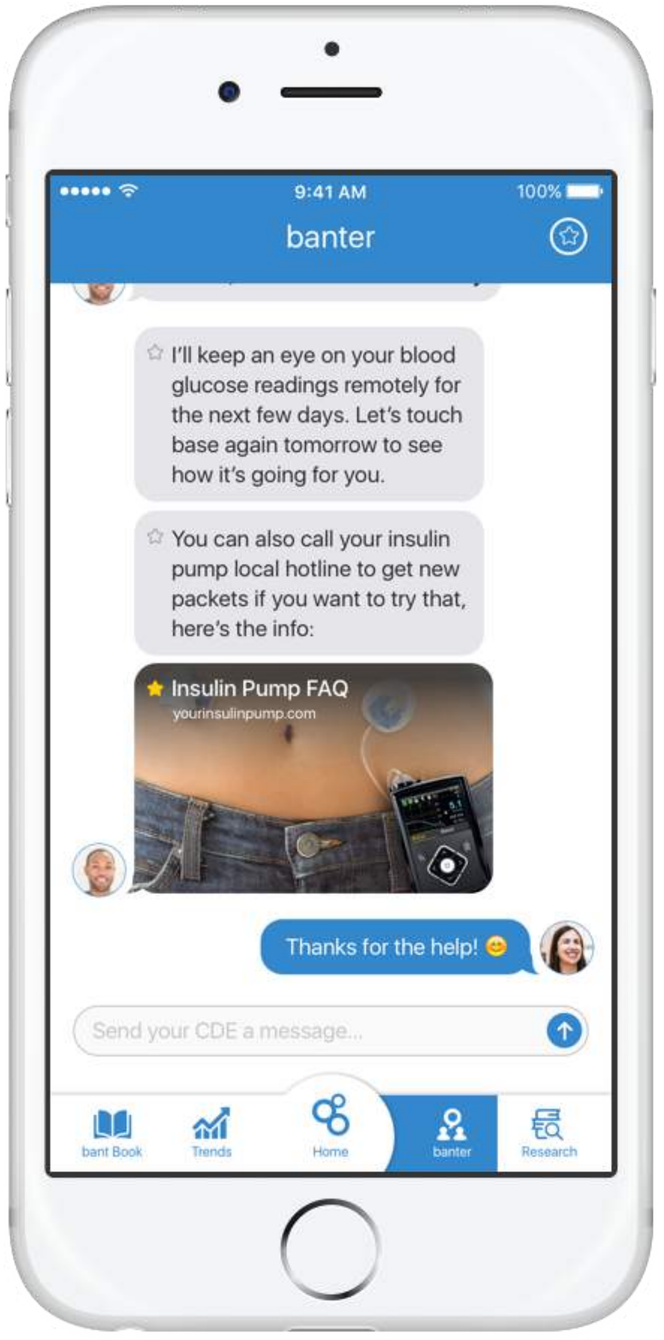

12:30
bant Book
Today
8,782 steps
80 kg
You have taken 400 more steps this week than average, keep it up!
1:27 PM
Lunch
1:25 PM
29 g of Carbs
22 (U) of Insulin

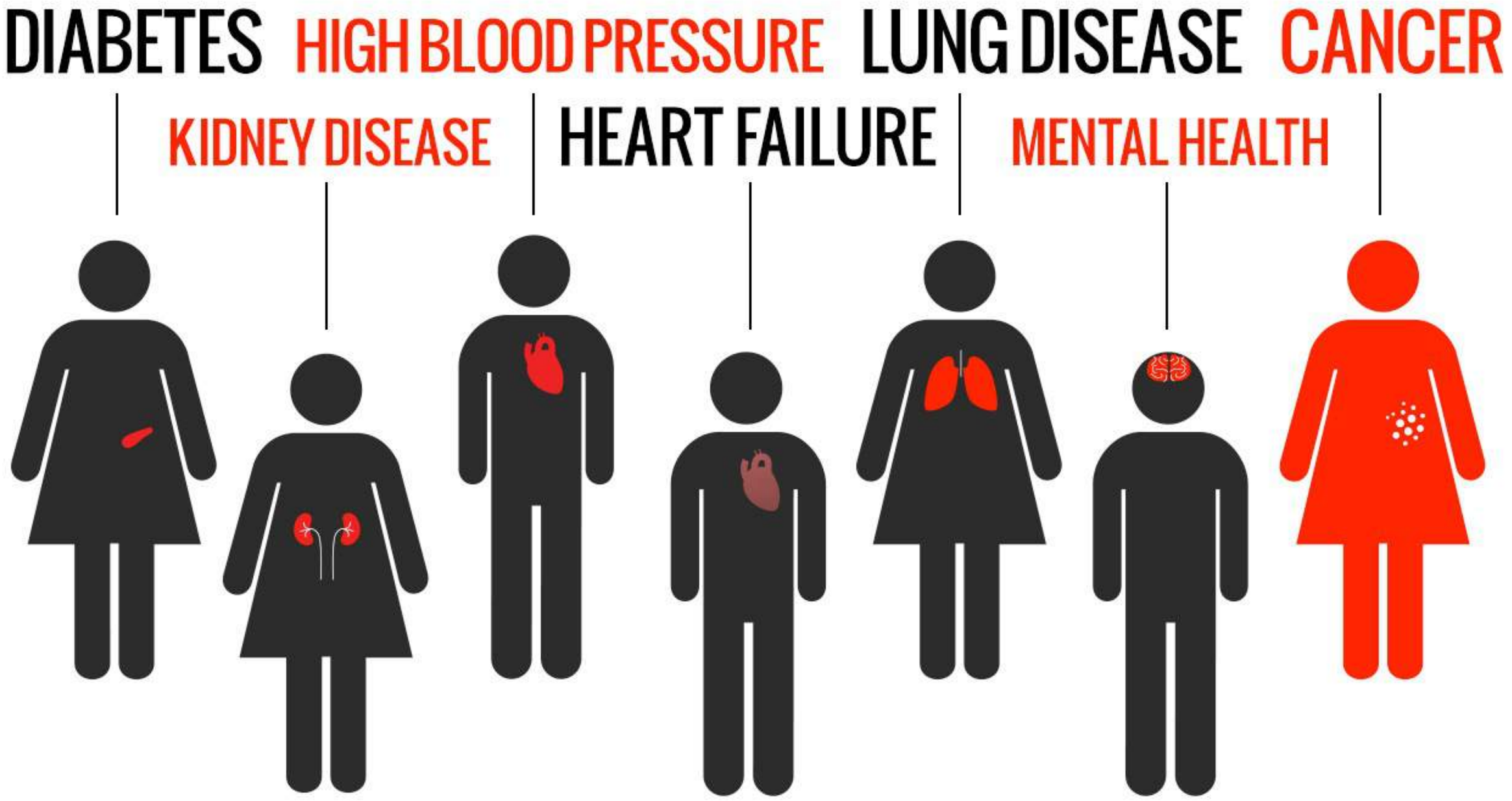

12:30
Trends
7 Days
30 Days
90 Days
BLOOD GLUCOSE
Before
After
Breakfast
Lunch
Dinner
Snack
Exercise
ACTIVITY


Today
Living on the Edge?
You've had some extreme readings lately. Consider talking to your doctor if things don't change.
OKAY

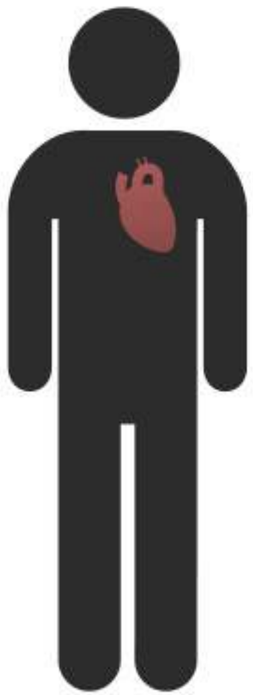

9:41 AM
100%
banter
Your Diabetes Educator today is:
Alexander Lee Thompson, RN
Thu, 16 Nov, 9:33 AM
Hi, I'm away on vacation and my pump is acting funny. It keeps saying no delivery and I don't know what to do.
Hi Tracey, okay did you bring any insulin injections with you?
Yes, but I only have short acting insulin.
Ok no problem, we can work with that. Want to have a call so we can talk in more detail?
Yes please
Call ended
bant Book
Trends
Home
banter
Research

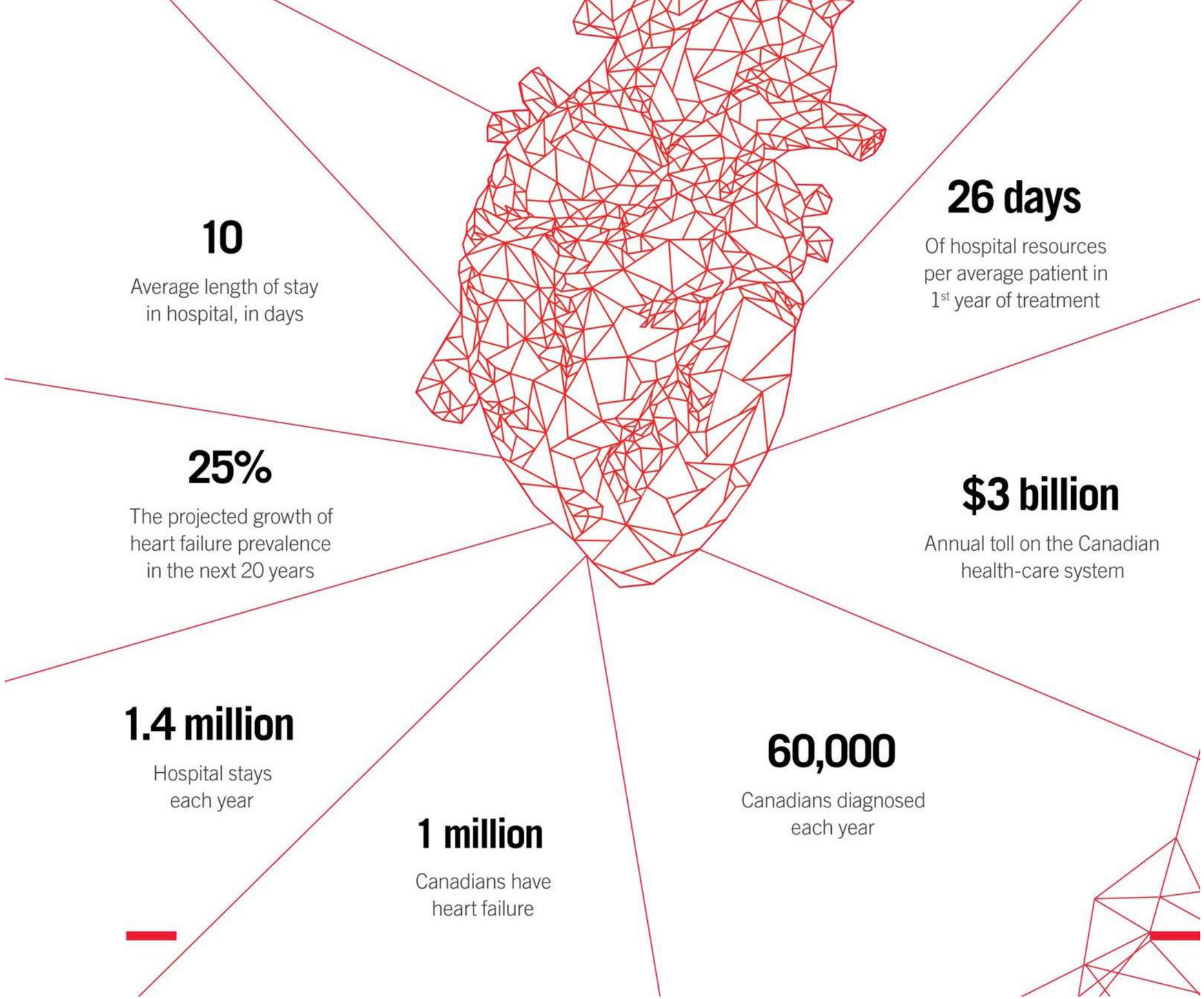

9:41 AM
100%
banter
Call ended
Lasted 8 mins 37 secs
Here's a summary of what we just discussed Tracey:
Add up your basal of four hours. For example: At midnight your basal rate is set to 0.4, then at 3am your basal rate changes to 0.6, so 3 x 0.4 = 1.2 ...
I'll keep an eye on your blood glucose readings remotely for the next few days. Let's touch base again tomorrow to see how it's going for you.
You can also call your insulin pump local hotline to get new packets if you want to try that, here's the info:
Insulin Pump FAQ
bant Book
Trends
Home
banter
Research


9:41 AM
100%
banter
I'll keep an eye on your blood glucose readings remotely for the next few days. Let's touch base again tomorrow to see how it's going for you.
You can also call your insulin pump local hotline to get new packets if you want to try that, here's the info:
Insulin Pump FAQ
yourinsulinpump.com
Thanks for the help!
Send your CDE a message...
bant Book
Trends
Home
banter
Research


DIABETES
HIGH BLOOD PRESSURE
LUNG DISEASE
CANCER
KIDNEY DISEASE
HEART FAILURE
MENTAL HEALTH

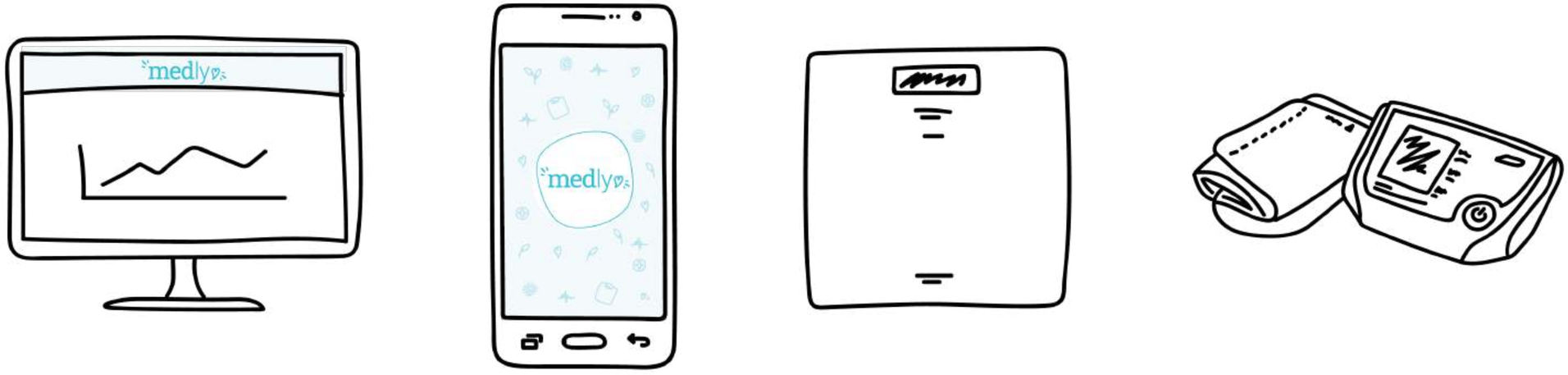
HEART FAILURE




10
Average length of stay in hospital, in days
26 days
Of hospital resources per average patient in 1st year of treatment
25%
The projected growth of heart failure prevalence in the next 20 years
$3 billion
Annual toll on the Canadian health-care system
1.4 million
Hospital stays each year
1 million
Canadians have heart failure
60,000
Canadians diagnosed each year

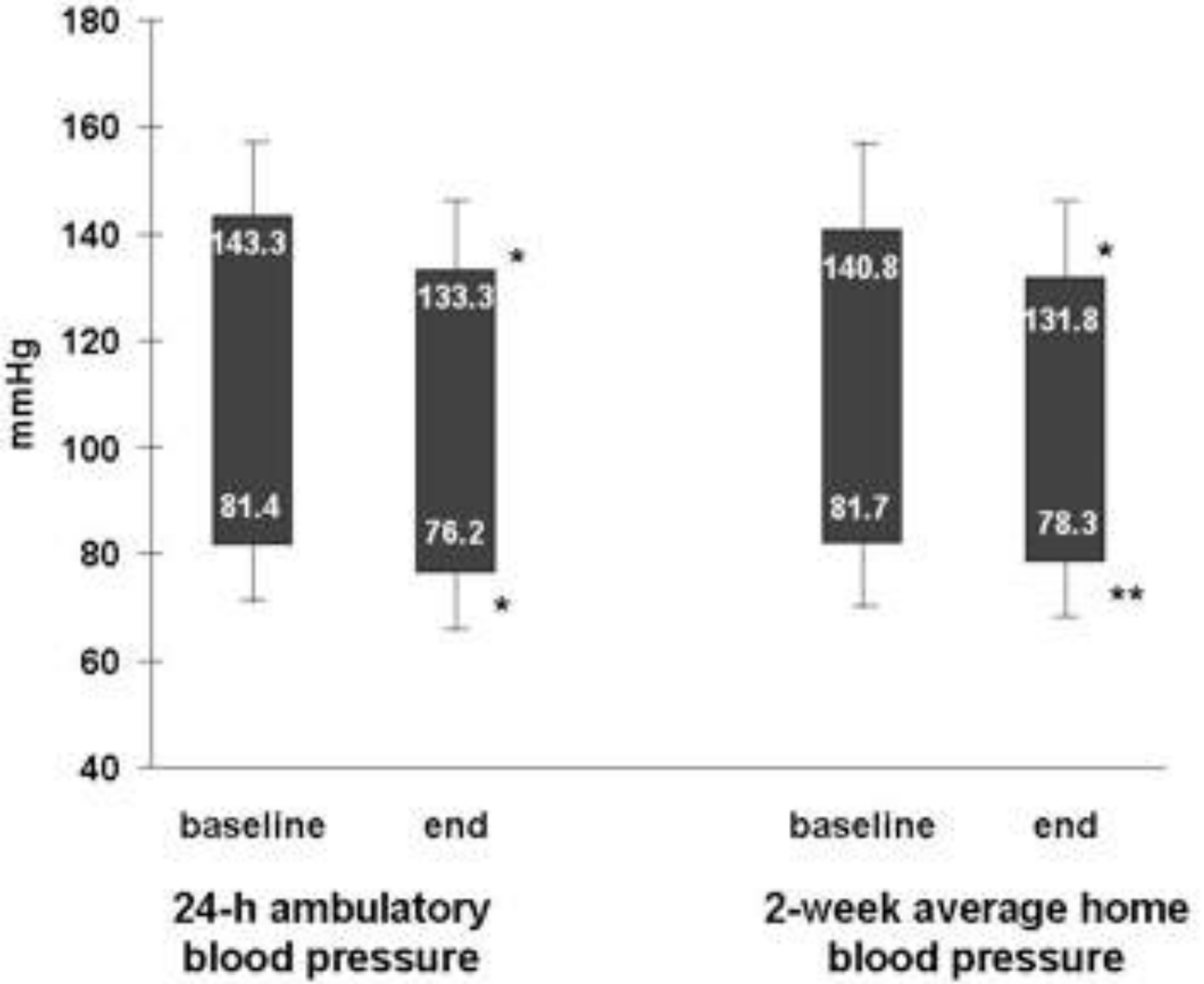
Remote Patient Monitoring for

Heart Failure



BLOOD PRESSURE TRANSMITTED AUTOMATICALLY TO BLACKBERRY

American Journal of Hypertension, 20(9), pp. 942-948, 2007



Effect of Home Blood Pressure Telemonitoring With Self-Care Support on Uncontrolled Systolic Hypertension in Diabetics

Alexander G. Logan, M. Jane Irvine, Warren J. McIsaac, Andras Tisler, Peter G. Rossos, Anthony Easty, Denice S. Feig, Joseph A. Cafazzo

Abstract—Lowering blood pressure reduces cardiovascular risk, yet hypertension is poorly controlled in diabetic patients. In a pilot study we demonstrated that a home blood pressure telemonitoring system, which provided self-care messages on the smartphone of hypertensive diabetic patients immediately after each reading, improved blood pressure control. Messages were based on care paths defined by running averages of transmitted readings. The present study tests the system's effectiveness in a randomized, controlled trial in diabetic patients with uncontrolled systolic hypertension. Of 244 subjects screened for eligibility, 110 (45%) were randomly allocated to the intervention (n=55) or control (n=55) group, and 105 (95.5%) completed the 1-year outcome visit. In the intention-to-treat analysis, mean daytime ambulatory systolic blood pressure, the primary end point, decreased significantly only in the intervention group by 9.1±15.6 mm Hg (SD; $P<0.0001$), and the mean between-group difference was 7.1±2.3 mm Hg (SE; $P<0.005$). Furthermore, 51% of intervention subjects achieved the guideline recommended target of <130/80 mm Hg compared with 31% of control subjects ($P<0.05$). These improvements were obtained without the use of more or different antihypertensive medications or additional clinic visits to physicians. Providing self-care support did not affect anxiety but worsened depression on the Hospital Anxiety and Depression Scale (baseline, 4.1±3.76; exit, 5.2±4.30; $P=0.014$). This study demonstrated that home blood pressure telemonitoring combined with automated self-care support reduced the blood pressure of diabetic patients with uncontrolled systolic hypertension and improved hypertension control. Home blood pressure monitoring alone had no effect on blood pressure. Promoting patient self-care may have negative psychological effects. (***Hypertension*. 2012;60:00.)**

blood pressure ■ hypertension ■ diabetes mellitus ■ blood pressure ■ self-care ■ depression


132
SYS
78
DIA.
69
PUL.
START


132
SYS
78
DIA.
69
PUL.
START
BlackBerry
Last Reading
168
81

NO CHANGE

- 9.1 mmHg systolic

- 4.6 mmHg diastolic

NO ADDITIONAL MEDS
NO ADDITIONAL VISITS

SELF AWARENESS
MED ADHERENCE

Original Paper

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

Emily Seto[1,2], PhD, PEng; Kevin J Leonard[1,2], PhD, MBA; Joseph A Cafazzo[1,2,3], PhD, PEng; Jan Barnsley[2], PhD; Caterina Masino[1], MA; Heather J Ross[4,5], MD, MHSc, FRCPC

[1]Centre for Global eHealth Innovation, University Health Network, Toronto, ON, Canada
[2]Department of Health Policy, Management and Evaluation, University of Toronto, Toronto, ON, Canada
[3]Institute of Biomaterials and Biomedical Engineering, University of Toronto, Toronto, ON, Canada
[4]Department of Medicine, University of Toronto, Toronto, ON, Canada
[5]Divisions of Cardiology and Transplant, University Health Network, Toronto, ON, Canada

Corresponding Author:
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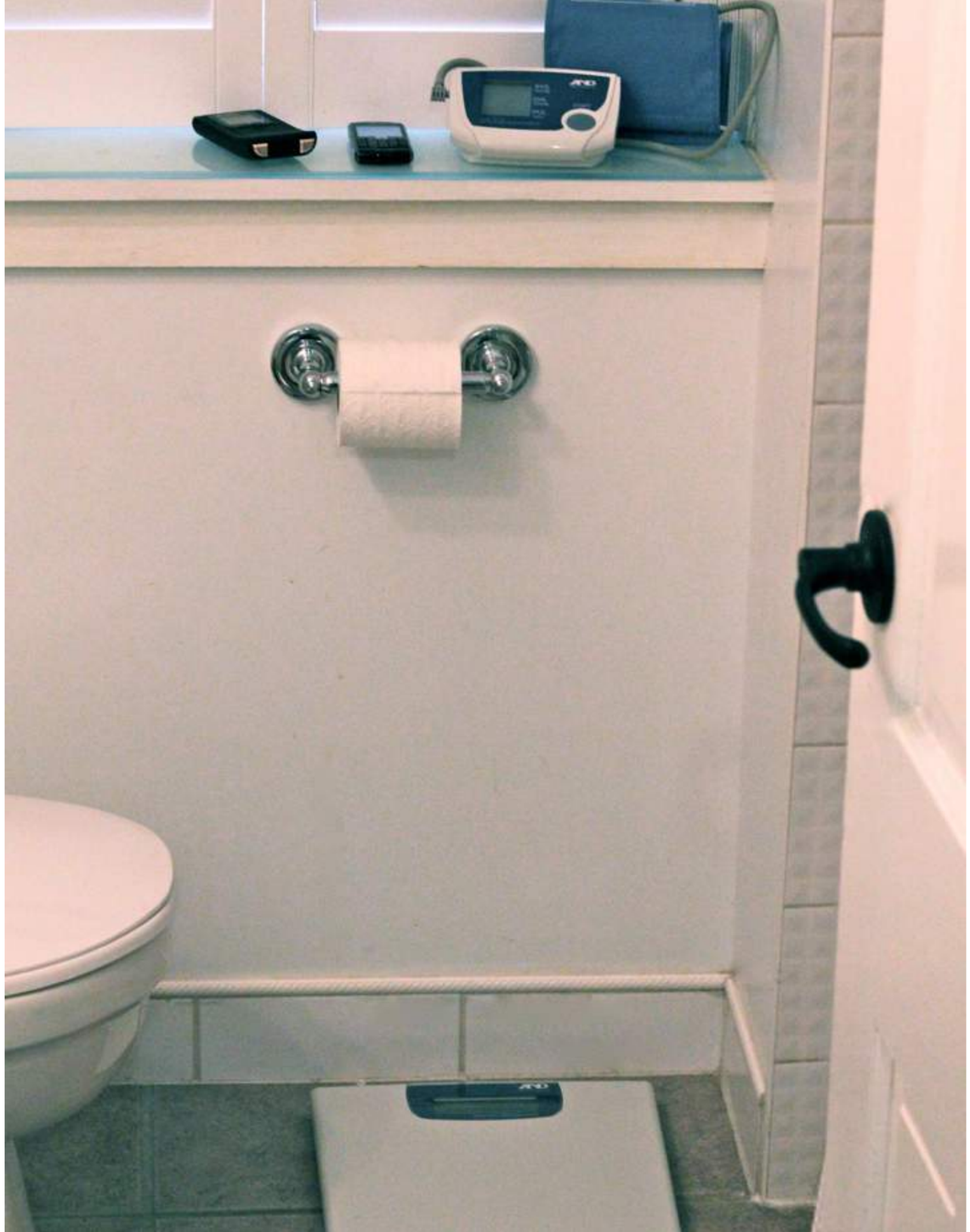
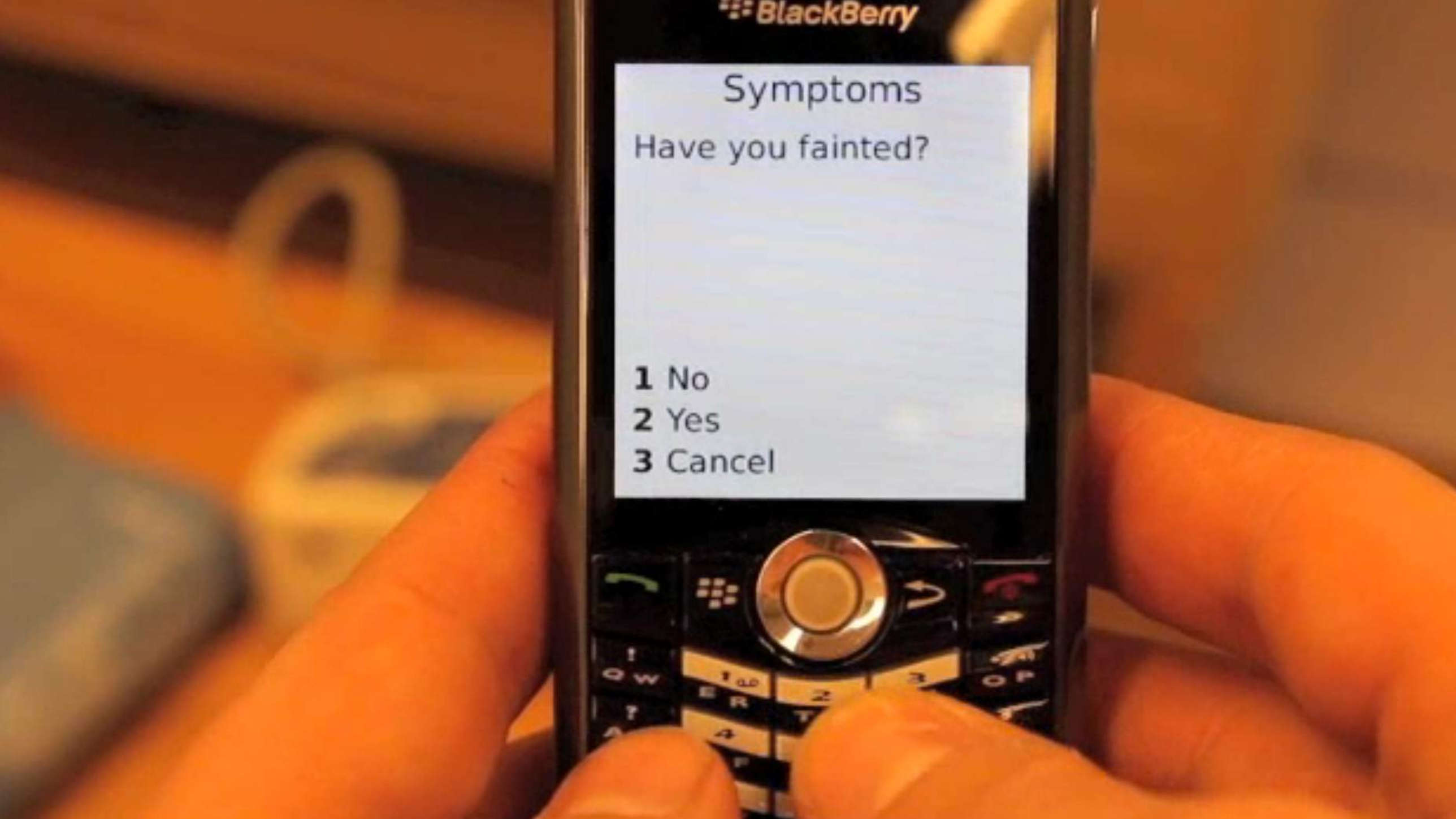
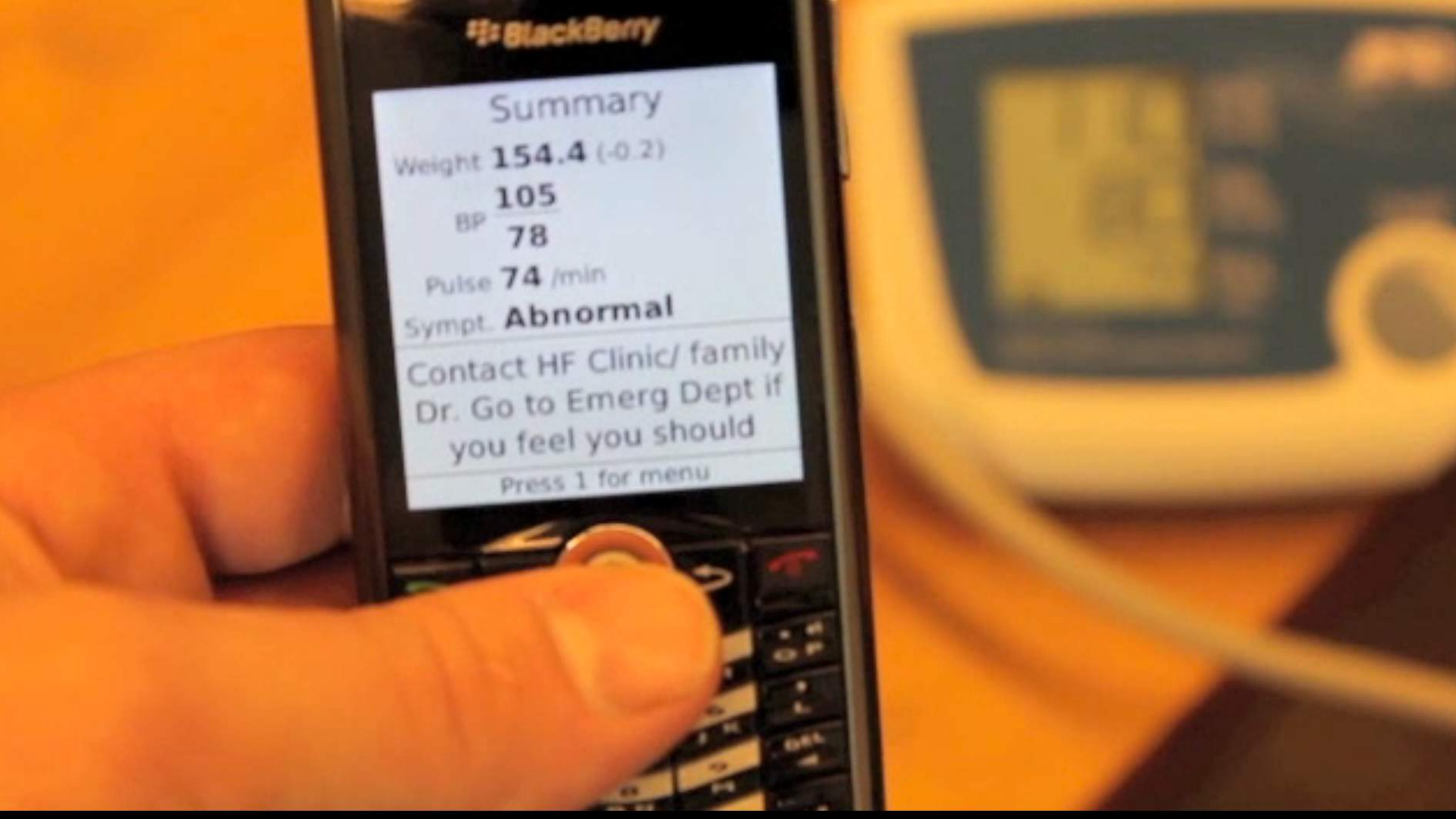
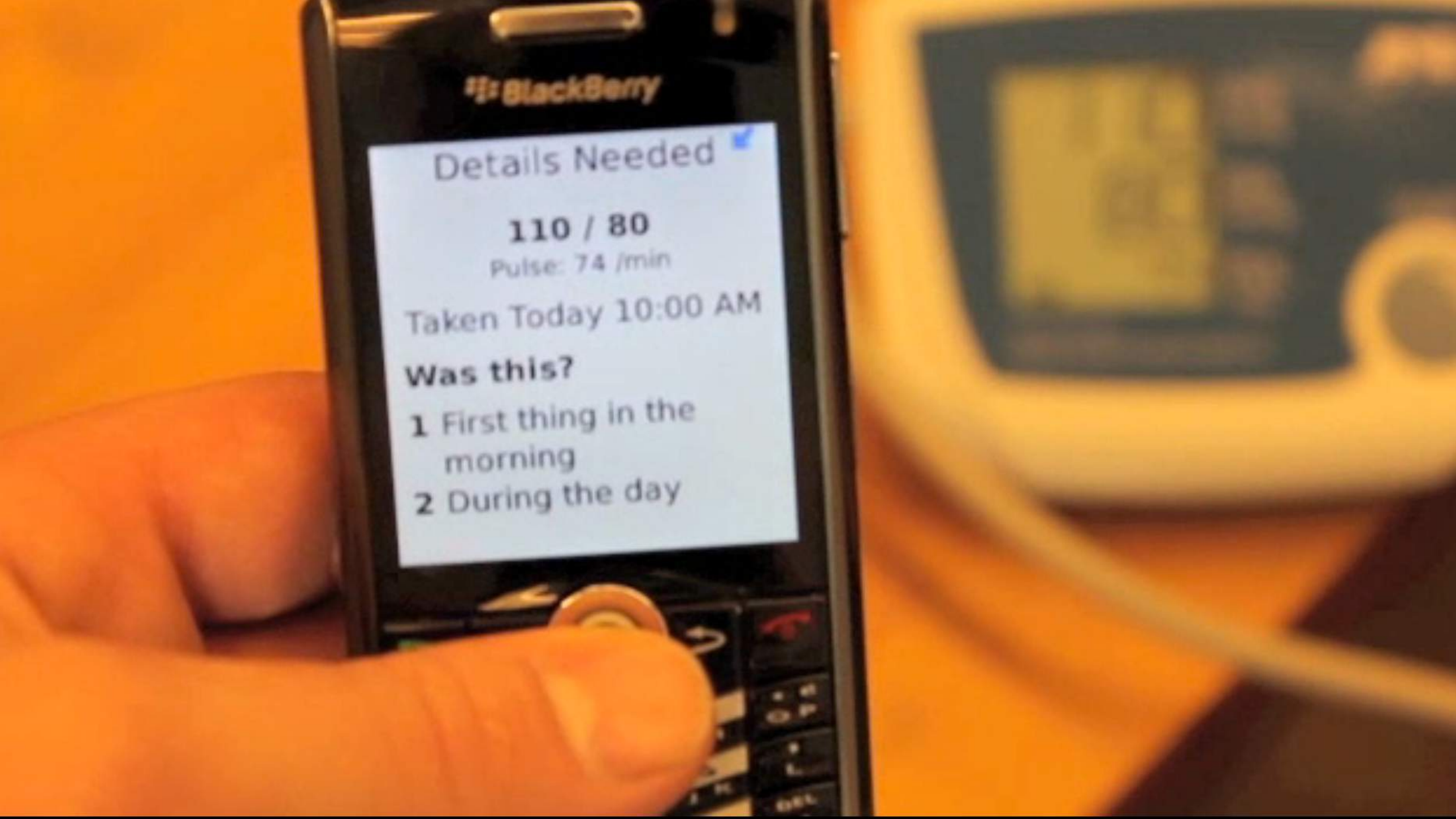
TGH/RFE Bldg, 4th Fl.
190 Elizabeth St.
Toronto, ON, M5G 2C4
Canada
Phone: 1 416 340 4800 ext 6409
1 416 340 3595




BlackBerry
Symptoms
Have you fainted?
1 No
2 Yes
3 Cancel


BlackBerry
Symptoms
Has your breathing at night worsened?
1 No
2 Yes
3 Cancel


BlackBerry
Summary
Weight 154.4 (-0.2)
BP 105/78
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


EXIT
EXIT
Ambulatory Cardiac Clinics

Fred

Heart Failure Patient

Study Participant

Heather Ross MD, MHSc, FRCP(C)

Project Clinical Champion

Medical Director, Cardiac Transplant Program

University Health Network

Study Design

- 100 Participants
- Duration: 9 months
- Daily Measurements
- Reminder Calls
- Alert Algorithm
- Direct Cardiologist Messaging
- Control Group

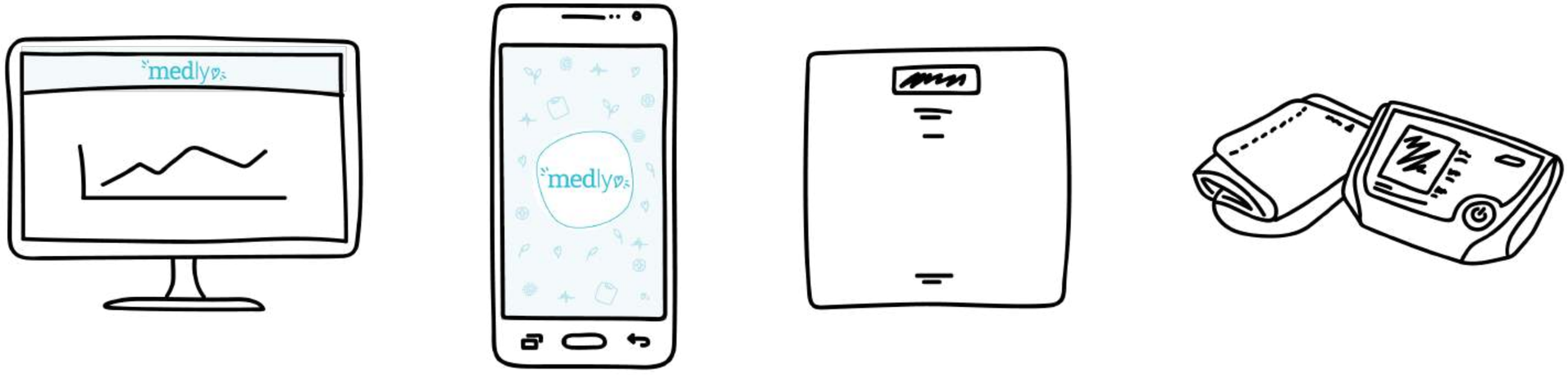
Results

Congestive Heart Failure

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

Remote Patient Monitoring for

Heart Failure



Medly

Helping patients monitor their symptoms and measurements, and provide self-care guidance, all at home.

- Chronic heart failure
- Receive feedback and instructions from their healthcare team
- Bluetooth enabled peripheral devices
- Integrates seamlessly with Apple Health

Medly Kit

Patients record their symptoms and take vital signs with a Bluetooth-enabled blood pressure monitor and weight scale. Medly transfers patient readings to the clinic and generates alerts.

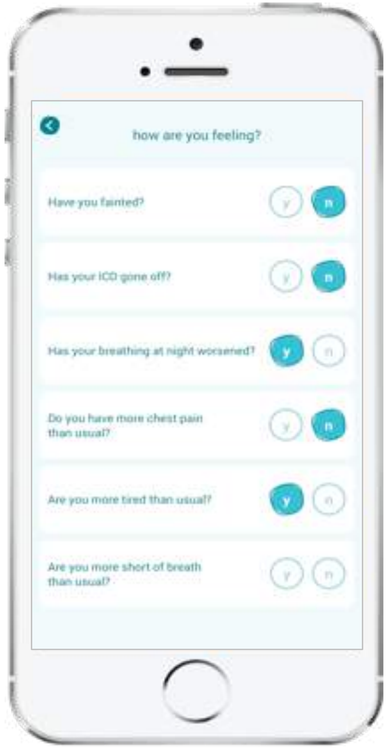
Daily Measurements

Take daily morning measurements

View instructions to take readings and health information at a glance.

Answer Symptom Tracking Questions

Questionnaires for self-monitoring.



Review trends

View trends and identify patterns.

Medly Algorithm

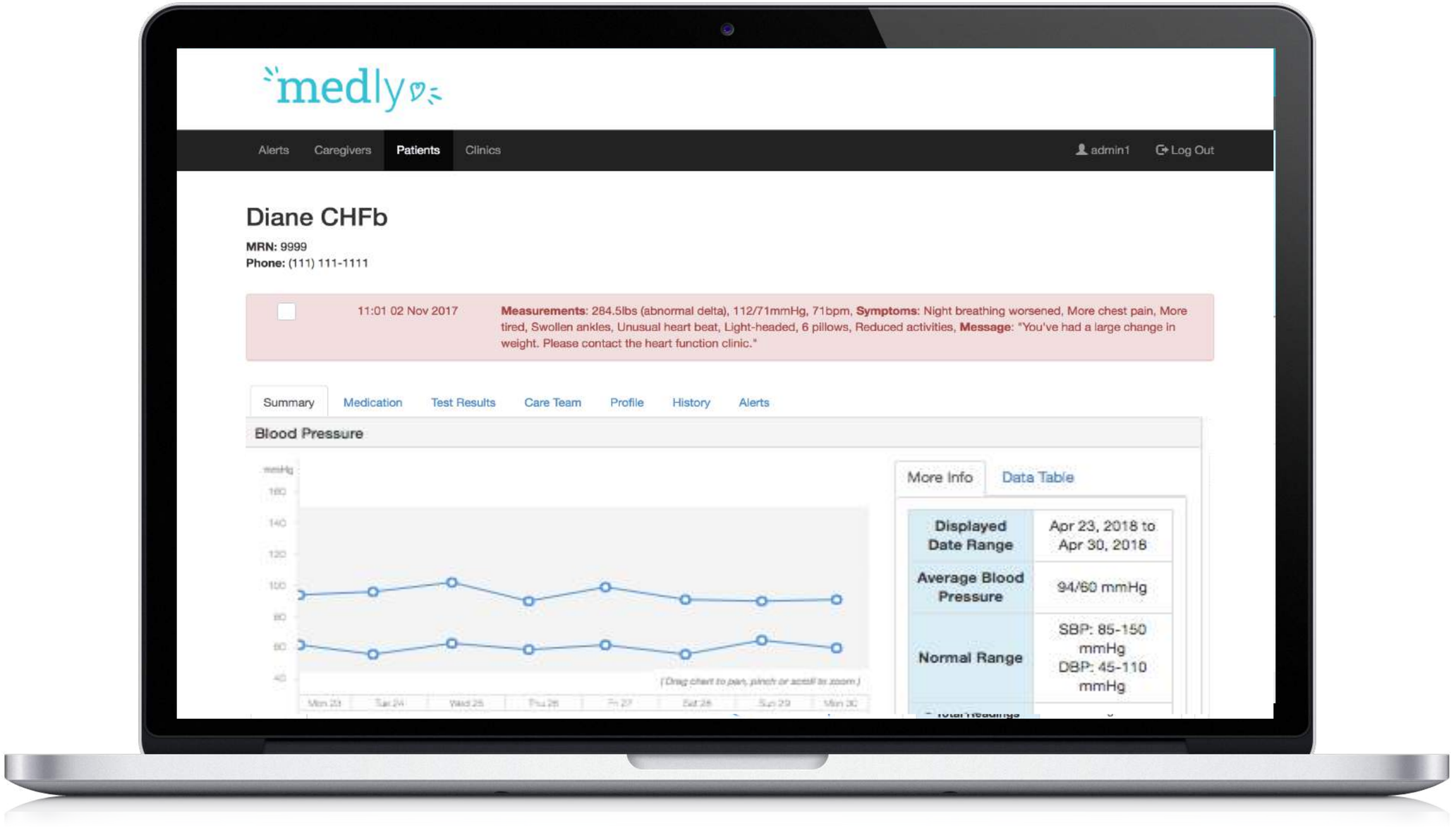
The Medly algorithm is a rule-based expert system that was developed in an iterative fashion with feedback from the PMCC clinicians.

The Medly algorithm:

- Inputs the four measurements taken by the patients and generates **one of six self-care feedback messages**
- **Supports the triaging of patients**, while keeping the clinicians updated on the patient's status
- Provides patients with peace of mind and allows **clinicians to focus on their most urgent patients**


Patient Message
Go to ED
Contact Clinic (due to large weight change)
Contact Clinic
Take your Medication
Record Symptoms Later if Unwell
Fine (no message to clinician)
No
Yes
Takes med on weight gain?
Output State
9
8
7
6
5
4
3
2
1
SYMPTOMS
Normal
Abnormal
Critical
Urgent
WEIGHT
BP
HR
N
Ab
High
Low
Weight
Symptoms
Blood Pressure
Heart Rate

Clinician Dashboard



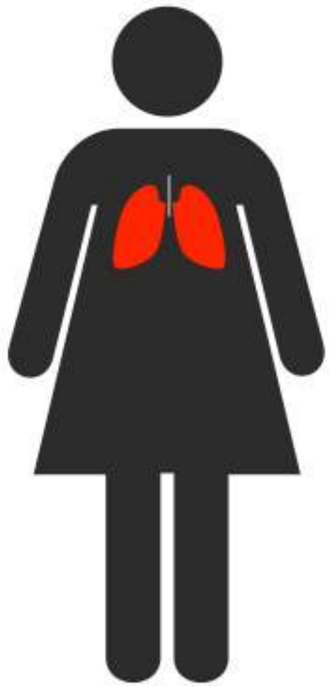
Scaling

PROVIDER

PATIENT

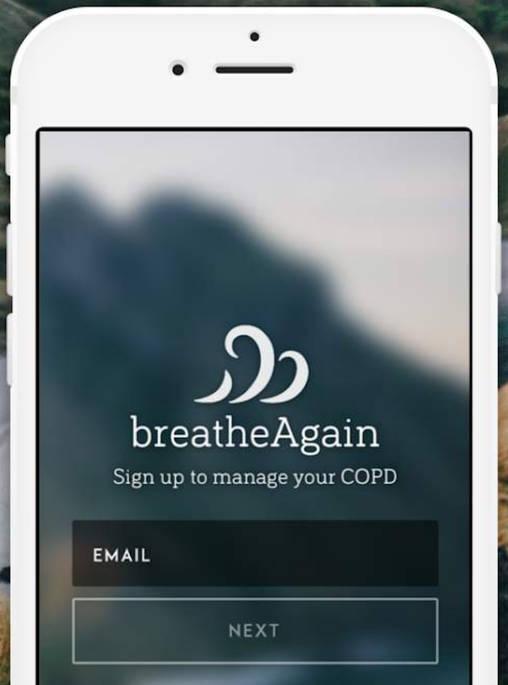
CONVENTIONAL	1	25 to 100
medly	1	300

LUNG DISEASE



breathe

for COPD




breathe
Sign in

What is your asthma control zone?

For each item below think about the statement that most closely reflects what you are currently experiencing.

Step 1	What to Look for	CONTROLLED ASTHMA	UNCONTROLLED ASTHMA	DANGEROUSLY UNCONTROLLED ASTHMA
	Physical activity	Normal ☐	Some interruption with activities ☐	Difficulty talking ☐
	***Reliever use**	Less than 4 times / week ☐	4 or more times / week ☐	Reliever inhaler doesn't work as usual ☐ *OR* Relief lasts less than 2 hours
	Day time symptoms: may include: cough, difficulty breathing, wheeze	Less than 4 days / week ☐	4 or more days / week ☐	All the time ☐
	Night time symptoms: may include: cough, difficulty breathing, wheeze	Less than 1 night / week ☐	1 or more nights / week ☐	Every night ☐
	Peak Flow Rates (optional)	Greater than _____	Between _____ and _____	Less than _____
Step 2	**What is my level of asthma control?**	If **all** checks are in the green column, your asthma is under control (Green Zone).	If you have any checks in the yellow column and zero checks in the red column, your asthma is uncontrolled and in the Yellow Zone.	If you have any checks in the red column, your asthma is *dangerously uncontrolled* (Red Alert Zone).
Step 3	**Steps to Take**	**Follow your current plan.**	**Make an appointment to see your doctor** ☐ Follow the steps below: • Continue this treatment for ____ days. • If asthma is not improving within ____ days see your doctor.	**Seek Immediate Medical Assistance** • Go to your nearest emergency room • Call 911 • Take your reliever inhaler as necessary. May take every 10 - 20 minutes on way to the hospital or as recommended by your doctor.


3:30 PM
UNCONTROLLED
Find out what you can do
Your Zone
Environment
Trends
Journal
Account Settings
3:30 PM
Action Plan
CONTROLLED
UNCONTROLLED
DANGEROUSLY UNCONTROLLED
What to Look For
Physical Activity
Difficulty talking
Reliever Use
Reliever doesn't work on relief 2 hours
Daytime Symptoms
All the time
Nighttime Symptoms
Every night
Peak Flow Rates
< 280 L/min
Steps to Take
Take your reliever inhaler as necessary
3:30 PM
Journal
Save
Awake
Asleep
What were your symptoms?
Cough
Shortness of breath
Tight chest
Wheezing
1
2
3
4

Goal

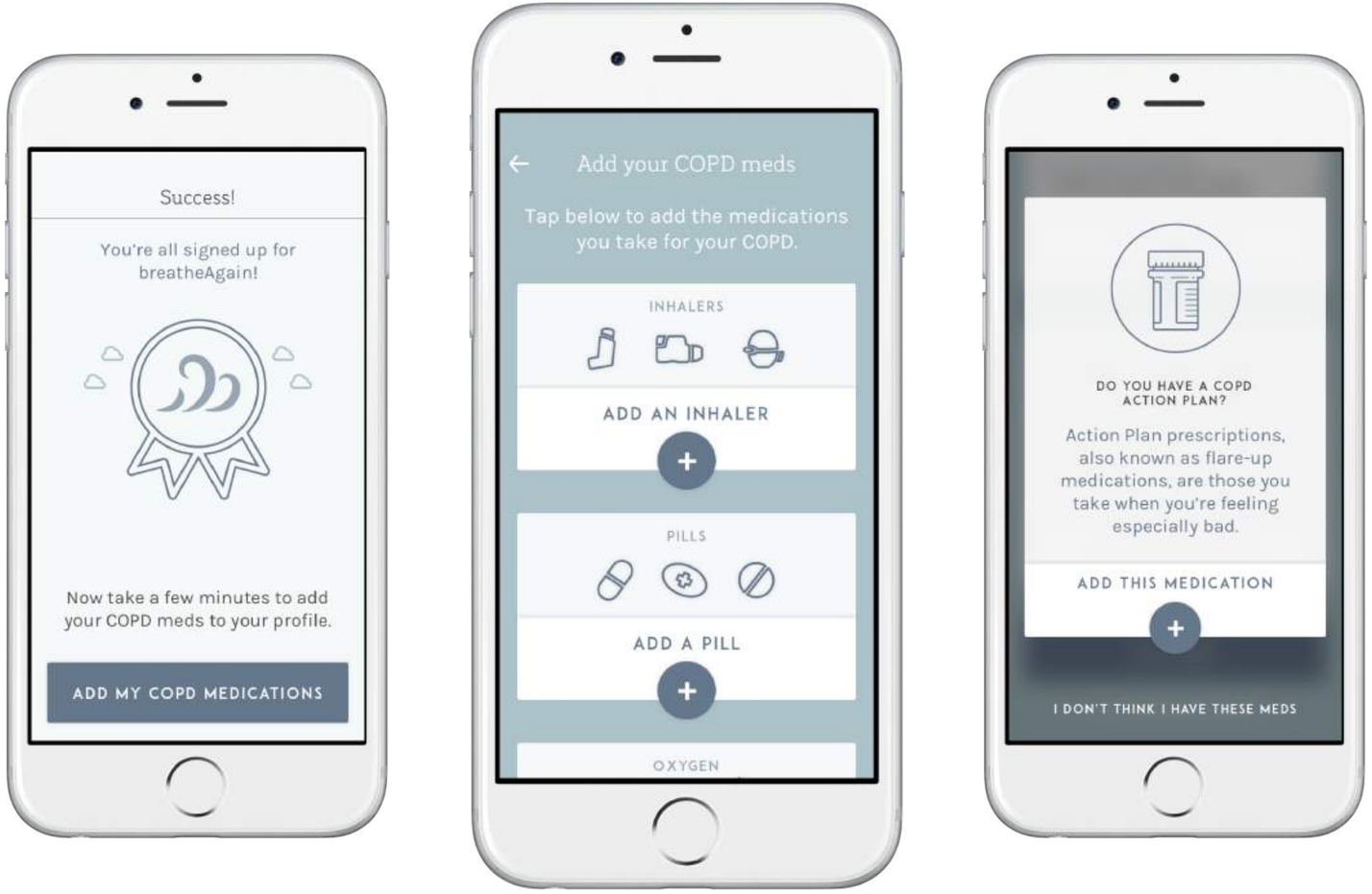
Build capacity for patient to take appropriate action when they feel unwell

How?

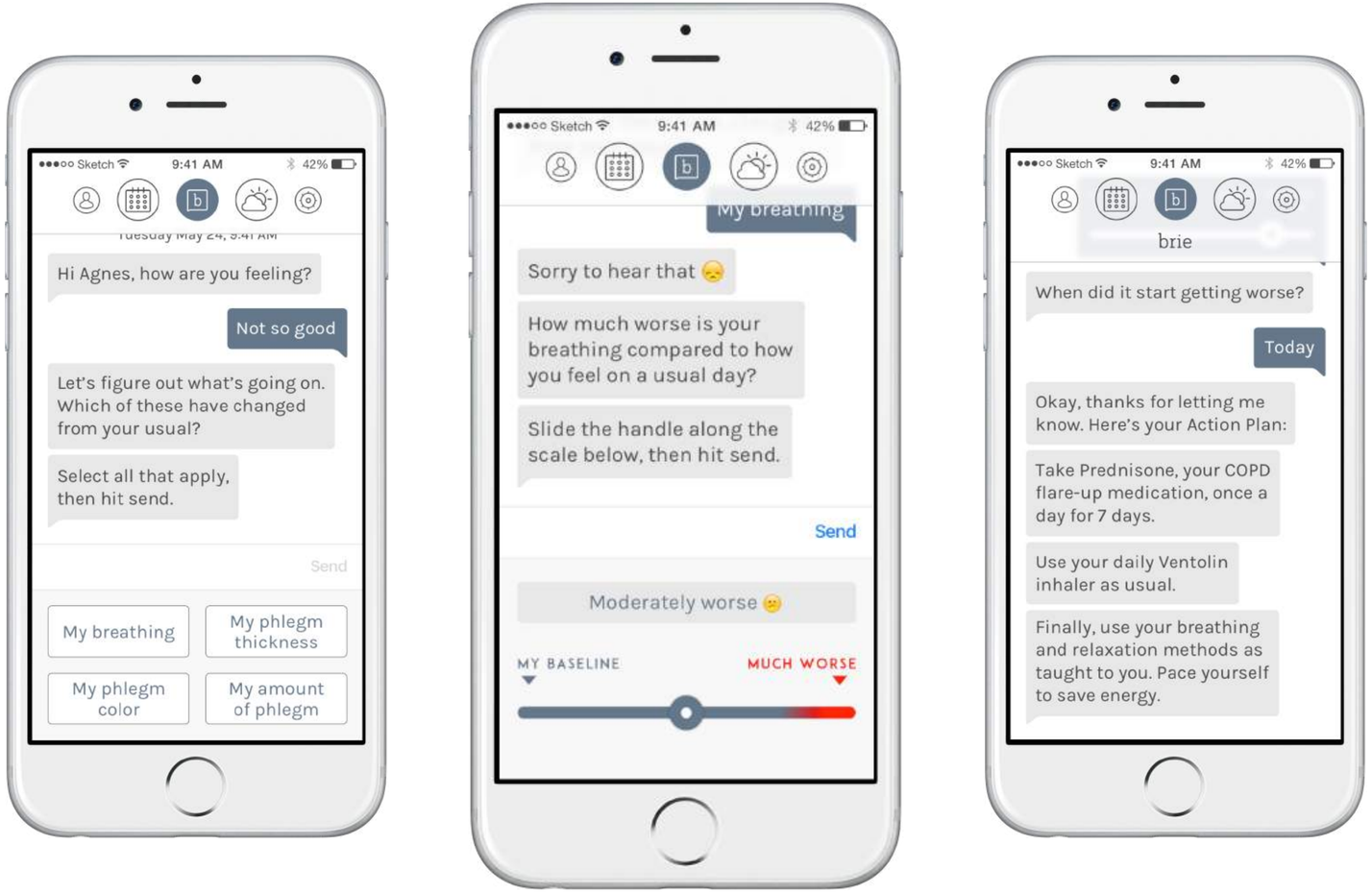
We use a chatbot to:

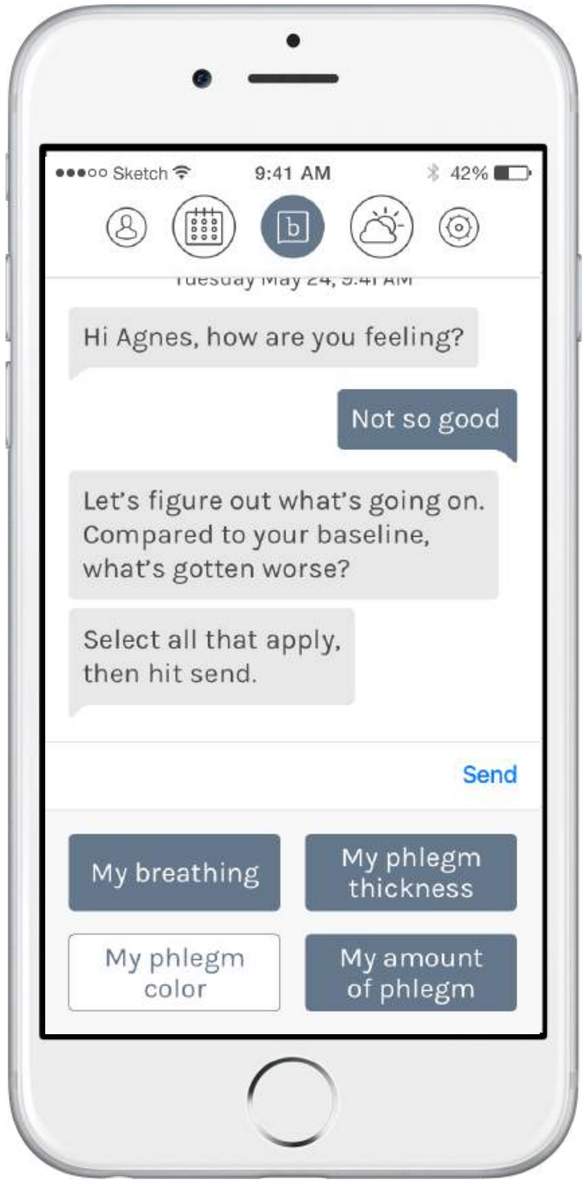
- Teach patients to recognize their flare-ups by identifying their early symptoms
- Self-manage their flare-ups through use of their existing action plan, developed with their healthcare provider

1 Step 1: Onboard & capture medications / action plan

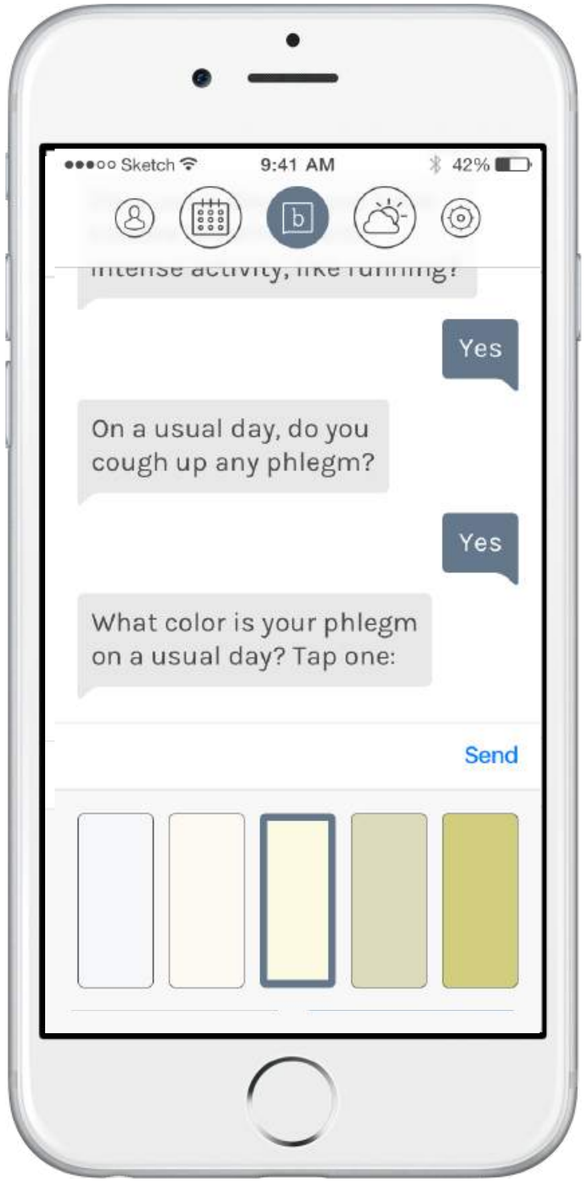


2 Step 2: Report symptoms & detect exacerbation

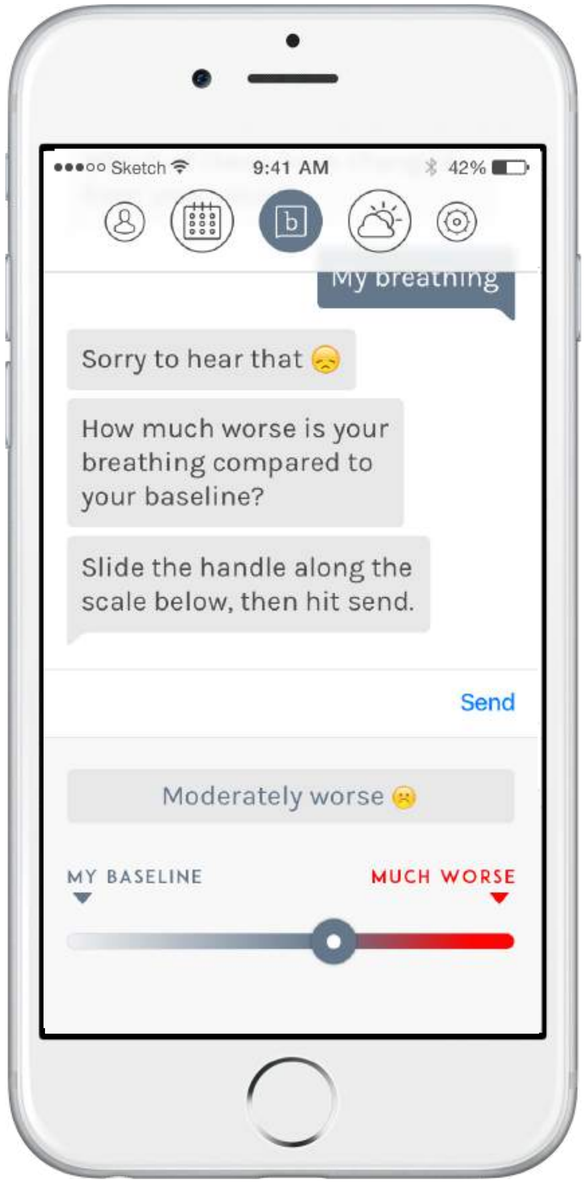




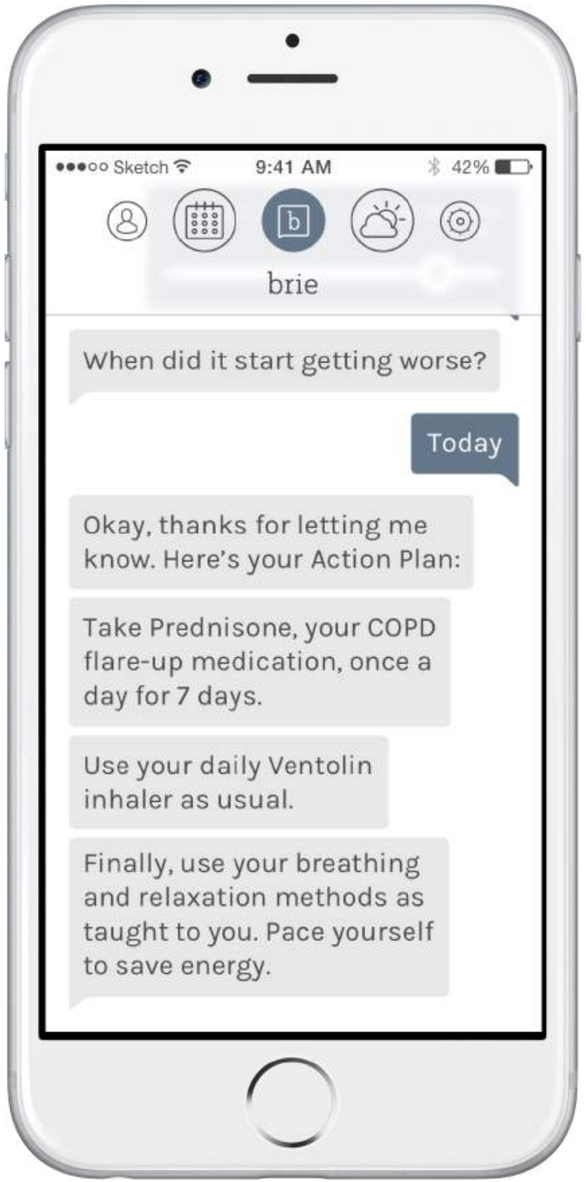
Multiple selections



Colours

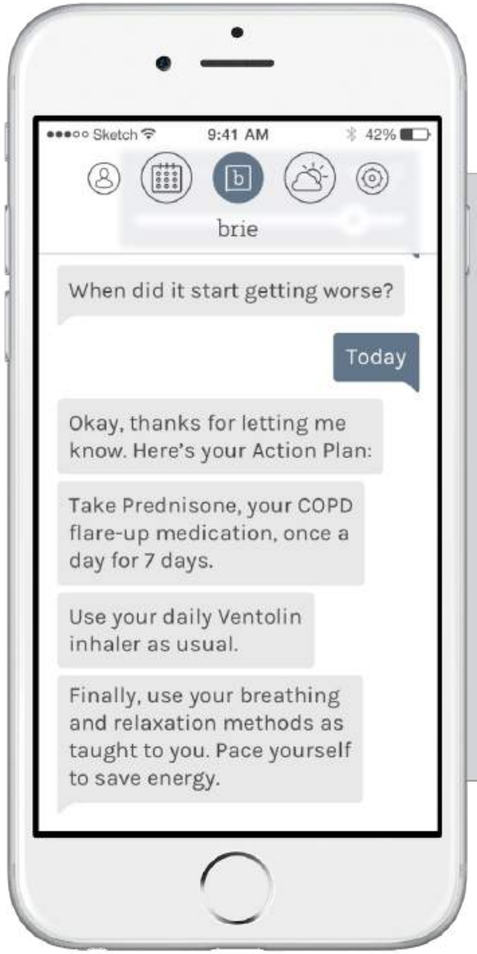


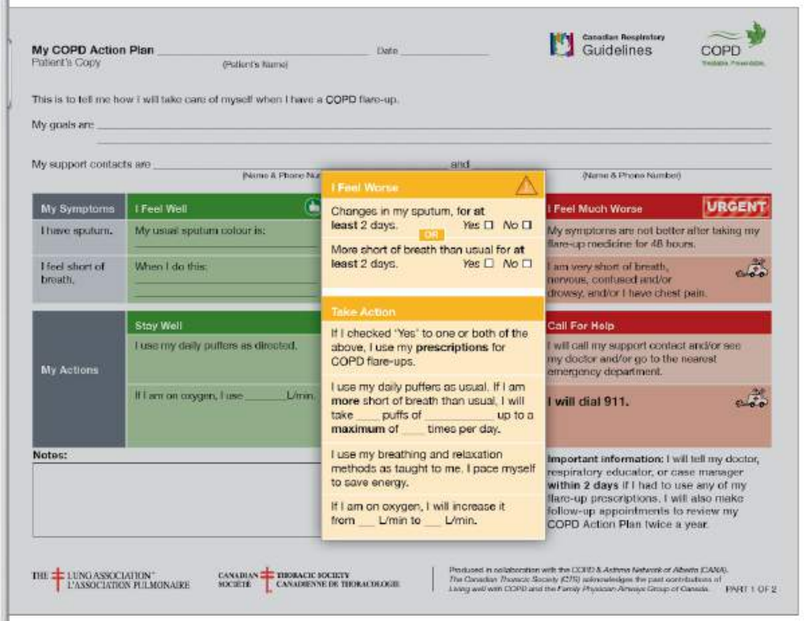
Severity



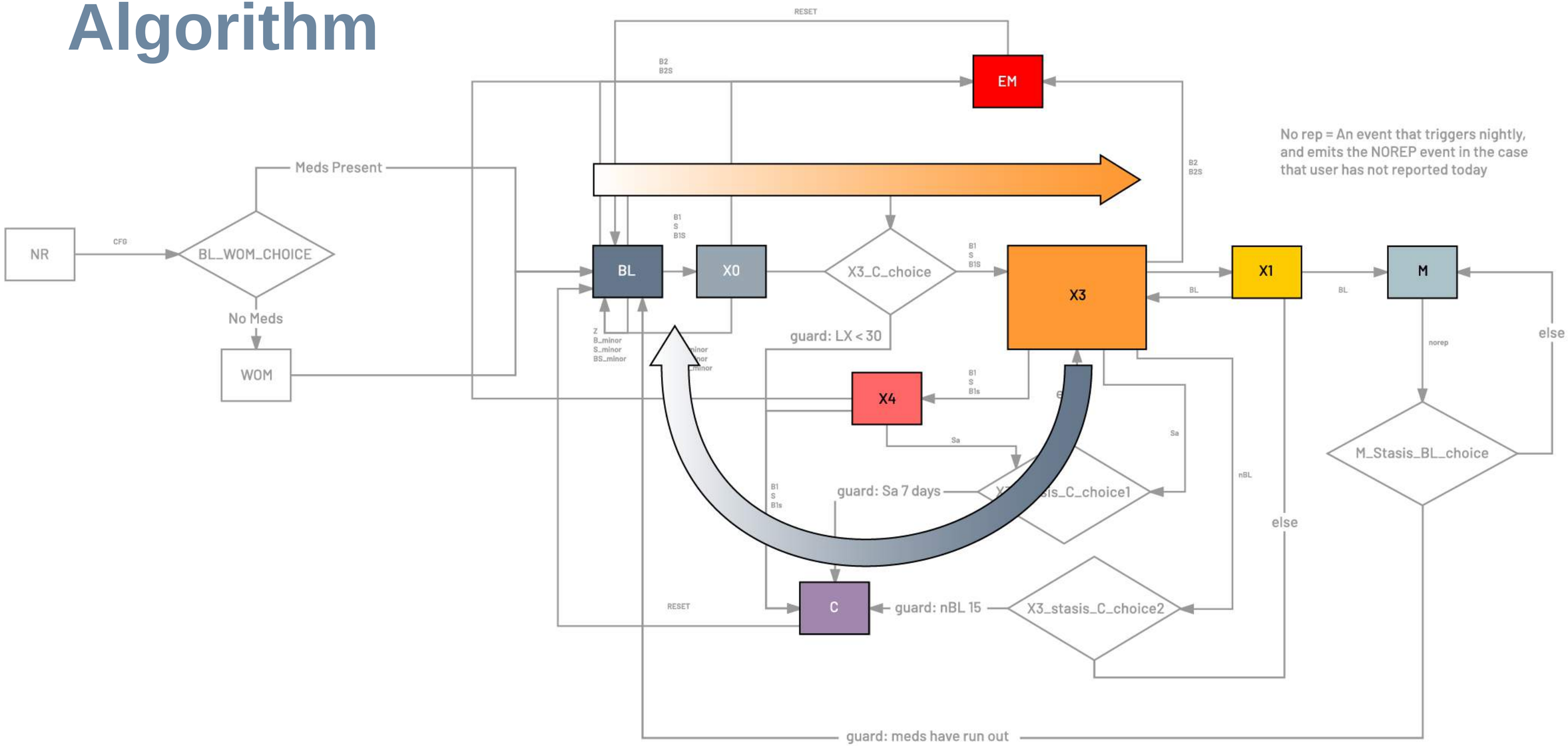
Action Plan

3 Step 3: Deliver personalized CTS action plan




My COPD Action Plan
Patient's Copy
(Patient's Name)
Date
Canadian Respiratory Guidelines
COPD
This is to tell me how I will take care of myself when I have a COPD flare-up.
My goals are
My support contacts are
and
(Name & Phone Number)
(Name & Phone Number)
My Symptoms
I Feel Well
I have sputum.
My usual sputum colour is:
I feel short of breath.
When I do this:
My Actions
Stay Well
I use my daily puffers as directed.
If I am on oxygen, I use L/min.
I Feel Worse
Changes in my sputum, for at least 2 days. Yes ☐ No ☐
OR
More short of breath than usual for at least 2 days. Yes ☐ No ☐
Take Action
If I checked 'Yes' to one or both of the above, I use my prescriptions for COPD flare-ups.
I use my daily puffers as usual. If I am more short of breath than usual, I will take ____ puffs of _____ up to a maximum of ____ times per day.
I use my breathing and relaxation methods as taught to me. I pace myself to save energy.
If I am on oxygen, I will increase it from ___ L/min to ___ L/min.
I Feel Much Worse
URGENT
My symptoms are not better after taking my flare-up medicine for 48 hours.
I am very short of breath, nervous, confused and/or drowsy, and/or I have chest pain.
Call For Help
I will call my support contact and/or see my doctor and/or go to the nearest emergency department.
I will dial 911.
Notes:
Important information: I will tell my doctor, respiratory educator, or case manager within 2 days if I had to use any of my flare-up prescriptions. I will also make follow-up appointments to review my COPD Action Plan twice a year.
THE LUNG ASSOCIATION / L'ASSOCIATION PULMONAIRE
CANADIAN THORACIC SOCIETY / SOCIÉTÉ CANADIENNE DE THORACOLOGIE
Produced in collaboration with the COPD & Asthma Network of Alberta (CANA).
The Canadian Thoracic Society (CTS) acknowledges the past contributions of Living well with COPD and the Family Physician Airways Group of Canada.
PART 1 OF 2

Algorithm


RESET
B2
B2S
EM
No rep = An event that triggers nightly, and emits the NOREP event in the case that user has not reported today
Meds Present
NR
CFG
BL_WOM_CHOICE
No Meds
WOM
B1
S
B1S
BL
X0
X3_C_choice
B1
S
B1S
X3
X1
M
BL
BL
B2
B2S
Z
B_minor
S_minor
BS_minor
guard: LX < 30
norep
else
X4
B1
S
B1s
Sa
Sa
M_Stasis_BL_choice
B1
S
B1s
guard: Sa 7 days
nBL
else
RESET
C
guard: nBL 15
X3_stasis_C_choice2
guard: meds have run out

Why do good products FAIL?

PRODUCT

HEALTHcare HUMANFACTORS

PRODUCT

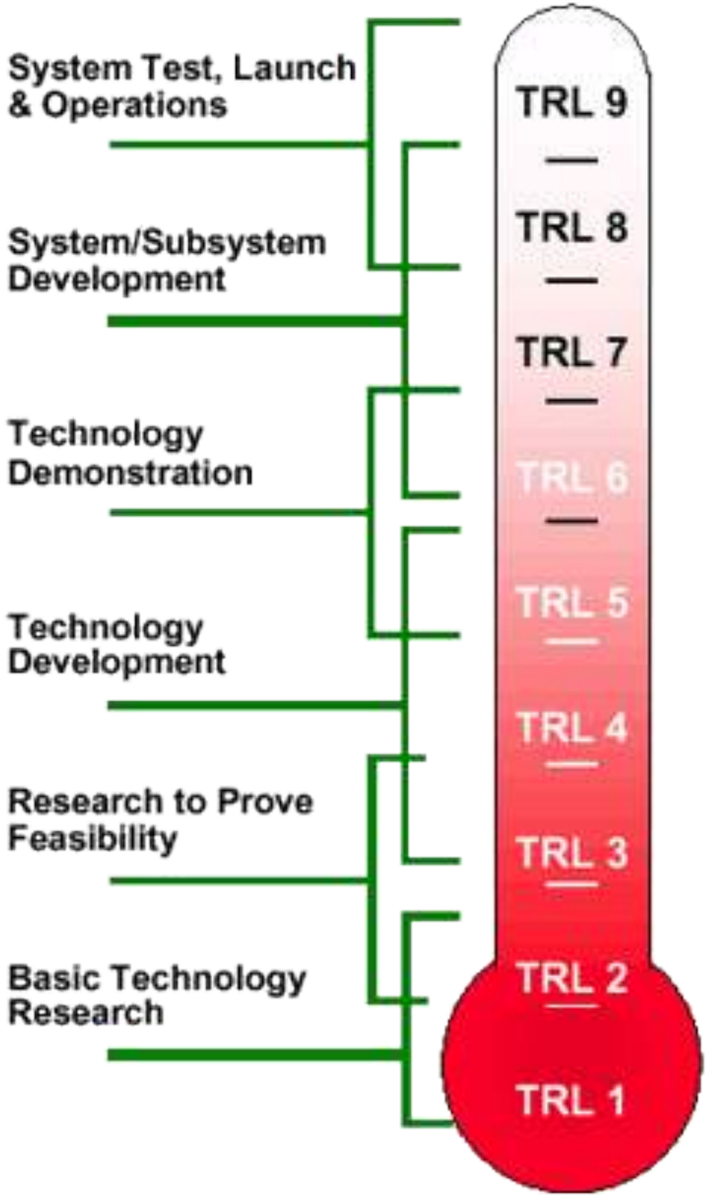
HEALTHcare HumanFACTORS

PRODUCT

HEALTHcare HUMANFACTORS

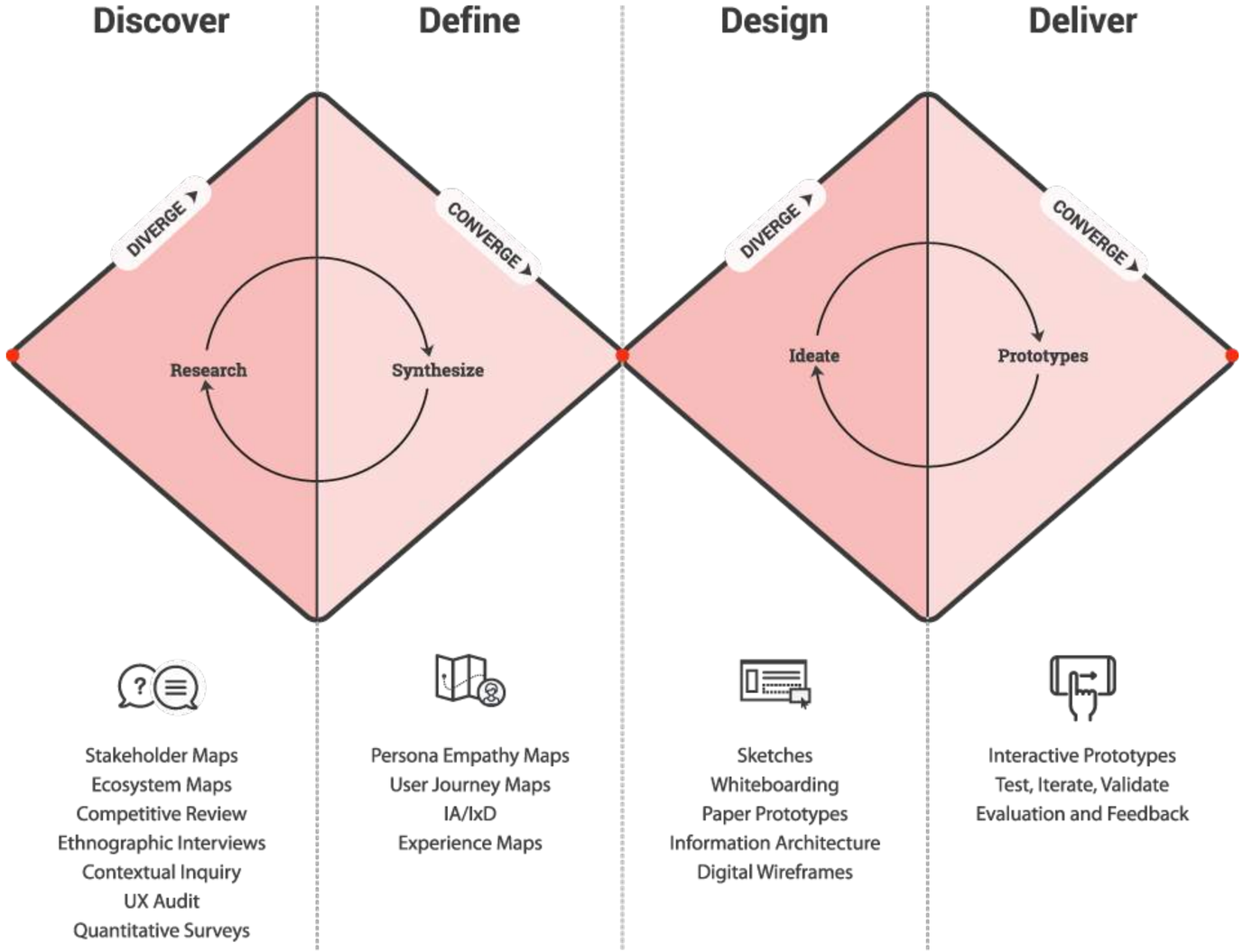
PRODUCT

HEALTHcare HUMANFACTORS


System Test, Launch & Operations
System/Subsystem Development
Technology Demonstration
Technology Development
Research to Prove Feasibility
Basic Technology Research
TRL 9
TRL 8
TRL 7
TRL 6
TRL 5
TRL 4
TRL 3
TRL 2
TRL 1

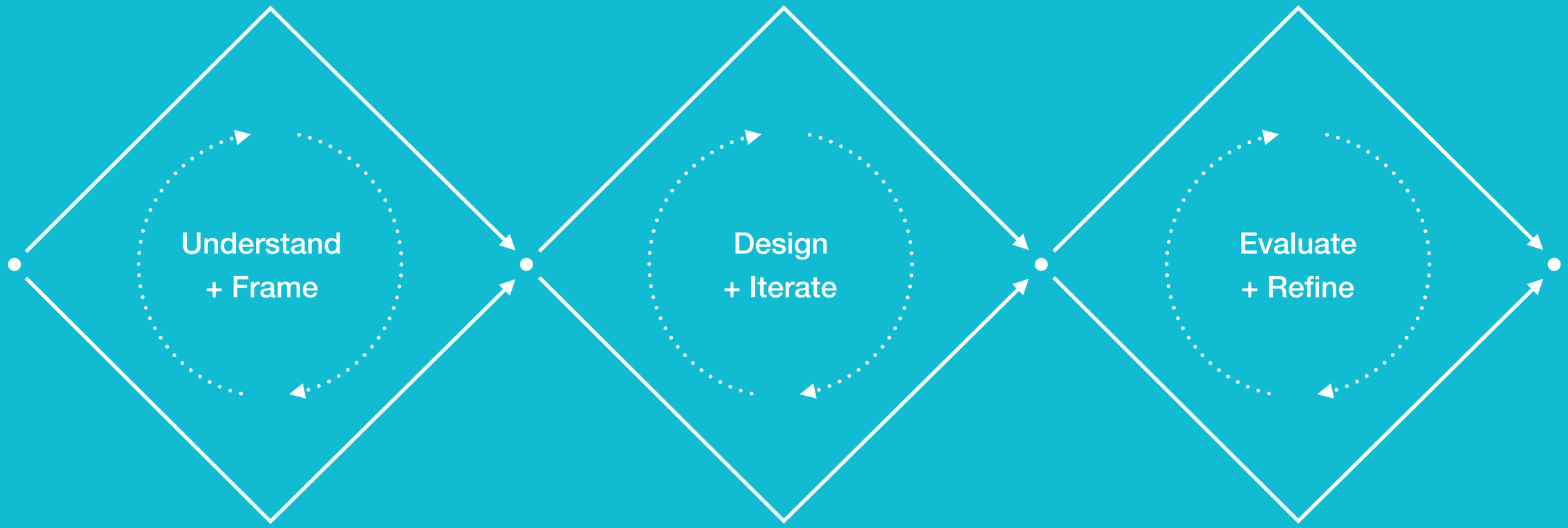

POLITICAL
ORGANIZATIONAL
TEAM
PSYCHOLOGICAL
PHYSICAL

Double Diamond Design Model

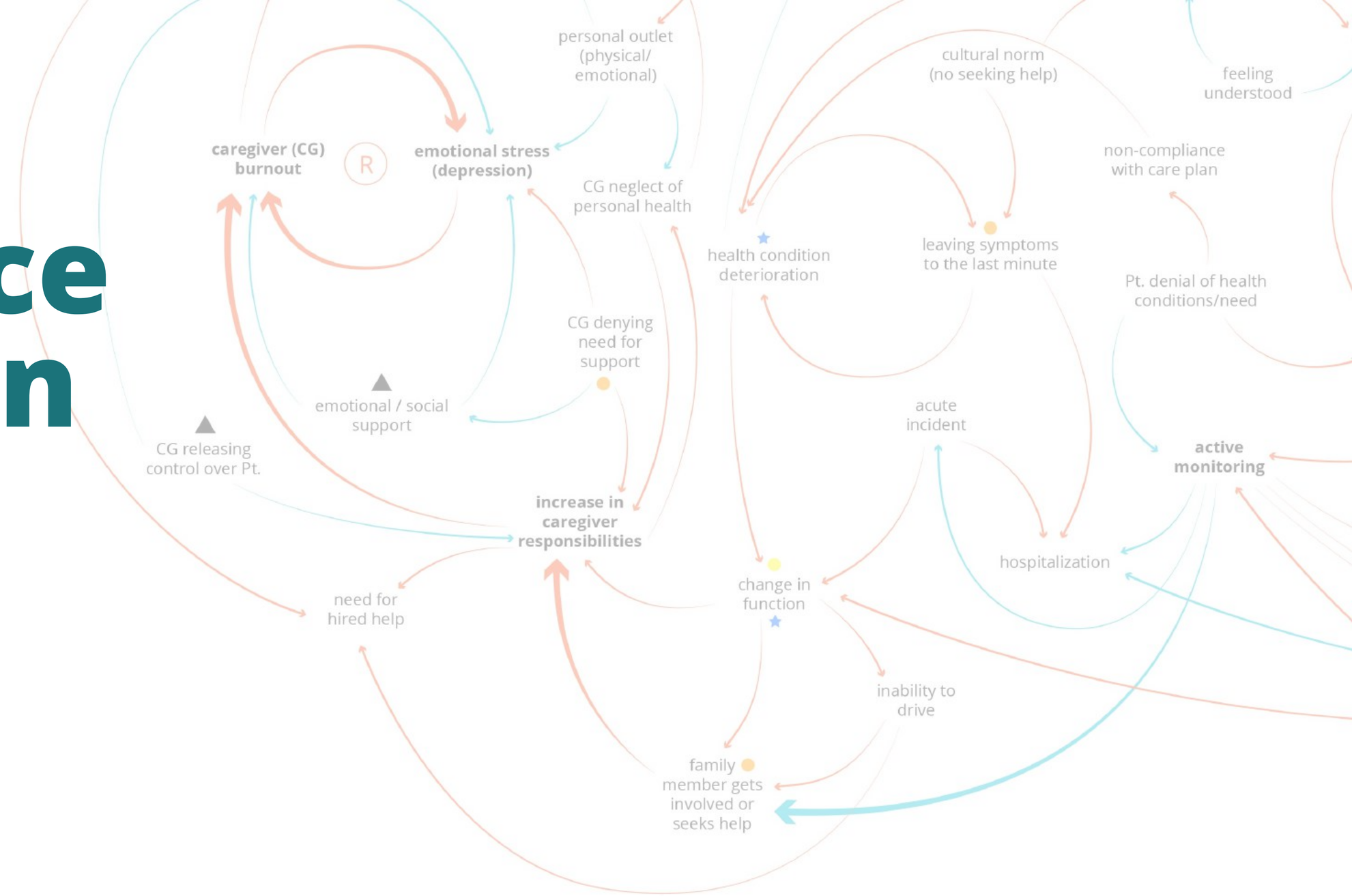


Our Design Process

Design the Right Thing → Design the Thing Right → Implement And Evolve



Service Design



Product

Service


HYDRO

Product

Service

DOLLAR SHAVE CLUB

BLADES BUNDLES

THE HUMBLE TWIN

EVERY MONTH $1 +2.00 S&H

SELECT

A great basic shaver, for guys who dig simplicity and precision.

THE 4X

EVERY MONTH $6 SHIPS FREE

SELECT

Member favorite - a gentle shave in a single stroke.

THE EXECUTIVE

EVERY MONTH $9 SHIPS FREE

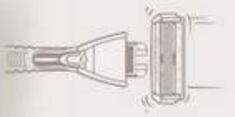
SELECT

The final frontier - it's like a personal assistant for your face.

$1/MO + $2 S&H **$6**/MO SHIPS FREE **$9**/MO SHIPS FREE

CHOOSE YOUR BLADE
We have 3 high quality options for you.

ADJUST AS YOU GO
Blades and frequency — you're in control.



TREAT YOURSELF
Pop on a fresh new blade when you want.

EASY CANCEL
Seriously, we should make it harder.

THE SMARTER WAY, DELIVERED.

You'll never look back.

PRODUCT

SERVICE

PRODUCT

SERVICE


CAR
2GO

PRODUCT

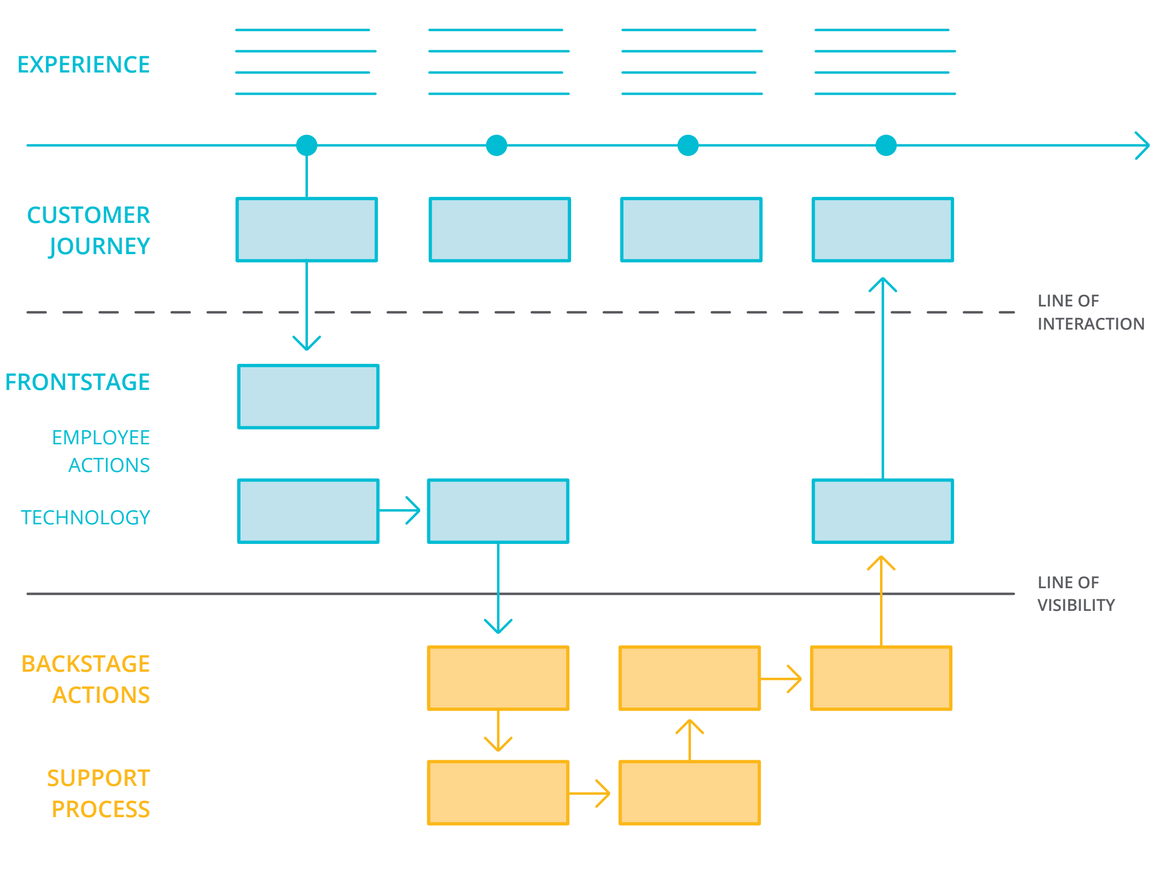
tangible +
consumable

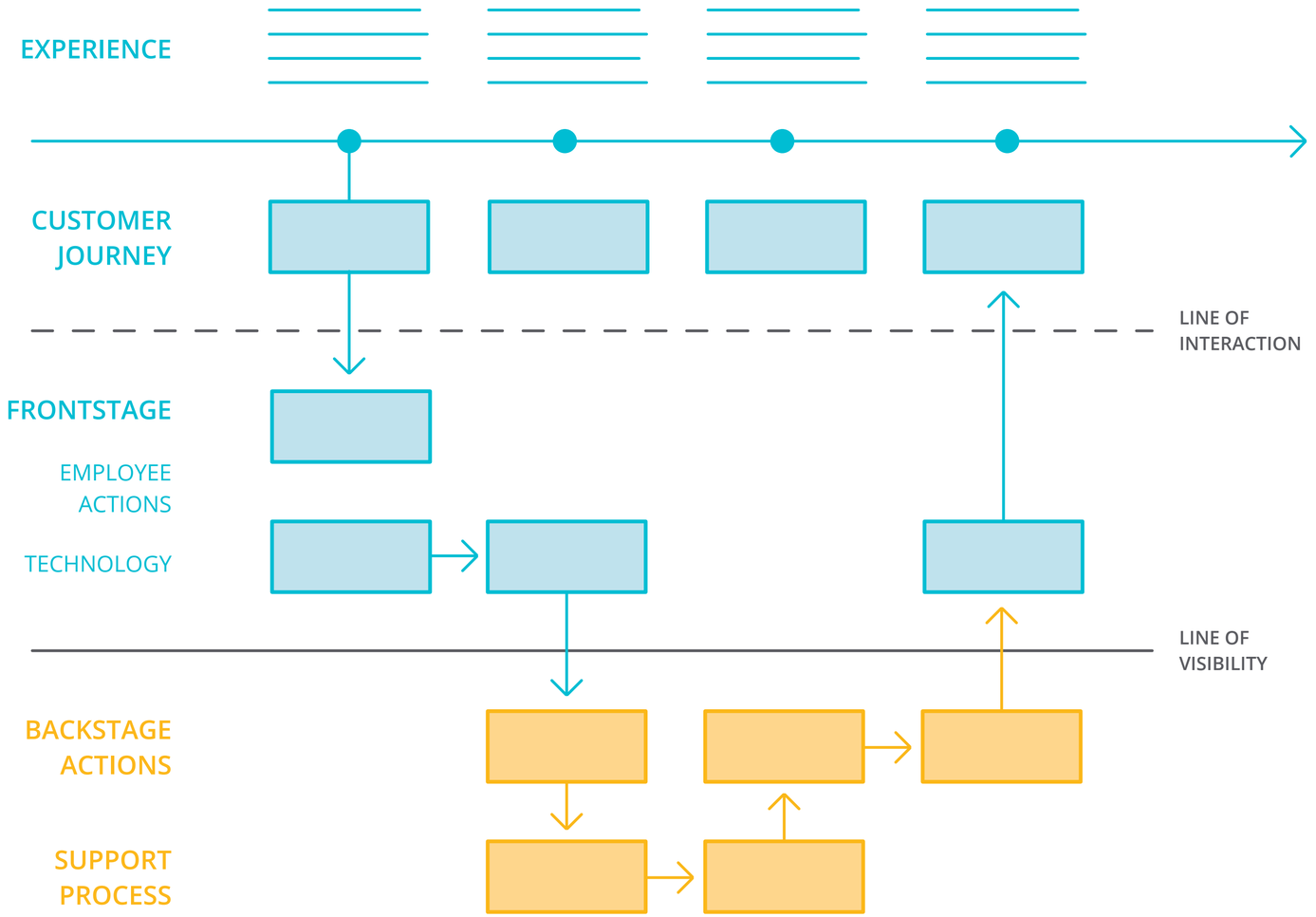
SERVICE

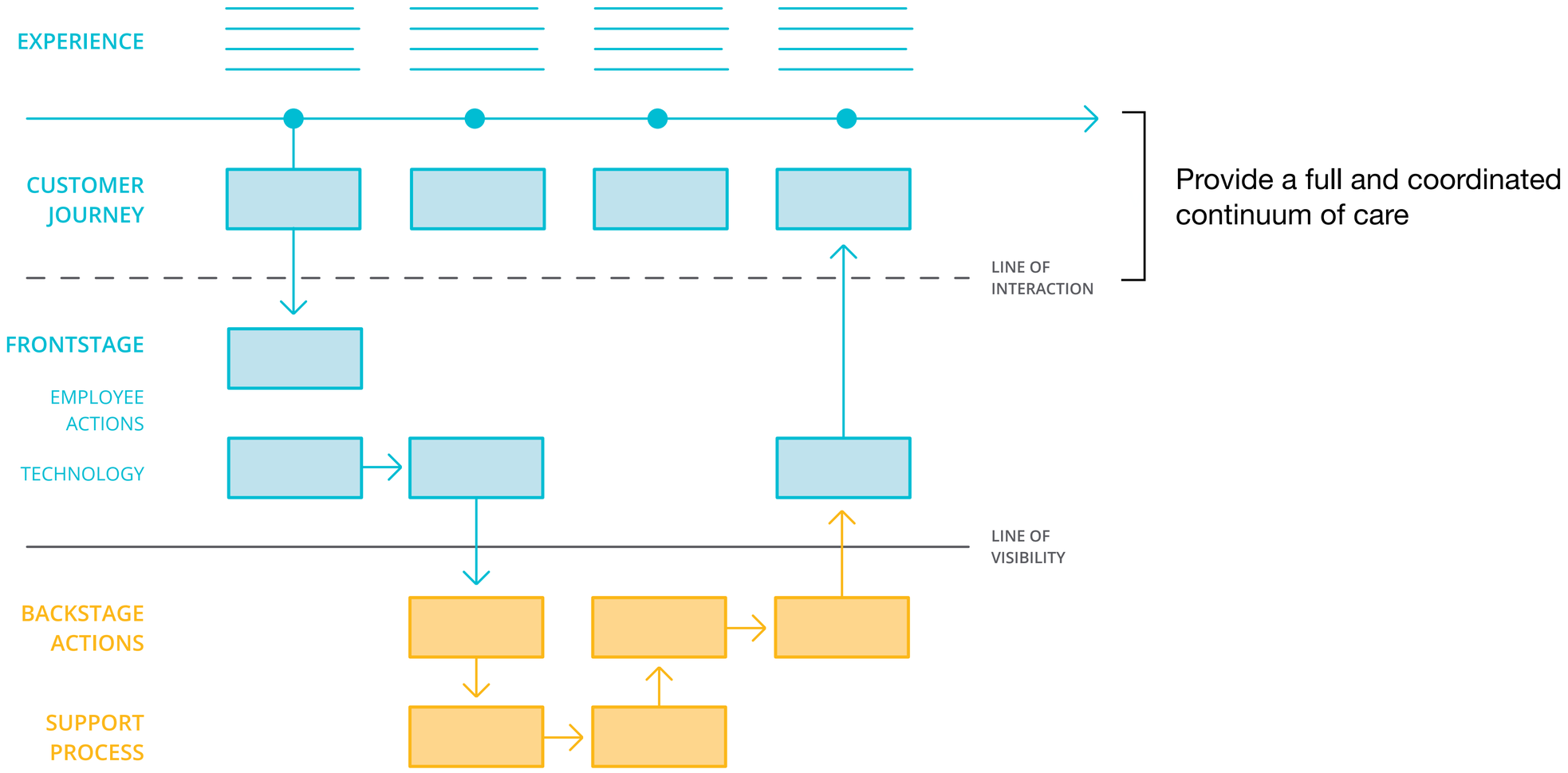
intangible +
lasting +
non-ownership

What is Service Design?

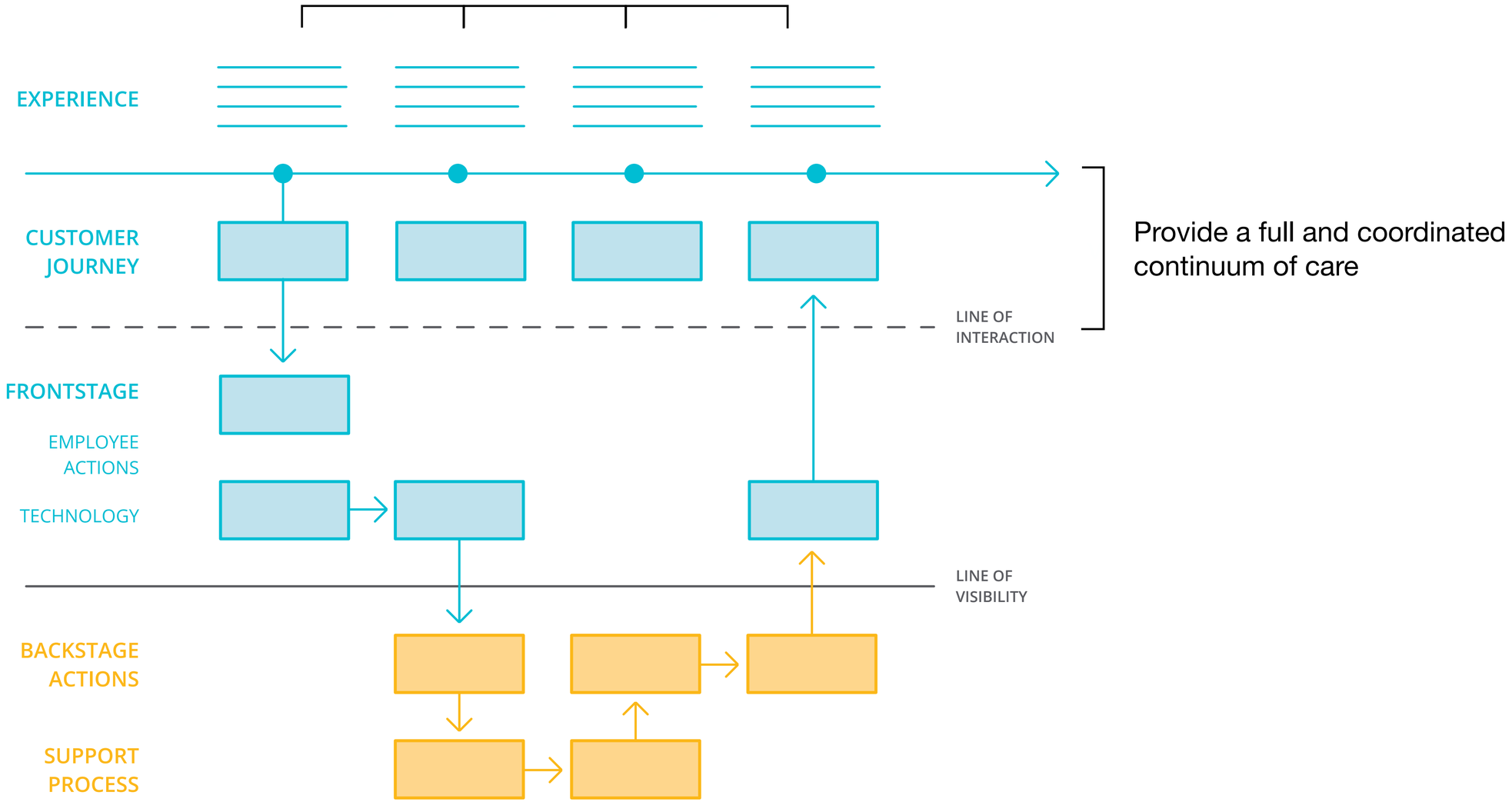
The designing, aligning, and optimizing of an organization's operations to improve the experiences of the people for whom an organization serves.



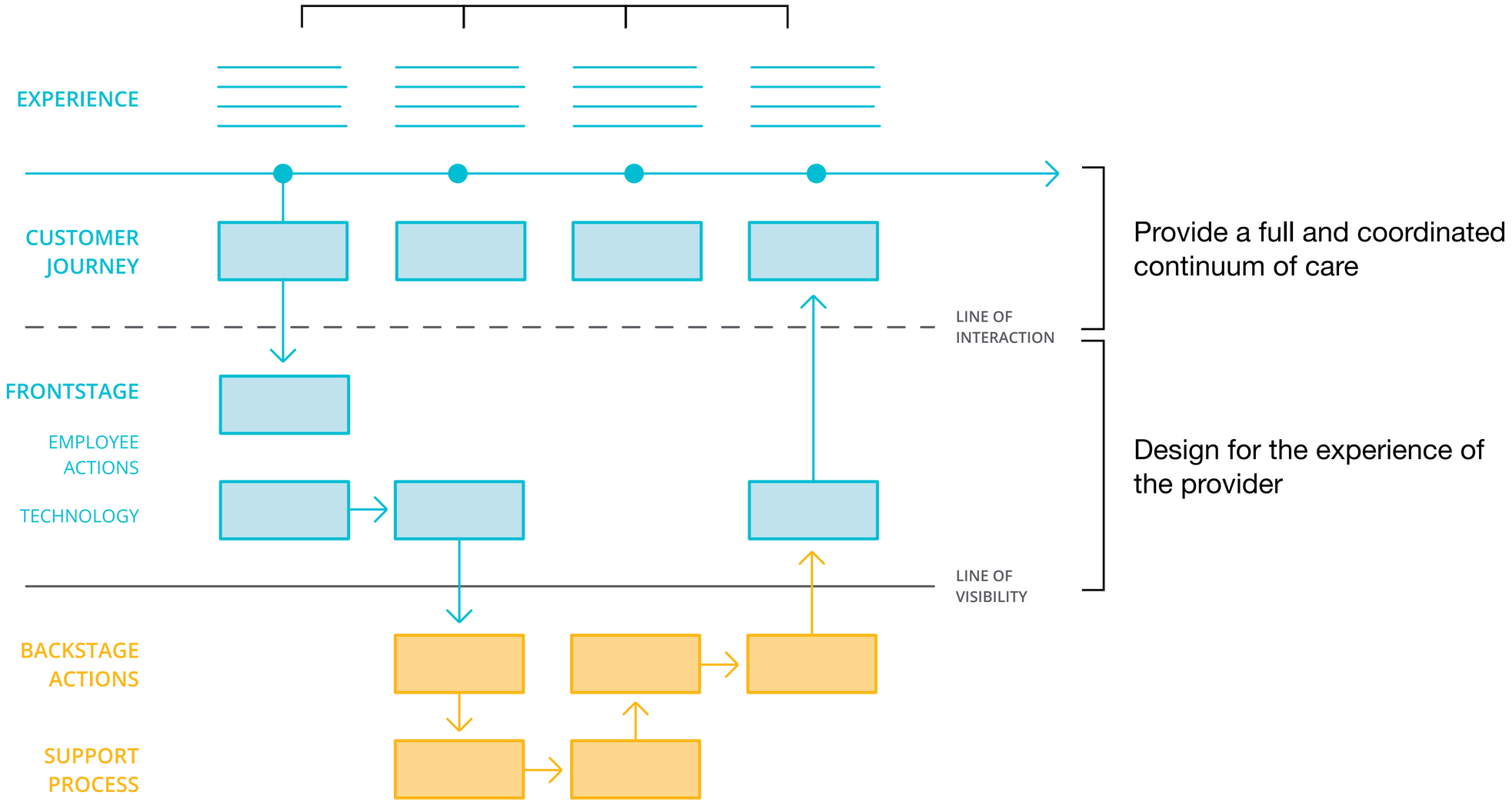

EXPERIENCE
CUSTOMER JOURNEY
LINE OF INTERACTION
FRONTSTAGE
EMPLOYEE ACTIONS
TECHNOLOGY
LINE OF VISIBILITY
BACKSTAGE ACTIONS
SUPPORT PROCESS


EXPERIENCE
CUSTOMER JOURNEY
FRONTSTAGE
EMPLOYEE ACTIONS
TECHNOLOGY
BACKSTAGE ACTIONS
SUPPORT PROCESS
LINE OF INTERACTION
LINE OF VISIBILITY
Provide a full and coordinated continuum of care

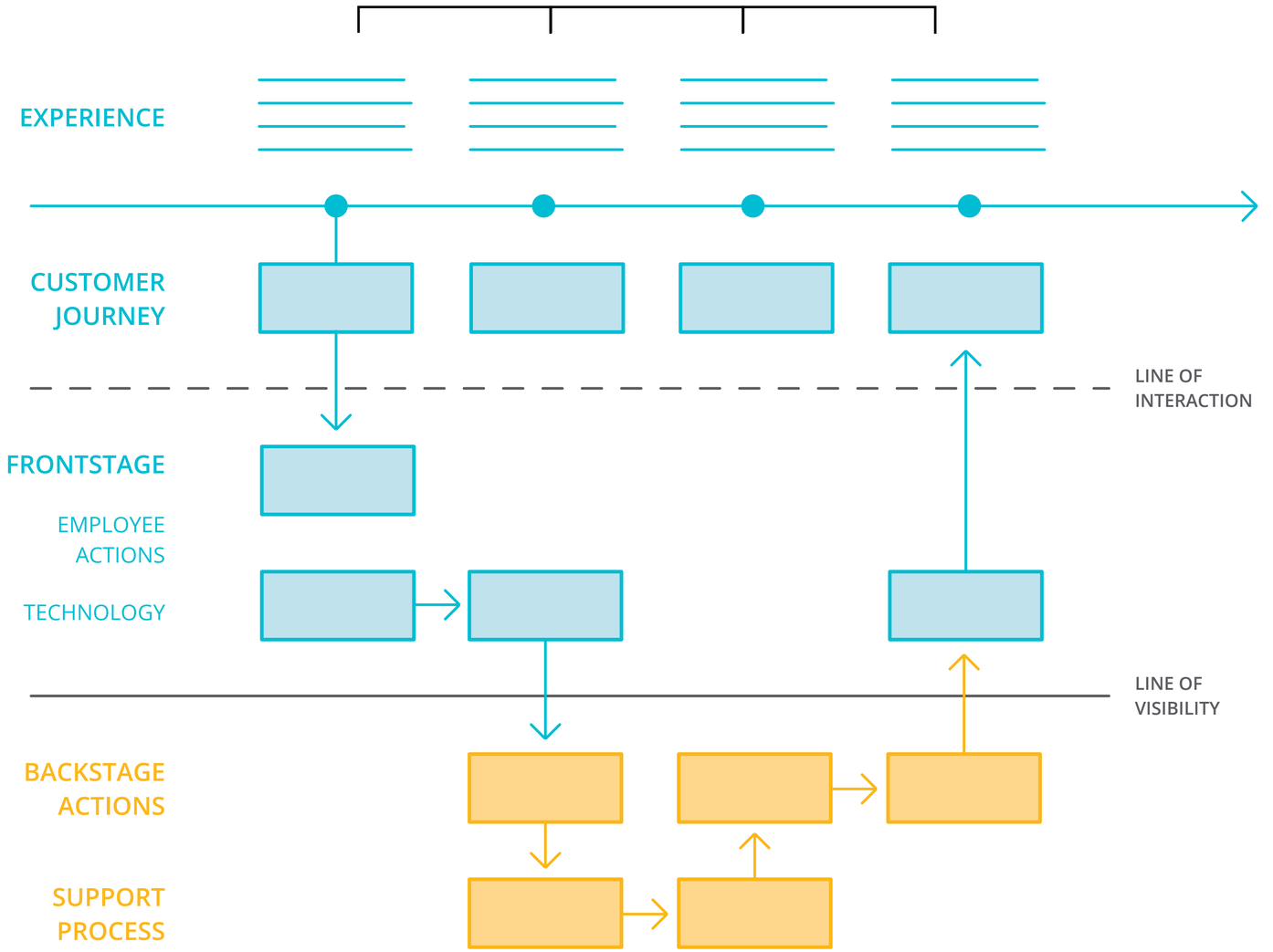
Ensure patients experience seamless transitions



Ensure patients experience seamless transitions



Ensure patients experience seamless transitions

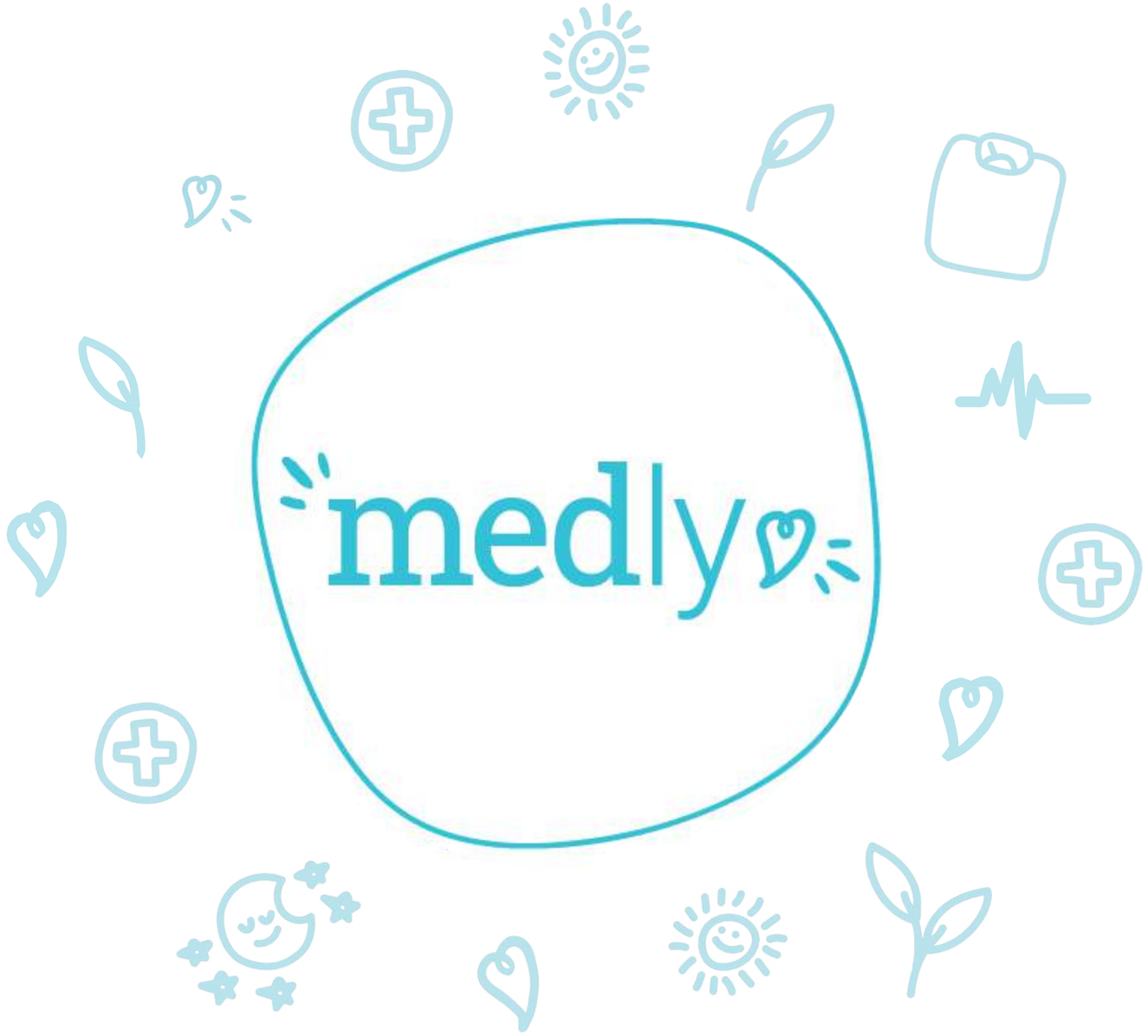


Provide a full and coordinated continuum of care

Design for the experience of the provider

Inform the provision of digital choices for patients to access care and health information and the use of digital tools to communicate and share information among providers

Case Study


medly

50% of HF Patients are Readmitted in 6 Months

How might we modify the existing HF service to:

- reduce readmission rates
- improve patient experience
- work with existing workflows
- reduce costs (increase patient:nurse)

Ethnography


Co-Design

Co-Design

Service Blueprinting

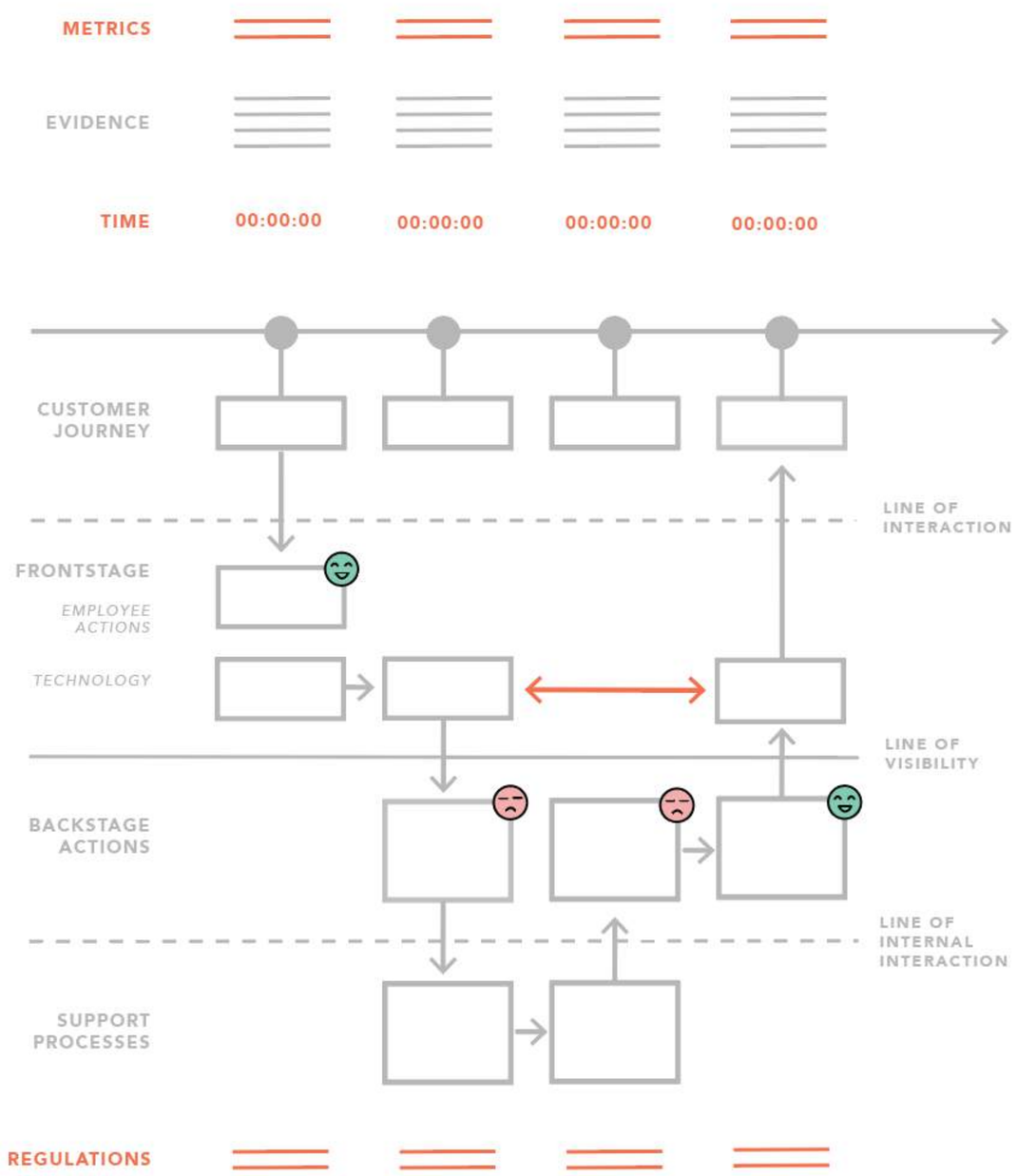
Service Blueprinting

1. Common understanding of the patient journey and the service that supports it
2. Find gaps in understanding
3. Identify pain-points
4. Launch pad for ideation

Service Blueprinting Workshop

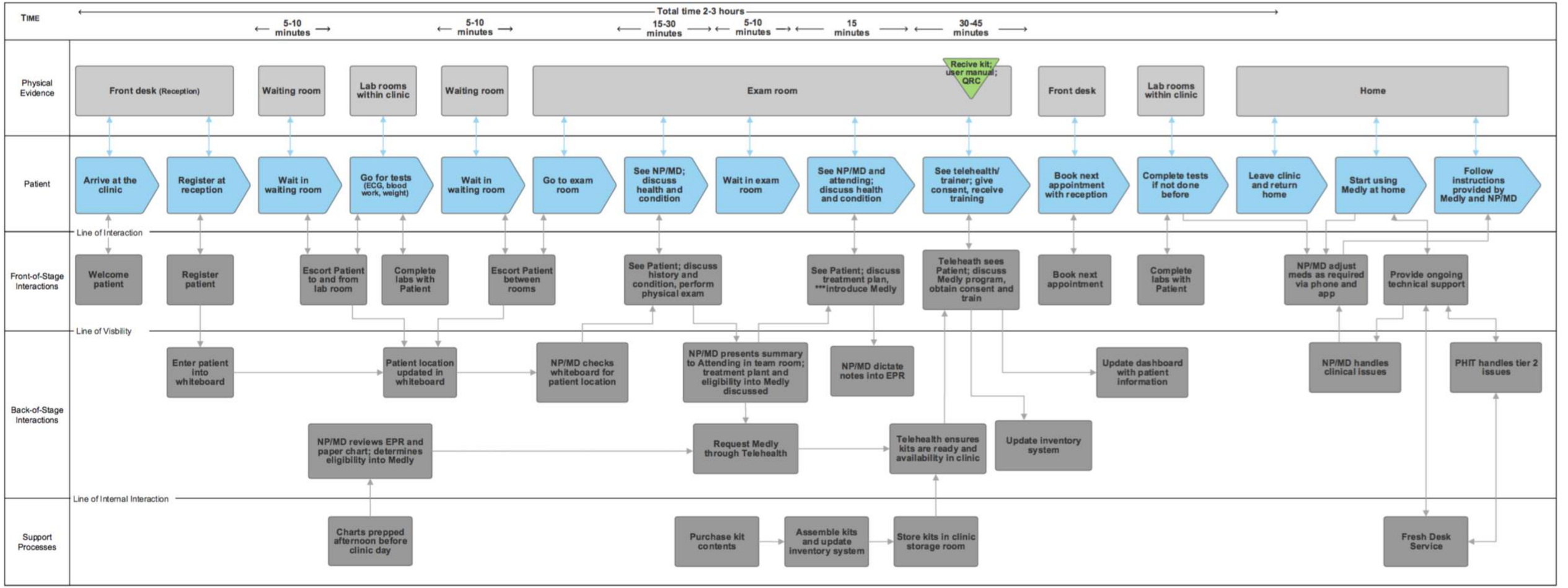
Pair-up: blue-print the first 3 phases of going to the ED / family doc. Focus on patient journey, front-stage, & technology.

SERVICE BLUEPRINT *Additional Elements*



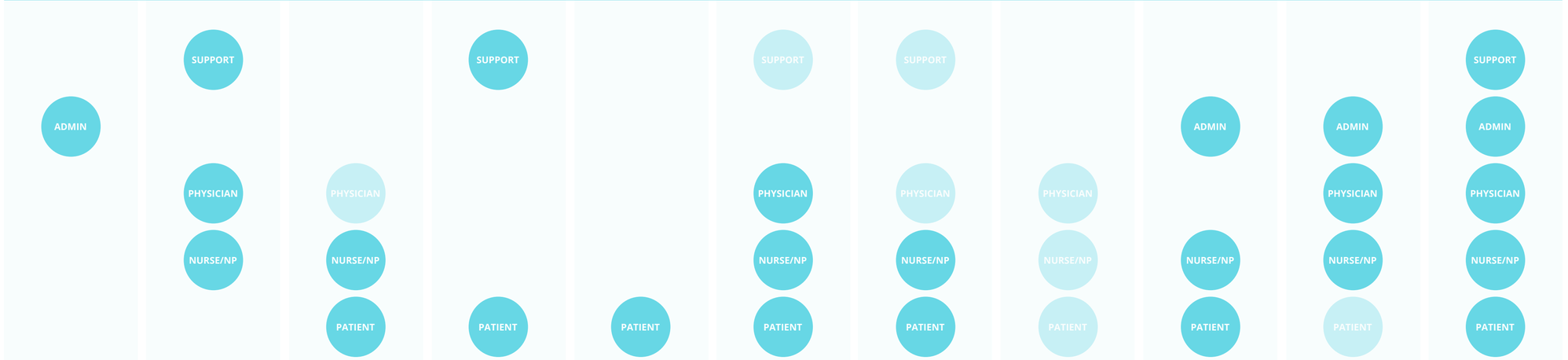

Vendor Journey
What the user does, says, inter
Front Sta Actions
What the teams do, say, intend while with the vendor
Line of Visibility
Back Stage Actions
What the teams do, says, intend at other times
Line of Internal Interaction
Support Process
Networks, structures, tech that support the service
Companies want evidence of value
Running out of Time
Map Service blueprint
Enable pivots
TRIAGE
Business Model Canvas
Customer profile
JTBD
Feedback on HTF process

Workshop



Synthesizing

Service Overview



SYSTEM SETUP

Purchase
Purchase a licence online by entering a licencee name and billing address and shipping address.

Chose the e-mail of the people who will have admin priveledges (don't worry, you can chose more later if you want).

Welcome E-mail
At the end of the flow you receive a welcome email with an attached receipt PDF.

Registration
Follow the link from your welcome e-mail to register the first user account on the dashboard system.

Enter the user information for this account in the portal.

Create New Clinic
Name the clinic and add in required information about location and contact.

Integrations
Licencees may want integrations with systems like LDAP. Any UI related to OLIS, EMR, etc. could fit here if necessary.

Clinicians & Admins (Batch)
Generate invites for any clinicians that need to use the system and chose who should share in the admin priveleges.

Clinicains can be added to care teams in order to organize the clinic if the size of the team is large enough.

Patients (Batch)
If a large batch of patients need to be added to the system because an existing clinic is putting many patients on Medly they can be added now.

CLINICIAN SETUP

Invitation Email
The clinician receives an invitation e-mail from the admin that added them to the team.

Registration
Following the link from their email the clinician enteres their information to set up their account on the portal.

This process may be simplified if the licencee has an account integration system like LDAP.

Identity
Confirm your identity and set a password if your licence does not have password integration.

Clinics
View your clinics or add yourself to the clinics on the license that you are a part of.

Clinic performance should be visible or have empty states.

Care Model (Onboarding)
What are the bands of patient management that exist in the app?

What actions to they create for patients, what leads to alerts and how are the thresholds able to be customized?

Care Teams
Who is on your care team or empty state prompting you to create a team of the people you work with.

Patients
What patients do you already have. Or empty state to add or take on existing patients if needed.

High risk patients can be flagged to be easily browsable by clinicians or to alert at more sensitive levels.

App Setup
Scan the screen code to visit the App Store or Google Play Store and download the wrapped app for your phone.

NEW PATIENT

Clinic Visit
Patient comes in for an appointment usualy involving tests and discussion about the arc of their illness.

Identification & Recommendation
The patient seems to be a good fit for Medly because they are at risk of an accute event, are remote, have a large bandwidth of data to share with their clinician, would benefit from self-monitoring, or all of the above.

Introducing Medly
The clinician informs the patient that there is a system in use that can help with managing their condition in general or a fixed time period such as titration.

Notifies NP
The clinician asks the NP to onboard a new patient and discusses the safe thresholds based on their situation.

Informed Consent
The NP fills the patient in on what they will be using Medly for and answers any questions. If the patient provides consent they move forward. Patient questions and reasons for refusing Medly could be valuable to the Medly Team.

Creates New Patient
The NP fills out the 'New Patient' workflow in Dashboard with the patient info and ranges. The form can be printed or pushed to EMR if documentation is needed for the patient's file.

Provides Onboarding Matl.
The NP provides the print materials and any hardware kit that helps the patient understand how to get set up.

FIRST RUN

In the Clinic or at Home
The Patient might download the app while with a nurse or disease educator if they are curious or unconfident with setting up.

Other patients may opt to go home because they are confident or because they (or their Clinicians) are pressed for time and space.

First Run Flow
The first time the user opens the app they will read through the information about the value prop, integrations and taking good readings.

They may even want to enter their first readings in the clinic. The nurse should be able to provide them with their first measures from in the clinic to test manual entry. Maybe these are written down on the print materials for them if we want everyone to set up in clinic.

sets up the equipment and goes through a first run on the device. This usage should accomodate (priming) in case they are using a clinic scale.

PRIMING PERIOD

First Measures
The patient takes their first measures and needs to be informed if they are in a priming period about what that means and how long it will last.

In Range
In range values are fine, but we might want to tell users that their values look good and priming will end soon.

Out of Range
Out of range values need the caviate that they might be caused by changes in scales or by changes in the user's health. Priming will end when values converge.

Alerts
What kind of notifications need to be created during a priming period? At the end of the priming period is there a notification? Is there a list of priming patients? How long does priming last? Or is it about convergence? What if the patient is unstable? Is it safe?

Baseline Formed
At some point the patient's readings will form some kind of baleline with a range of deviation. The system will indicate that the priming period is complete and the patient will use Medly as normal from now on.

Return to Priming
If a patient changes scales, goes on a trip or is admitted they might have to prime again. What could this look like?

STABILIZATION

Receive Tasks
Every morning the unstable patient receives tasks. Perhaps they are being titrated onto new meds like Lasix or Insulin. At this time the relationship between the meds and their biometrics is not clear.

Complete Readings
When the patient completes their readings they are transmitted to the clinicians in their care team and the clinicians are allerted if something seems out fo the ordinary.

Alerts Generated
The patient is told what to do if they have readings that are out of the ordinary. Their clinician is sometimes alerted if they need to intervene or if it makes sense for them to follow up.

Critical Patients
The clinicians want to follow a small set of files more closely than others because they often have a set of patients that are either new to the practice, less stable, had a recent critical event, or have high risk factors that mean they need to be followed more closely.

Clinician Thought Process
The Clinician is spending their time adjusting the meds and thresholds, looking at the corresponding change and seeing if this is balancing the patient out (CHF is a stable weight on diuretics, DB is often a stable blood glucose from before bed to waking up).

Patient Stable
As patient's are titrated or the clinician has found the right balance of meds and lifestyle related changes they can often go back to being managed normally.

This may mean they can be completely discharged to a more hands of practice or a GP. It may mean that they just go lower into the pile of folders for now.

TRAJECTORY

Receive Tasks
The patient receives tasks like they always have. We should consider if the day to day management for some diseases should look different from stabilization. Maybe over time the patient takes readings less often or has less of a need for adherance calls as they begin to self manage.

Provide Support
People who have trouble with their devices, the app or the surrounding service will need support. This applies to patients and clinicians. It is important to clarify the kinds of support we are willing to provide and where people can look for the support we are not willing to provide.

Maybe if the Patient calls the clinician for support that we provide they can flag in Dashboard that the Patient needs support. That way there is a single point of contact and the Clinicians act as a filter (however, this could create a burden for the clinicians if lots of support is needed).

Clinician Initiated Changes
Changes to the patient baselines or patient treatment plan involve visits to the patient profile.

As patients come in for appointments the clinician may need a summary of their recent progress. The timeline for this summary could be adjustable.

Patient Initiated Changes
The patient might have a critical event or unrelated health scare that needs to be relayed to their doctor. Their lifestyle, meds or condition may change.

TEMPORARY CHANGES

Clinician Shift Changes
A clinician may have someone who is on call for them on weekends, while they are on vacation or working in the ward.

In this situation they should be able to hand their patients off to another clinician. If the other clinician initiates taking their patients temporarily they should be notified and be able to snooze alerts for the duration.

Regular Shift Change
If clinicians regularly switch shifts they should be able to just be on the same care teams and switch in and out. the qeustion of snoozing alerts and who is responsible during a period of time becomes more of a challenge in this situation.

Patient Vacation
In general patients should be encouraged to continue participating in Medly while on vacation, but the difficulties of wifi, devices, battery power and the prospect of a bunch of adherance calls may make this unlikely in some situations.

Patients are notnotifying about vacation just because they don't want to take readings. They also may want their clinicians to know that they are travelling to avoid sending the impression that they don't care.

Critical Event or Admit
When a patient has a critical event they may need time off Medly as changes to their treatment plan or their baselines may make them unstable at first or they may not be in a condition to deal witht he pressure of a service like this.

We should be conscious of the way the adherance calls opperate when a patient is admitted. Maybe there is an addition to the call that explains what to do if you are unwell. There should also be a proceedure for bringing patients back onboard.

PATIENT LEAVING

No Longer in Need
Over time patients may become stable or no longer be critical enough that regular monitoring makes sense. They may in some circumstances recover completely (post NODAT or after a heart transplant).

They should be able to phase out when ready. The messaging and process for this should be considered carefully.

No Longer a Fit
A patient may be losing their vision, have to hectic of a lifestyle or have financial issues that impact their access to a smart phone and plan.

There should be sensitive an dignified ways of opting out of the program in these situations or being assisted with access where this makes sense.

Become Too Sick
There are patients dealing with comorbidities or patients whose illness becomes too serious (even paliative) to the point where monitoring doesn't make sense or the burden impacts the patient's quality of life.

In this situation there should be sensitive ways of opting out fo the program. The way in which the program is shut off and the messaging to the patient is very important. Any hardware that needs to be collected should be retreived in a sensitive way and it should be as easy as possible to complete the return.

Sudden Death
This is a very challenging scenario that it is not easy to plan for. The way in which we identify that a patient has died is important. Adherance calls could be problematic in this scenario. The process of retrieving any equipment is extremely sensitive.

CLINICIAN LEAVING

Leaving Medly
A clinician may opt to stop using Medly for their patients even though the licence as a whole remains open and other clinicians stay on.

When this happens we need a proceedure for freezing their patients and a flow for closing out all of the apps of the patients that are using Medly on their phones. What messaging do they see? Does their app stop working? What happens to their ability to view data or take readings?

Leaving the Clinic
If a clinician is leaving the clinic and their patients will simply be distributed to other clinicians we need a flow for this redistribution.

It will perhaps be less of an issue because the patients are stainh on so there are no special closeouts , but it is still something to consider.

CLINIC OFFBOARDING

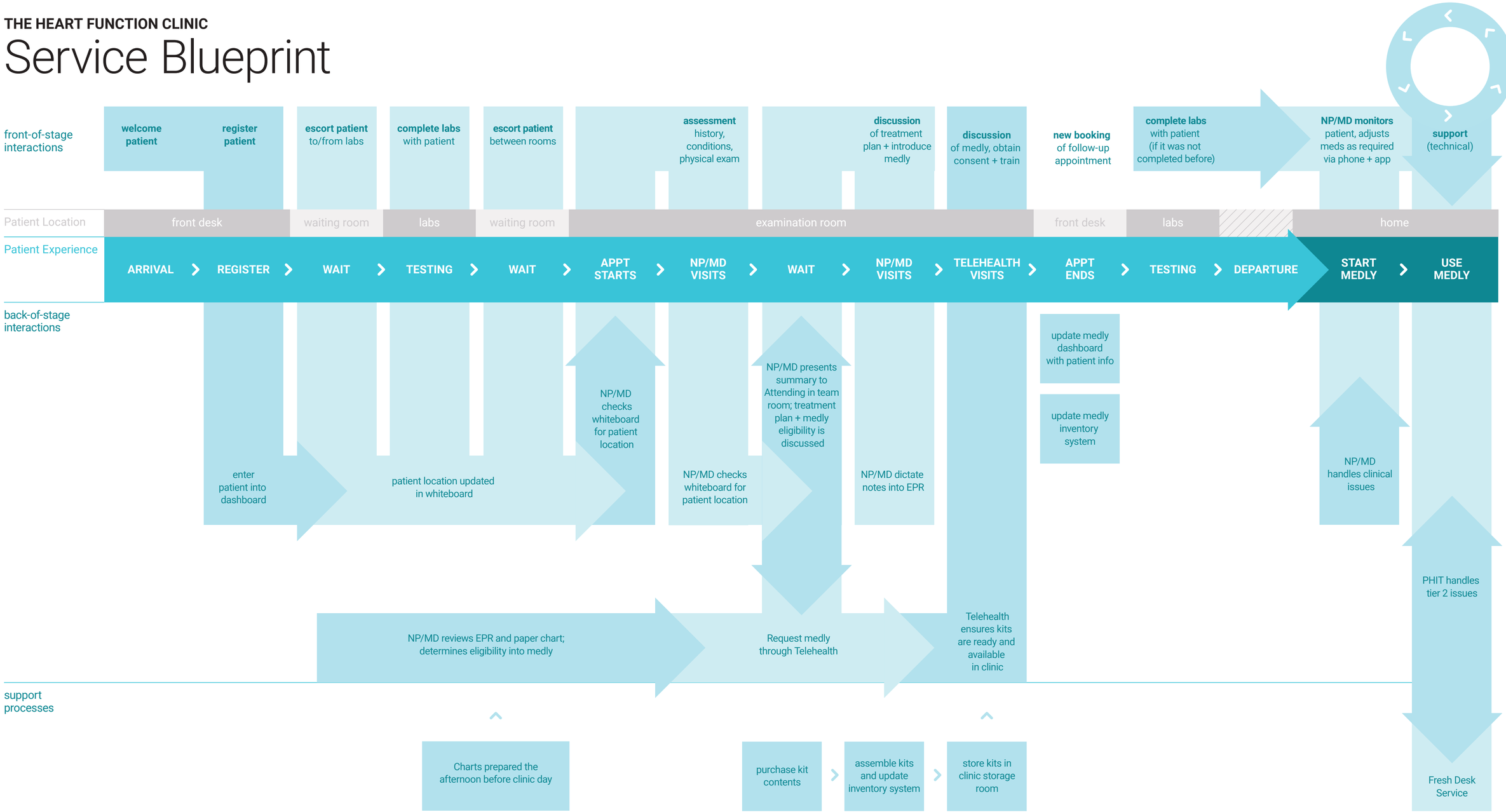
Admin Closes Licence
This means that all patients and clinicians are removed from Medly. There will need to be notification e-mails that are sent out to the clinicians and messaging that they see if they try to log in.

It could be possible for a clinician or even a patient to have accounts on multiple licences (a clinician at multiple sites or patient with MCC). In this case we may have to think about in app messaging or notification.

Patients
Again patients will need special notifications in app if their health care provider has closed out their license. Medly is intended to be used with a clinic so if the license has been closed there is also the possibility of recomending an app for self management.

THE HEART FUNCTION CLINIC

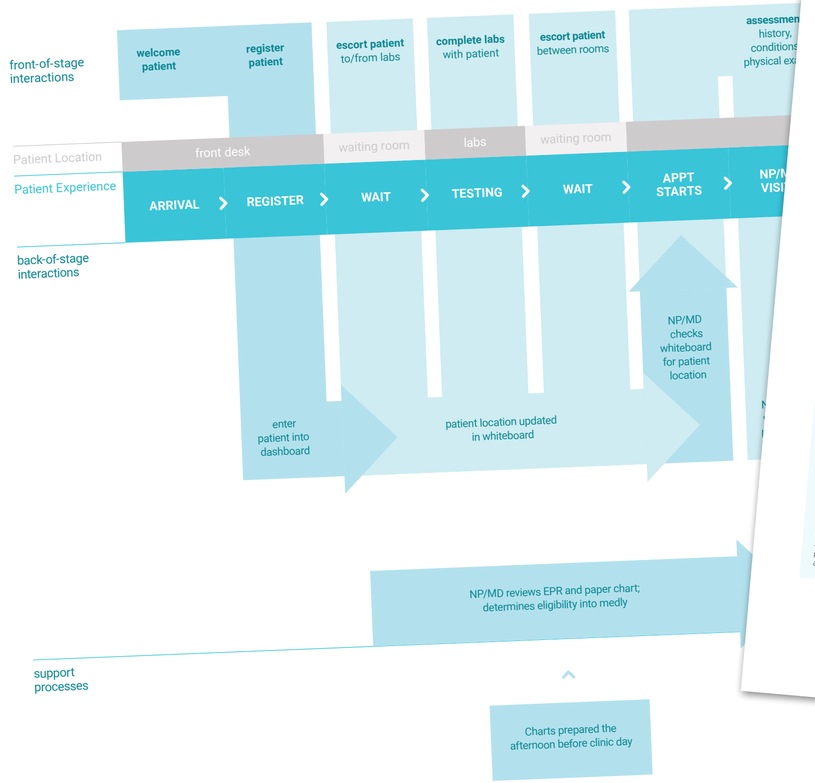
Service Blueprint



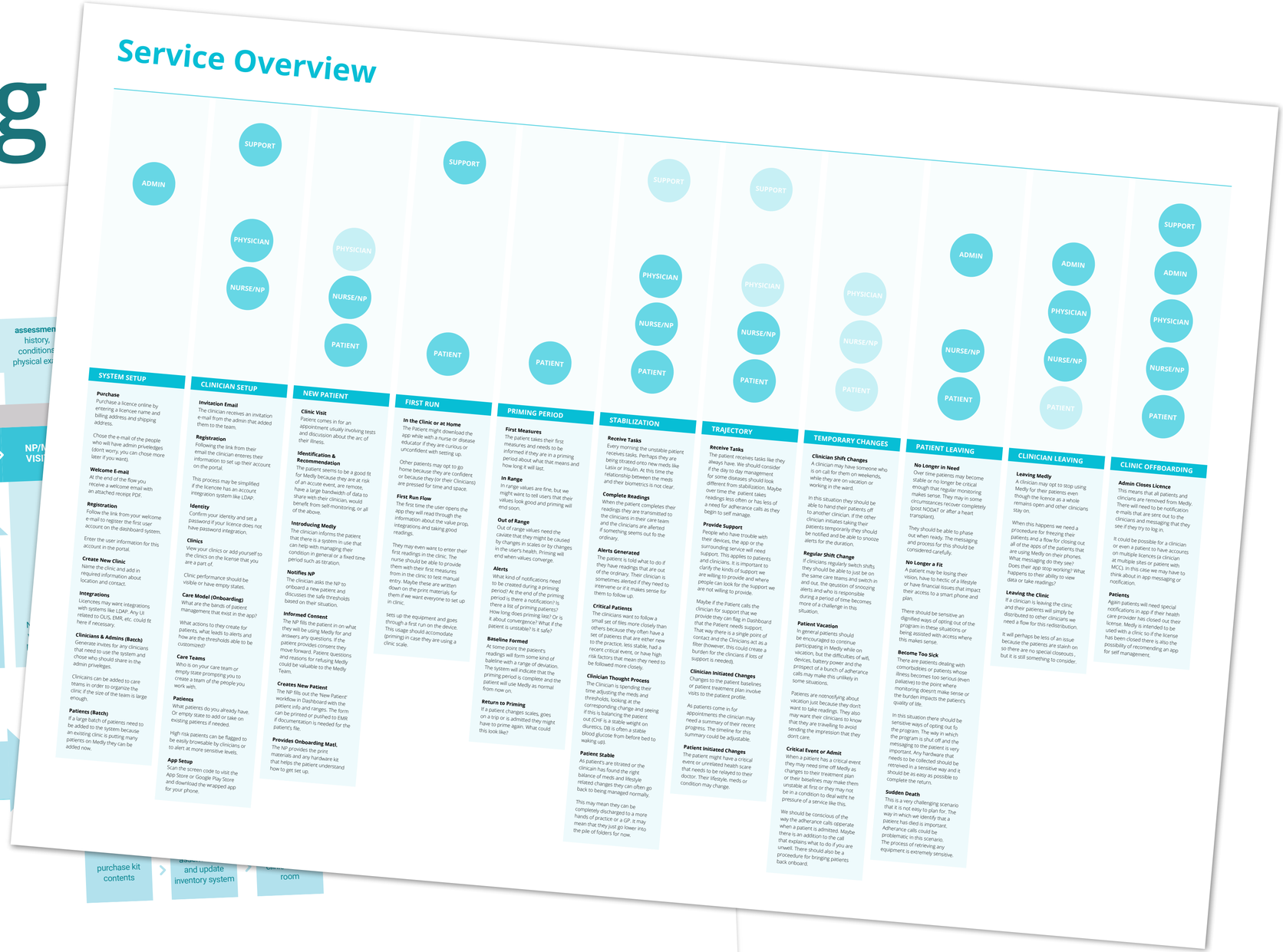
Artifact-ing

THE HEART FUNCTION CLINIC

Service Blueprint



Service Overview



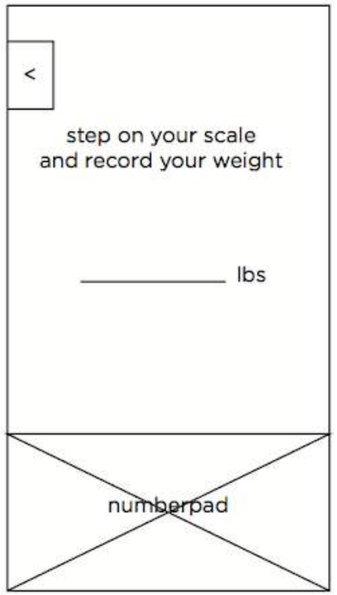
Prototyping

USER GOAL

I want to enter my data in manually.

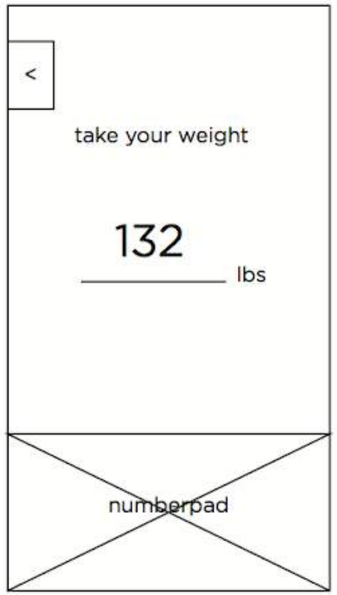
User is presented with blank home card that directs them to their tasks.

By tapping on the task, the user is pushed into the repurposed wizard.



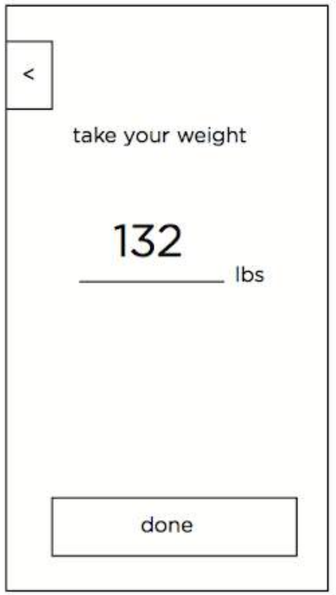
In the wizard, the user has a 1-one line instruction, and a blank line for their value.

The numberpad is automatically open when user enters in, and the first parameter is always selected.

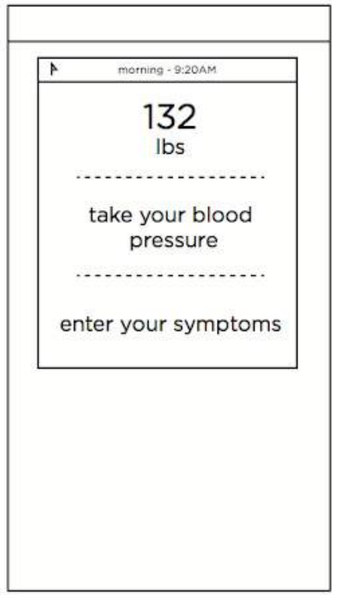


User enters their value with the keyboard, and the blank line fills in.

To exit the numberpad, user has to press the checkmark button in the numberpad.

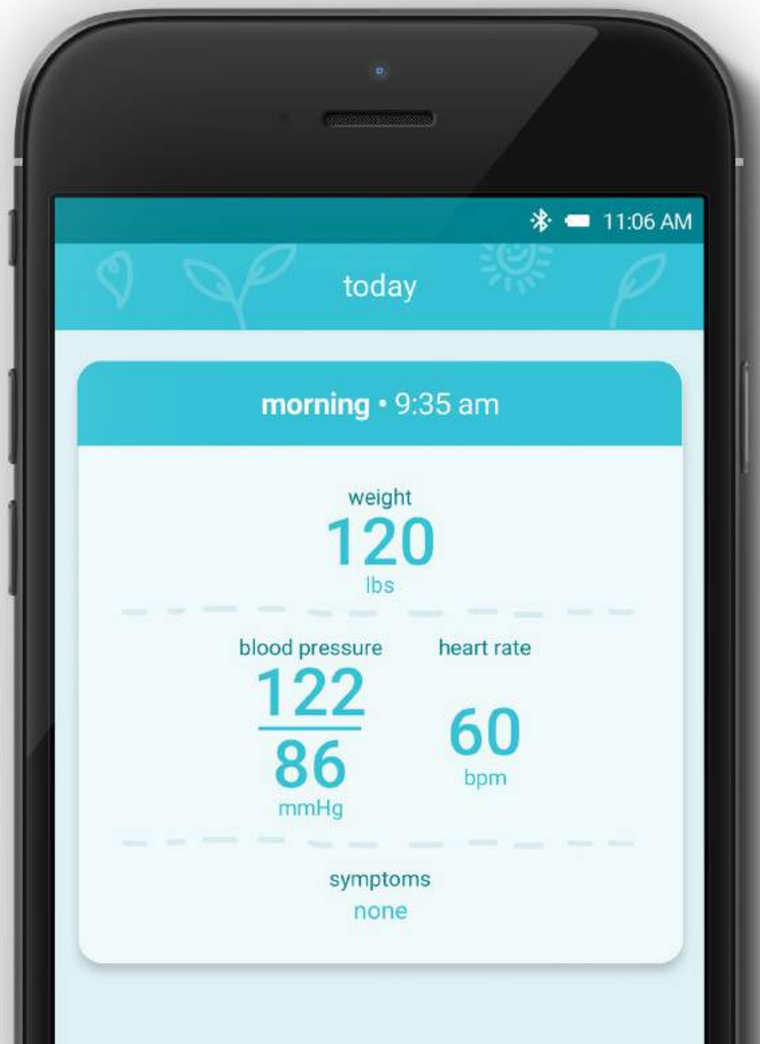


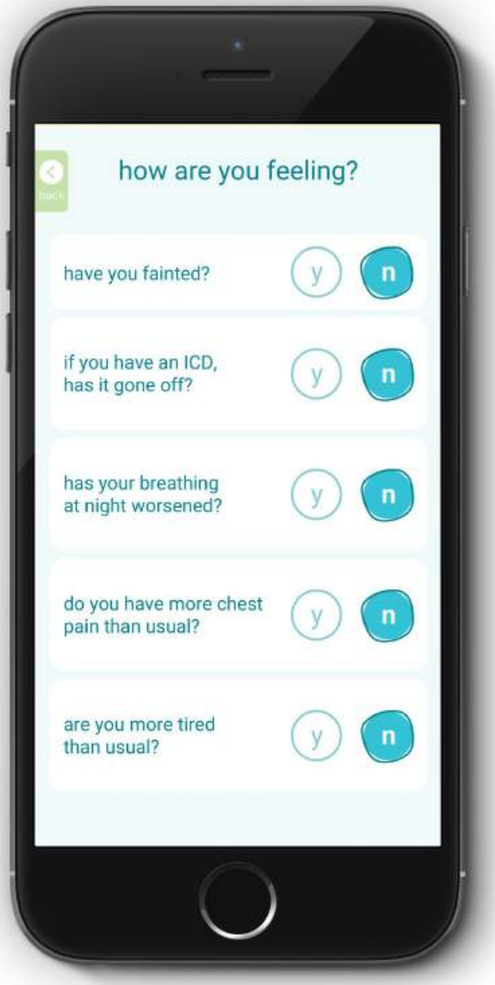
When the numberpad is closed, it will draw back down and the 'Done' button is available so the user can submit their value and return to home.



Home card is updated with the value.

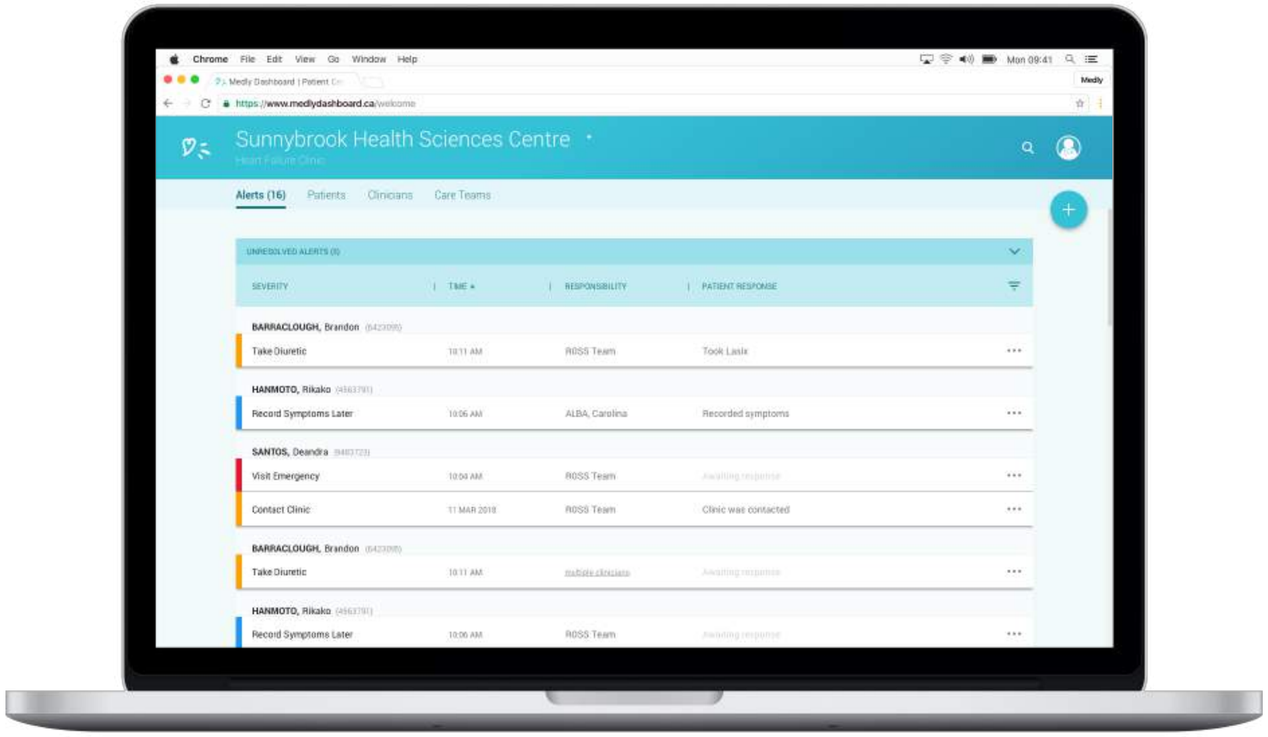
Patient App

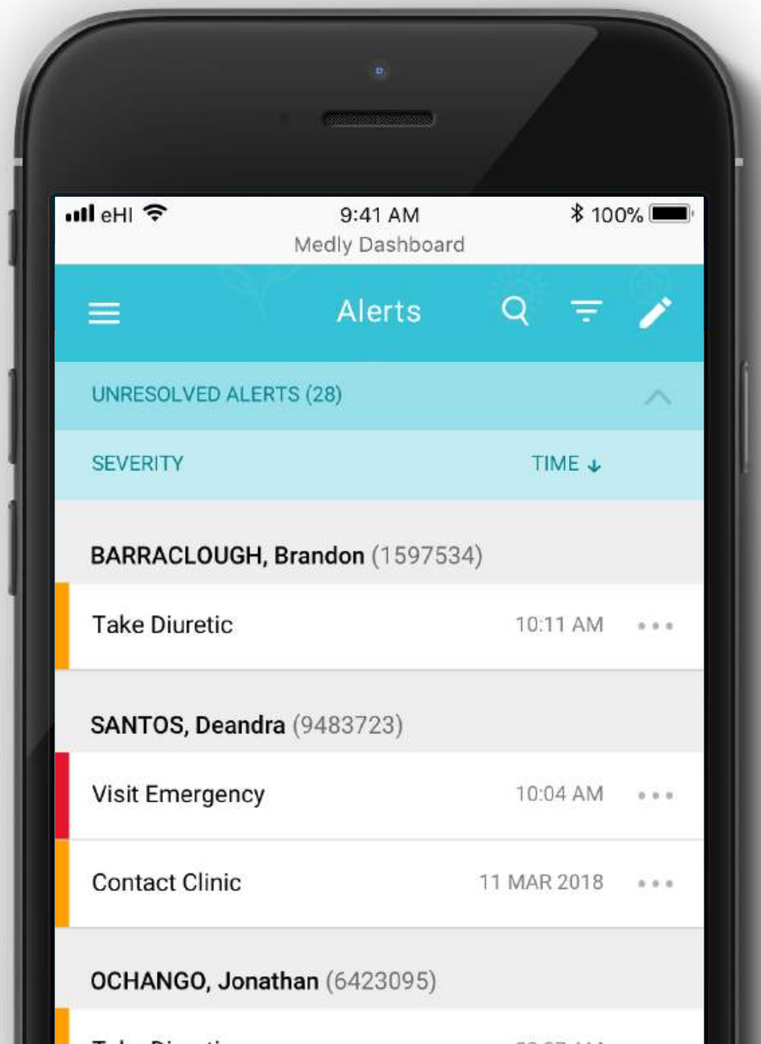

11:06 AM
today
morning • 9:35 am
weight
120
lbs
blood pressure
122
86
mmHg
heart rate
60
bpm
symptoms
none


how are you feeling?
have you fainted?
y
n
if you have an ICD, has it gone off?
y
n
has your breathing at night worsened?
y
n
do you have more chest pain than usual?
y
n
are you more tired than usual?
y
n


11:06 AM
trends
weight
155 lbs • 6:53 AM
lbs
170
165
160
155
150
145
140
Feb 16
Feb 17
Feb 18
Feb 19
Feb 20
Feb 21
Feb 22
blood pressure
155 lbs • 6:53 AM
lbs
170
165

Clinical Dashboard





Integrating Peripherals

Service Prototyping

Clinician Scripts

Ned, A Play

Featuring:
Sheena as Dr. Andrew Feifer
Hiba as Julie
Cait as Amna/Inside-Clinic Observer
Quynh as Quynh/Outside-Clinic Observer

SCENE 1: PATIENT ENTERS JULIE'S WAITING ROOM

Julie: greets patient, tells them to sit down and that Dr. Feifer will call them in shortly.

Patient sits.

Julie: tells patient that Andrew is ready for them and directs them into Andrew's office.

Patients exits Julie's waiting room and enters Andrew's office.

SCENE 2: PATIENT ENTERS ANDREW'S OFFICE

Andrew: greets patient, asks them how they are.

Patient responds.

Andrew: tells patient about Ned.
SPEAKING POINTS

- *A mobile and web application for healthcare providers and their patients, conceptualized by Andrew Feifer in partnership with UHN*
- *First consumer health application to directly connect to Ontario Laboratory Information Systems (OLIS)*
- *Releases PSA result directly to the application*
- *Patient can see their PSA result through the Ned Application*
- *Proactively collect Patient Reported Outcomes (patient fills out EPIC-26 & FACT-P on a monthly basis)*
- *Results of Patient Reported Outcomes and Lab results aggregated on patient and clinician application*
- *Hope that this will result in:*
    - *Improved shared decision making*
    - *More investment in care, resulting in better self-management*

Andrew: asks patient if they are interested in using Ned as part of their care.

Patient: may ask questions, may be unsure, but ultimately will say yes.

Andrew: tells patient that in order for them to get access to Ned, they will need to join the Ned Study.
SPEAKING POINTS

- *a clinical trial of Ned will be launched at two Trillium Health Partners hospital sites (Mississauga and Credit Valley)*
- *a total of 400 survivors and their circle of care will be given access to Ned for 12 months*
- *the study is being done because we want to understand the effect of Ned on health-related quality of life, satisfaction with cancer care, unmet needs, self-efficacy, and prostate cancer-related levels of anxiety.*
- *the knowledge gained from this study will help us to understand how and why Ned works, for whom, and in what circumstances*
- *currently, it is not possible to use Ned without joining the Ned study*
- *the patient does not have to decide right now in this chair if they want to join the Ned Study.*
- *However, if they are interested in learning more, Andrew can provide them with a Ned card so that that they can learn more about the Ned Study, and can make a decision to join the study and get access to the application, ONLY if they want to.*

Patient: may ask more questions about the study and why it is necessary, but will ultimately say they are interested in learning more about Ned.

Andrew: takes a Ned card, signs the bottom of the card, tells the patient to go out into Julie's waiting room, fill out the card there, rip it in half, and give the bottom of the card to Julie.

Andrew: warns patient that they will have to stay an extra 10 minutes to complete the study consent form in-clinic in order to get access to Ned.

Andrew: thanks the patient for coming in, asks them if they have any more questions, directs them back to Julie's waiting room.

Patient exits Andrew's office and enters Julie's waiting room.

SCENE 3: PATIENT RETURNS TO JULIE'S WAITING ROOM

Patient: sits down, fills out card, rips card, brings bottom half to Julie.

Julie: takes card, hands patient a tablet with a consent form, tells patient that the consent form can be completed using this tablet, tells patient to take a seat in the clinic, complete the consent form, and once they have submitted the form, to bring it back to Julie.

Julie: makes sure the patient knows that if they have any questions about anything they read on the consent form, they can call the Ned Research Team at the number specified on Julie's desk to have their question answered.

Patient sits down to complete form.

Patient may call the Ned Research team - Quynh to answer if this happens.

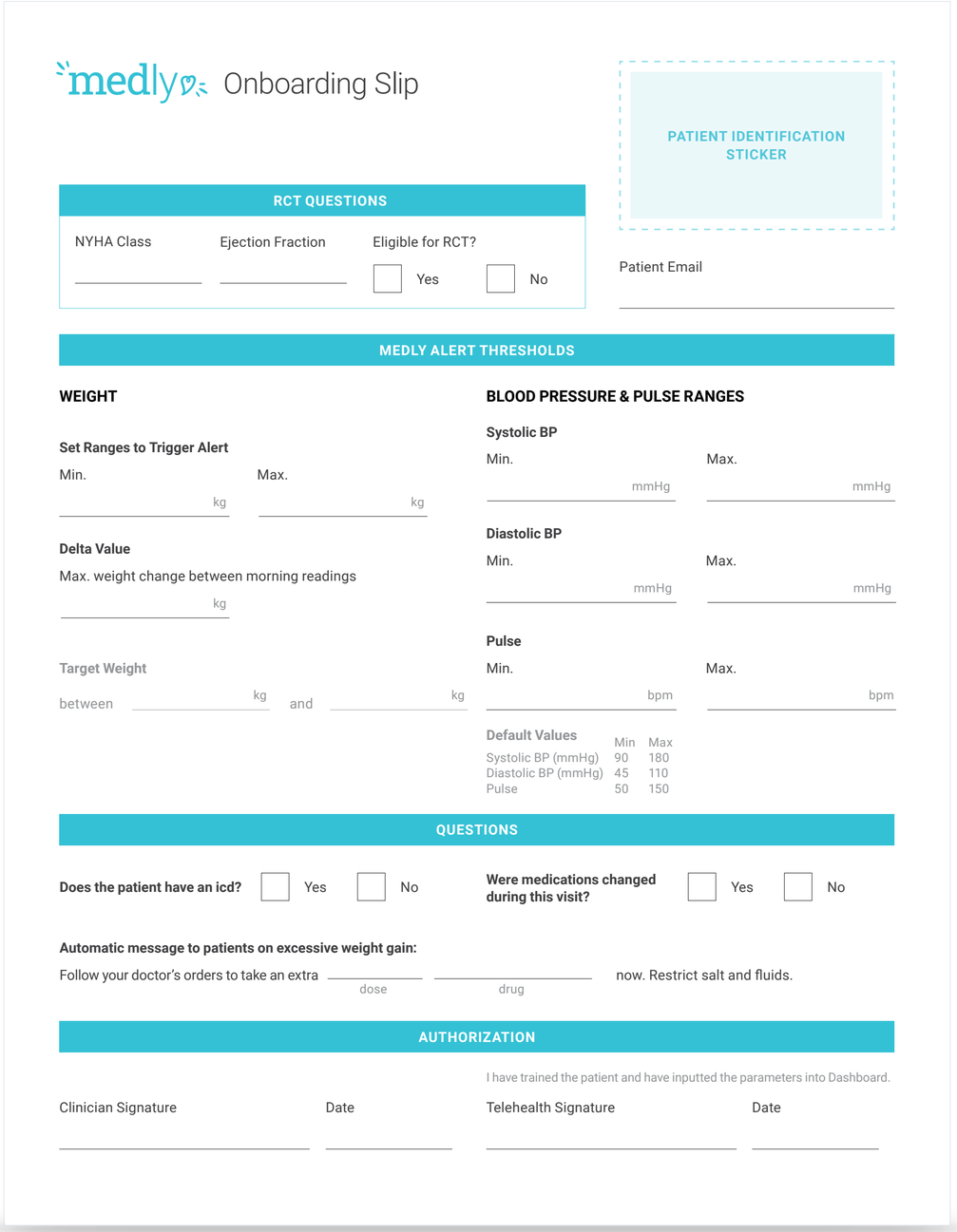
Patient may try and ask Julie about a research-related question - if this happens, Julie is to make it clear that she is not part of the research team, but that there is a dedicated research hotline that a patient can call to have their questions answered. If the patient states that they do not want to call the research team and would instead prefer live support, Julie is to call Amna and request that she come to the clinic and support the patient in person.

Patient completes consent form and returns the tablet to Julie.

Julie: directly asks patient if they provided informed consent to join the Ned Study.

If YES: thank patient, tell them to keep their portion of the Ned card and to look for an email later that day, make a Ned account for the patient
If NO: thank patient, tell them to go ahead and throw away their portion of the Ned card, do not make a Ned account for the patient.

Clinician Slips



medly Onboarding Slip

PATIENT IDENTIFICATION STICKER

RCT QUESTIONS

NYHA Class _____

Ejection Fraction _____

Eligible for RCT? ☐ Yes ☐ No

Patient Email _____

MEDLY ALERT THRESHOLDS

WEIGHT

Set Ranges to Trigger Alert

Min. _____ kg Max. _____ kg

Delta Value

Max. weight change between morning readings _____ kg

Target Weight

between _____ kg and _____ kg

BLOOD PRESSURE & PULSE RANGES

Systolic BP

Min. _____ mmHg Max. _____ mmHg

Diastolic BP

Min. _____ mmHg Max. _____ mmHg

Pulse

Min. _____ bpm Max. _____ bpm

Default Values

	Min	Max
Systolic BP (mmHg)	90	180
Diastolic BP (mmHg)	45	110
Pulse	50	150

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 _____ dose _____ drug now. Restrict salt and fluids.

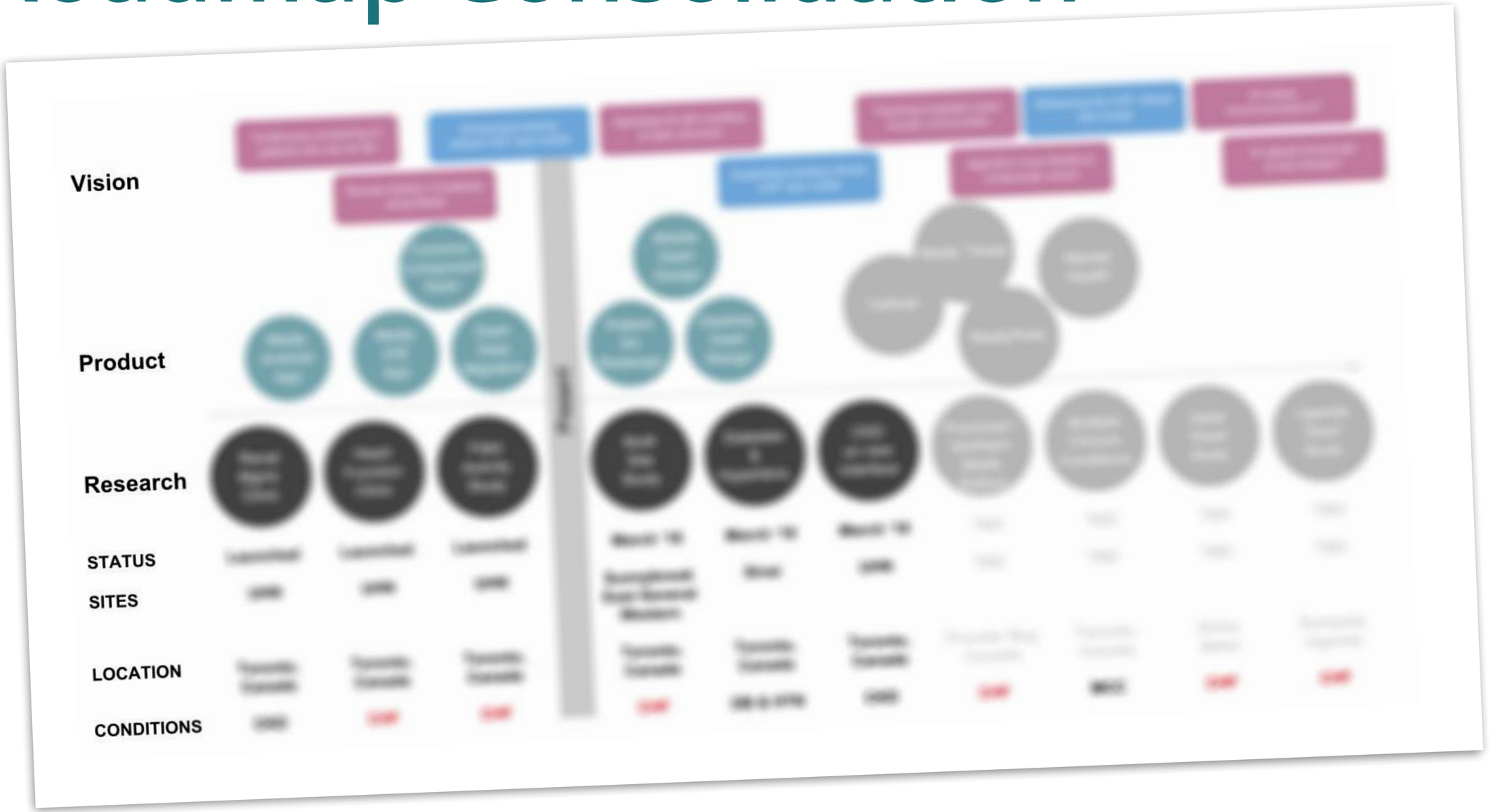
AUTHORIZATION

I have trained the patient and have inputted the parameters into Dashboard.

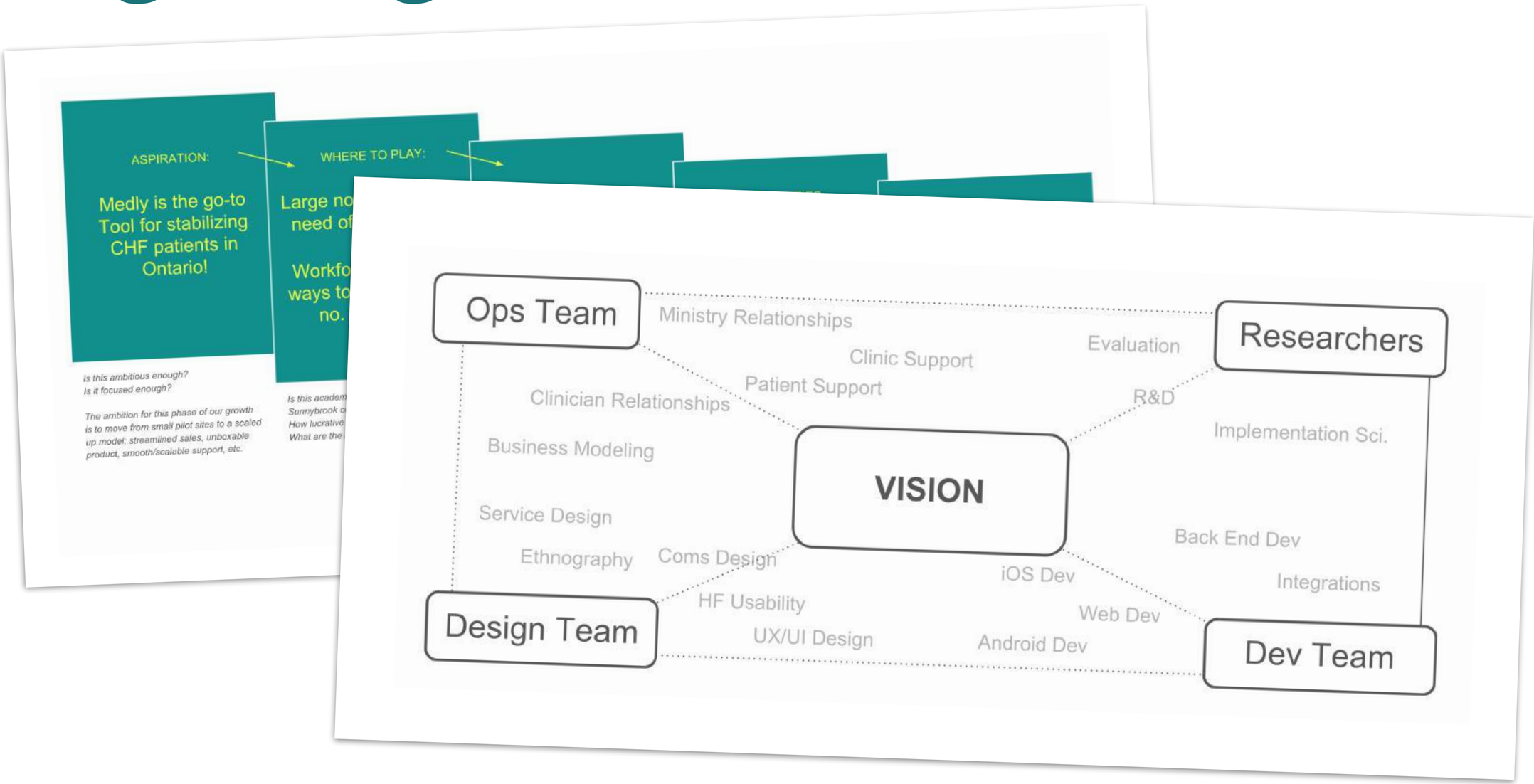
Clinician Signature _____ Date _____

Telehealth Signature _____ Date _____

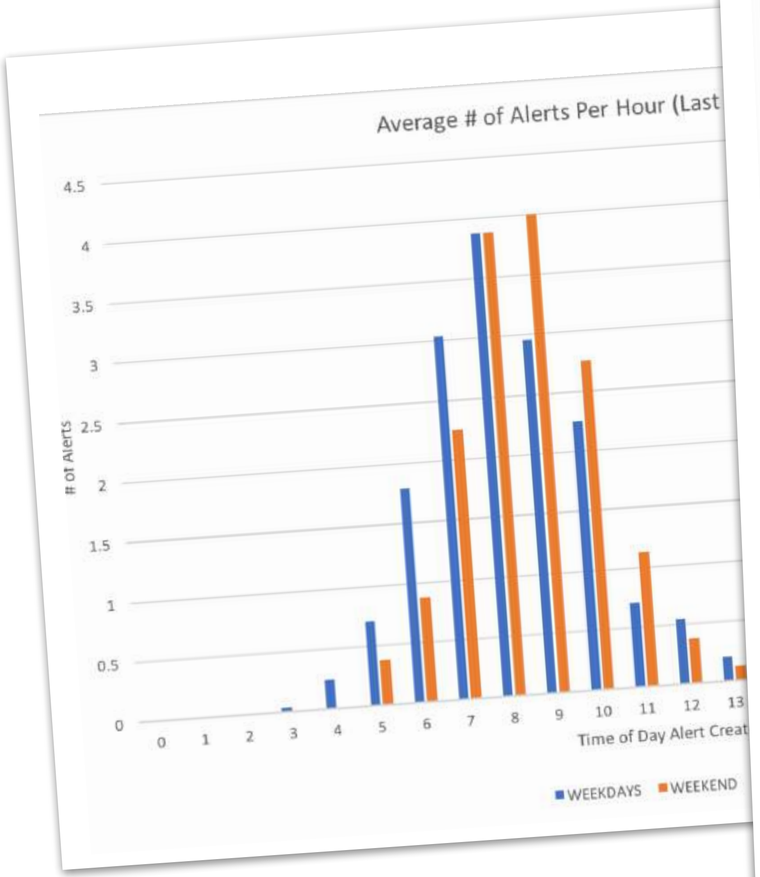
Roadmap Consolidation

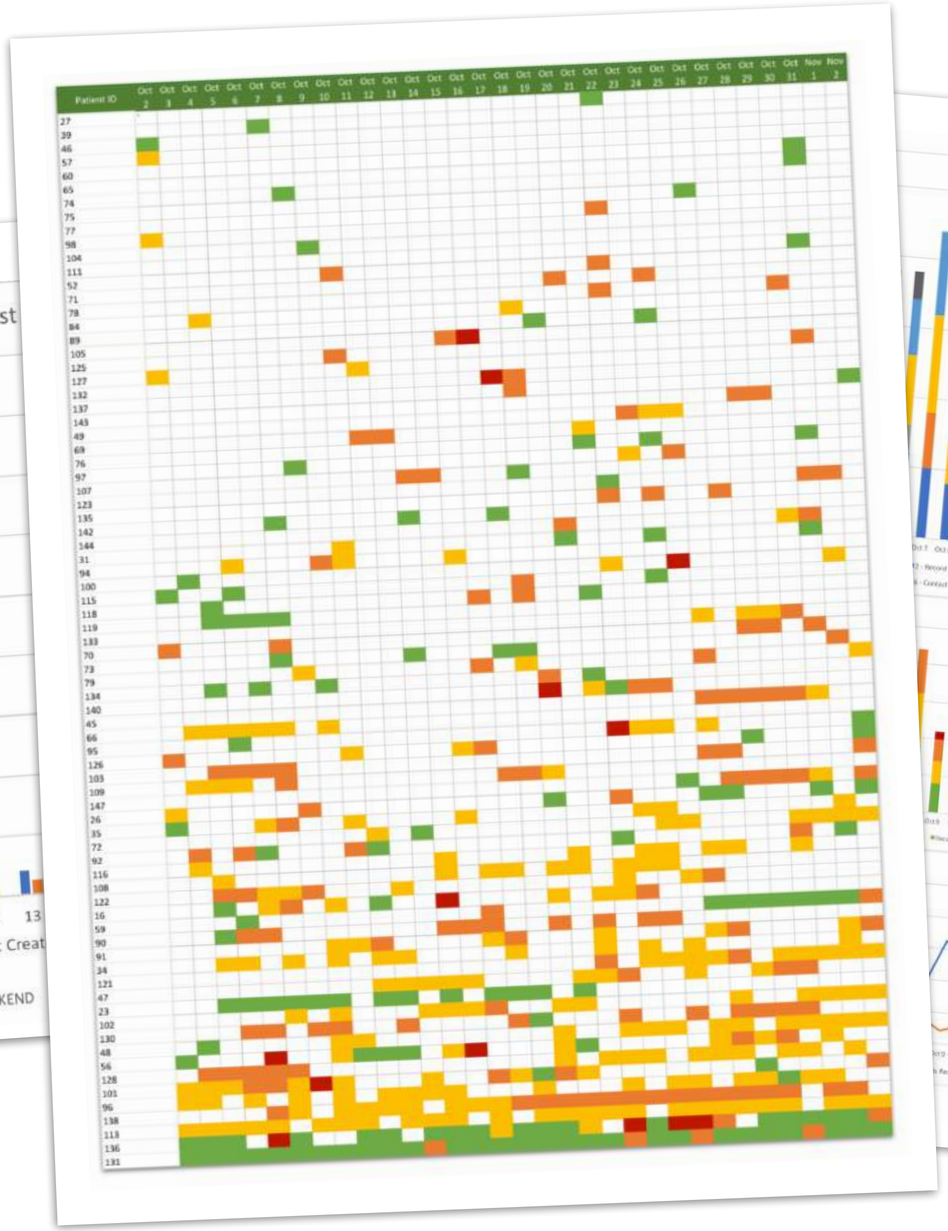


Org Design


ASPIRATION:
Medly is the go-to Tool for stabilizing CHF patients in Ontario!
WHERE TO PLAY:
Is this ambitious enough?
Is it focused enough?
The ambition for this phase of our growth is to move from small pilot sites to a scaled up model: streamlined sales, unboxable product, smooth/scalable support, etc.
Ops Team
Ministry Relationships
Clinic Support
Patient Support
Clinician Relationships
Business Modeling
Service Design
Ethnography
Coms Design
HF Usability
UX/UI Design
Design Team
Researchers
Evaluation
R&D
Implementation Sci.
VISION
Back End Dev
Integrations
iOS Dev
Web Dev
Android Dev
Dev Team

Evolution


Average # of Alerts Per Hour (Last
# of Alerts
Time of Day Alert Creat
WEEKDAYS
WEEKEND


Patient ID


Breakdown of Medly Alerts by Day and Alert-Type
Alerts Per Day, Categorized by Message to Patient
Percent of Alerts for Self-Care Instructions vs Contact Clinician

Good Service for Medly

- Considered - referral, visit, home, support
- Cohesive - bag, manual, apps, support, dashboard
- Coordinated - clinician, admins, support
- Contextual - older users & traveling, site-specific
- Clear - who to phone

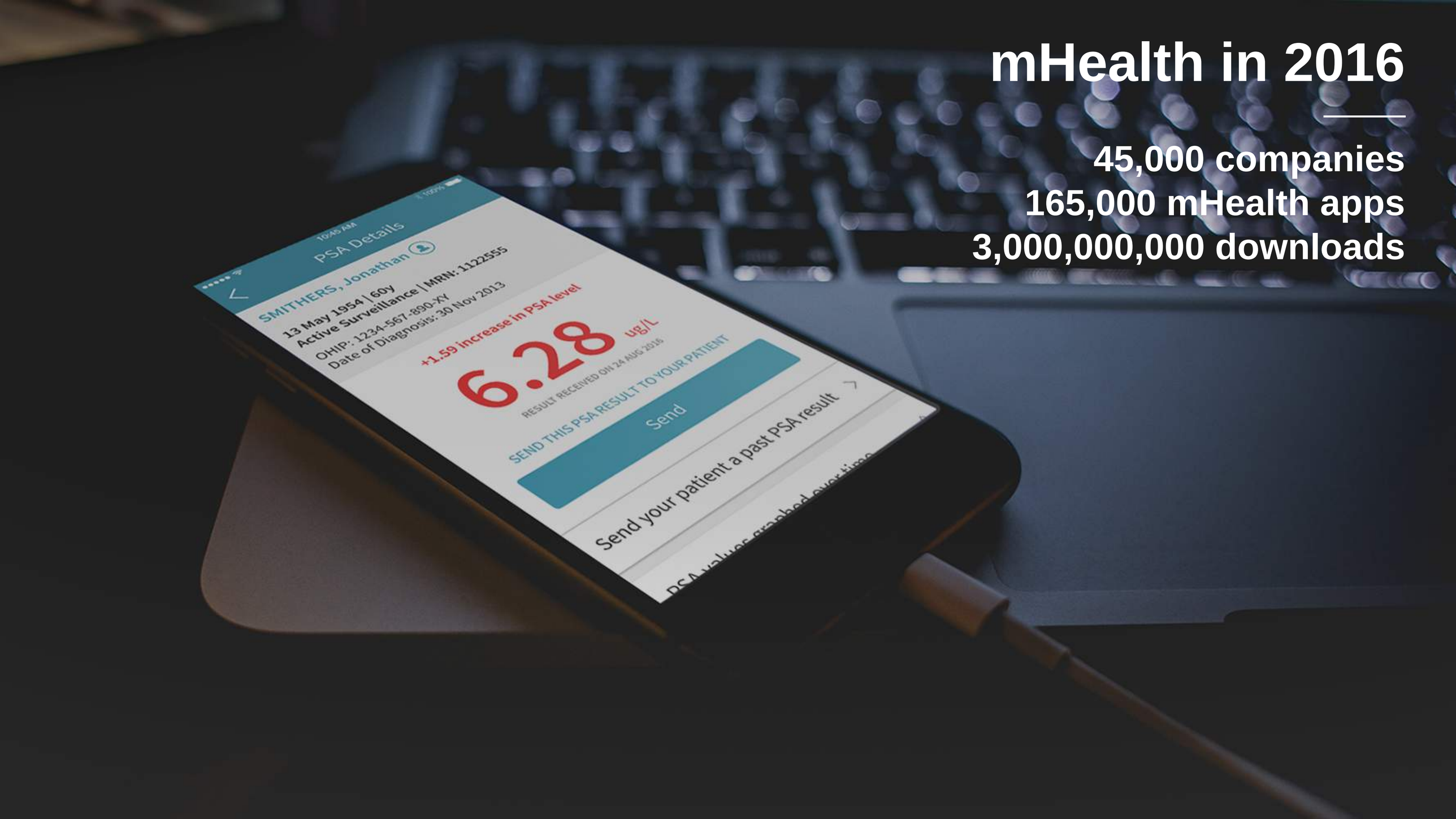
Beyond the RCT

A review of alternatives in mHealth clinical trial methods

Quynh Pham, PhD
University of Toronto

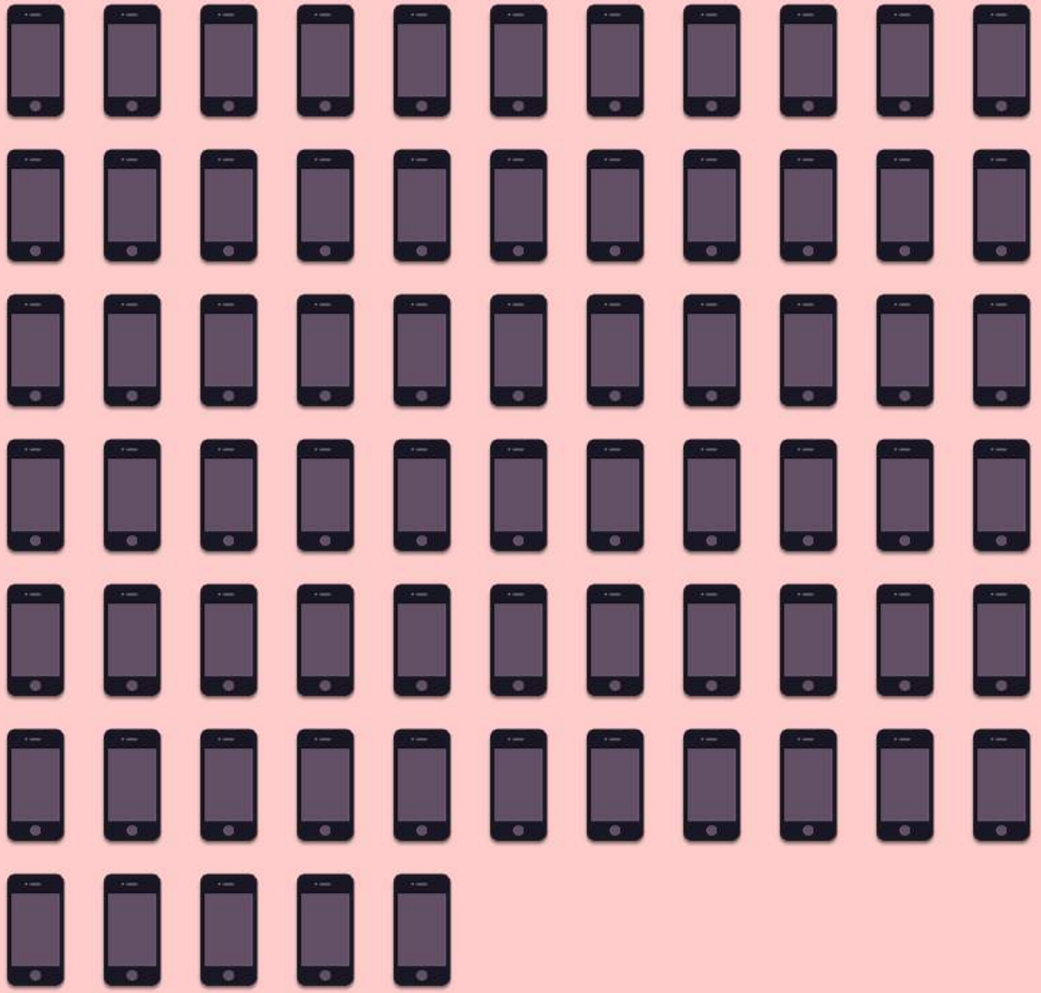
mHealth in 2016

45,000 companies
165,000 mHealth apps
3,000,000,000 downloads



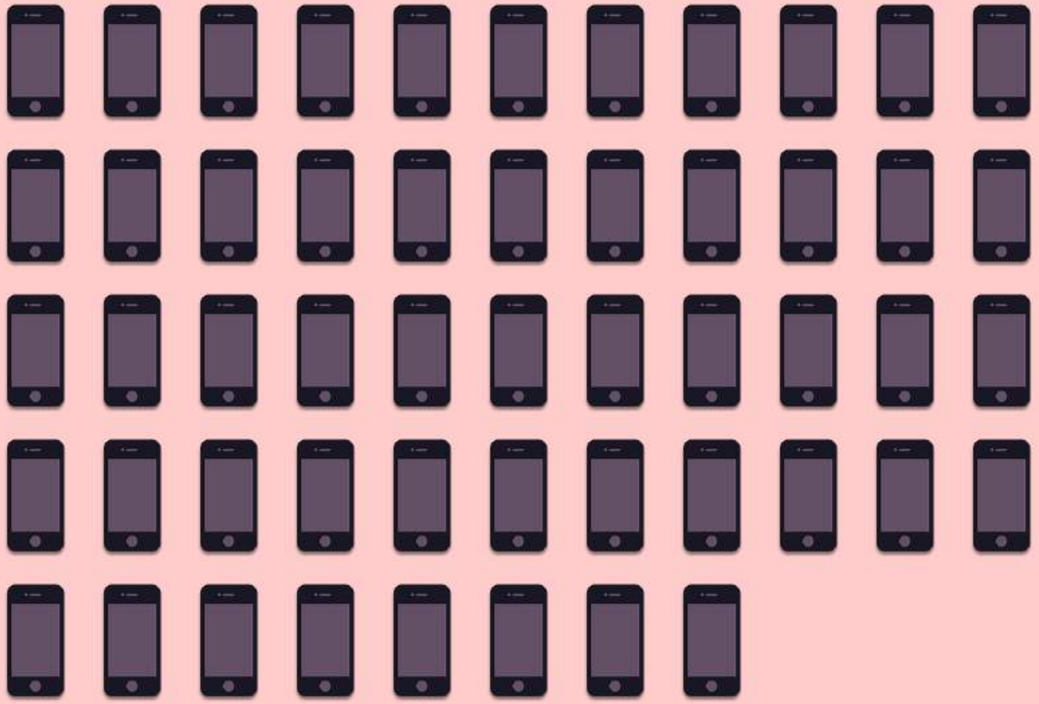
What research designs and methods are currently being used in mHealth clinical trials?

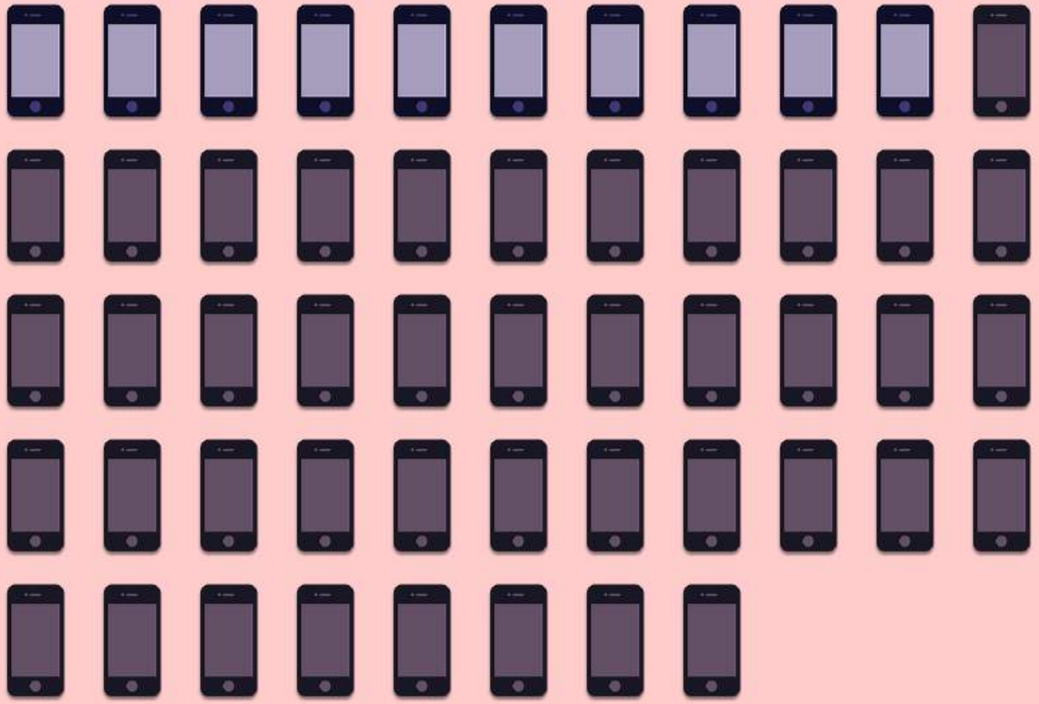
I conducted a review of every single clinical trial registered on ClinicalTrials.gov between November 2014 and November 2015 that evaluated an mHealth app.

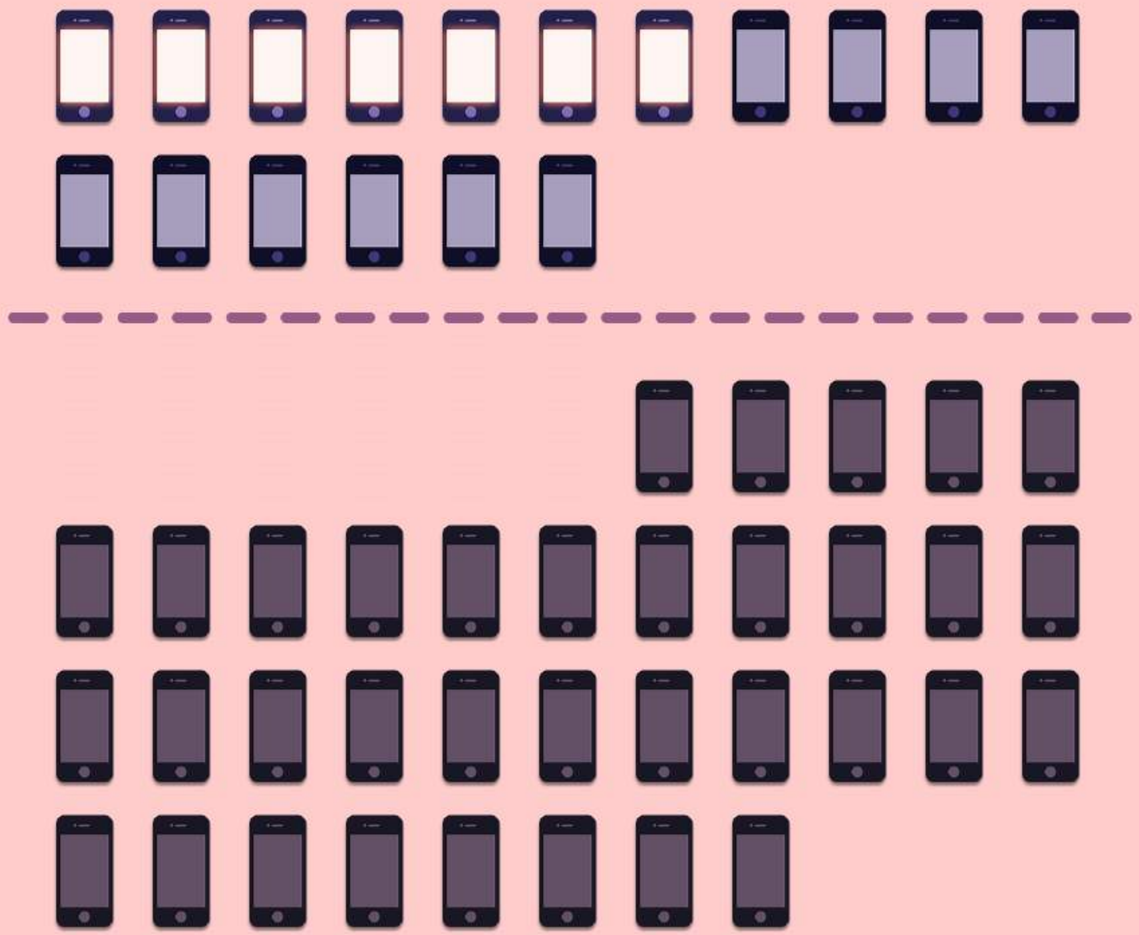


The average study duration for a clinical trial evaluating an mHealth app is 20 months.

As an mHealth research community, we have not deviated from traditional methods.







Garnett et al. BMC Public Health (2016) 16:536
DOI 10.1186/s12889-016-3140-8

BMC Public Health

STUDY PROTOCOL Open Access

Evaluating the effectiveness of a smartphone app to reduce excessive alcohol consumption: protocol for a factorial randomised control trial

Claire Garnett[1*], David Crane[1], Susan Michie[1,2], Robert West[3] and Jamie Brown[1,3]

Abstract

Background: Excessive alcohol consumption is a leading cause of death and morbidity worldwide and interventions to help people reduce their consumption are needed. Interventions delivered by smartphone apps have the potential to help harmful and hazardous drinkers reduce their consumption of alcohol. However, there has been little evaluation of the effectiveness of existing smartphone interventions.

A systematic review, amongst other methodologies, identified promising modular content that could be delivered by an app: self-monitoring and feedback; action planning; normative feedback; cognitive bias re-training; and identity change. This protocol reports a factorial randomised controlled trial to assess the comparative potential of these five intervention modules to reduce excessive alcohol consumption.

Methods: A between-subject factorial randomised controlled trial. Hazardous and harmful drinkers aged 18 or over

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Designing a Pilot Sequential Multiple Assignment Randomized Trial for Developing an Adaptive Treatment Strategy

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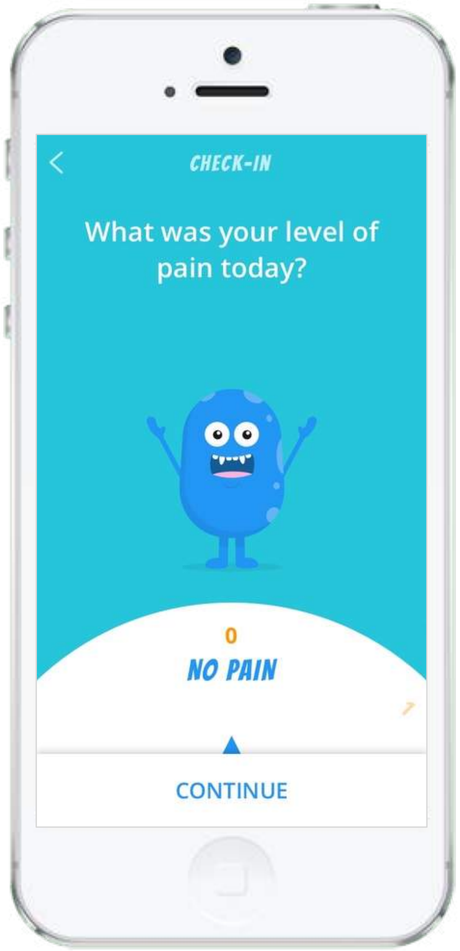
Abstract

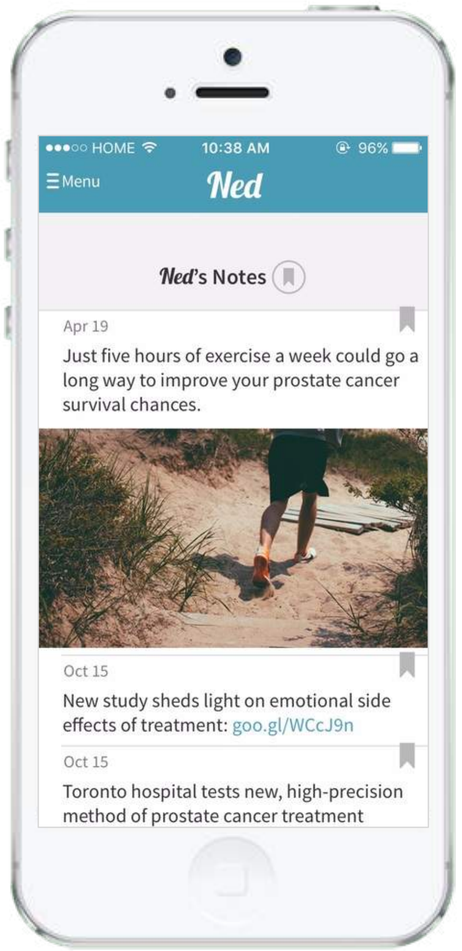
There is growing interest in how best to adapt and re-adapt treatments to individuals to maximize clinical benefit. In response, adaptive treatment strategies (ATS), which operationalize adaptive, sequential clinical decision making, have been developed. From a patient's perspective an ATS is a sequence of treatments, each individualized to the patient's evolving health status. From a clinician's perspective, an ATS is a sequence of decision rules that input the patient's current health status and output the next recommended treatment. Sequential multiple assignment randomized trials (SMART) have been developed to address the sequencing questions that arise in the development of ATSs, but SMARTs are relatively new in clinical research. This article provides an introduction to ATSs and SMART designs. This article also discusses the design of SMART pilot studies to address feasibility concerns, and to prepare investigators for a full-scale

Upcoming trials

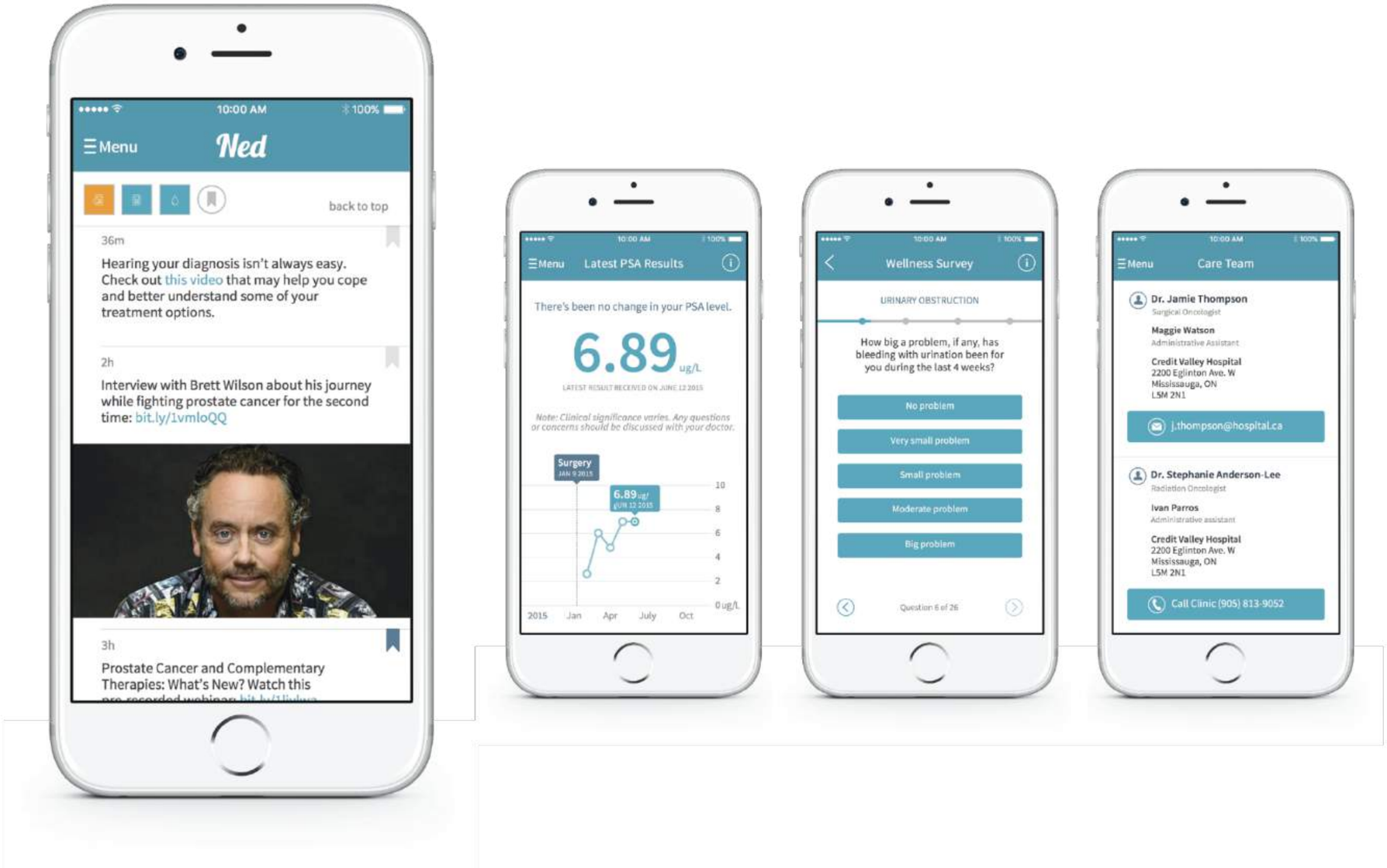
ICANCOPE



Ned



A Case of Ned


10:00 AM
100%
Menu
Ned
back to top
36m
Hearing your diagnosis isn't always easy. Check out this video that may help you cope and better understand some of your treatment options.
2h
Interview with Brett Wilson about his journey while fighting prostate cancer for the second time: bit.ly/1vmloQQ
3h
Prostate Cancer and Complementary Therapies: What's New? Watch this
Latest PSA Results
There's been no change in your PSA level.
6.89 ug/L
Note: Clinical significance varies. Any questions or concerns should be discussed with your doctor.
Surgery
2015
Jan
Apr
July
Oct
0 ug/L
Wellness Survey
URINARY OBSTRUCTION
How big a problem, if any, has bleeding with urination been for you during the last 4 weeks?
No problem
Very small problem
Small problem
Moderate problem
Big problem
Question 6 of 26
Care Team
Dr. Jamie Thompson
Surgical Oncologist
Maggie Watson
Administrative Assistant
Credit Valley Hospital
2200 Eglinton Ave. W
Mississauga, ON
L5M 2N1
j.thompson@hospital.ca
Dr. Stephanie Anderson-Lee
Radiation Oncologist
Ivan Parros
Administrative assistant
Credit Valley Hospital
2200 Eglinton Ave. W
Mississauga, ON
L5M 2N1
Call Clinic (905) 813-9052

A Web Page

http://

APEEE Home Lab People Filters Quynh

Home

Range Last 7 days Filter All

Quynh Pham Principal Investigator

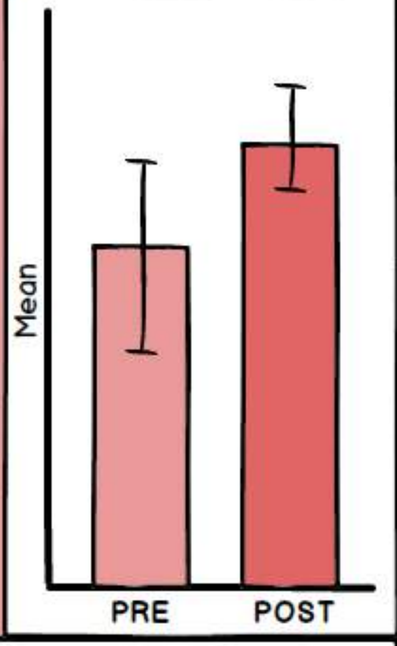
Engagement

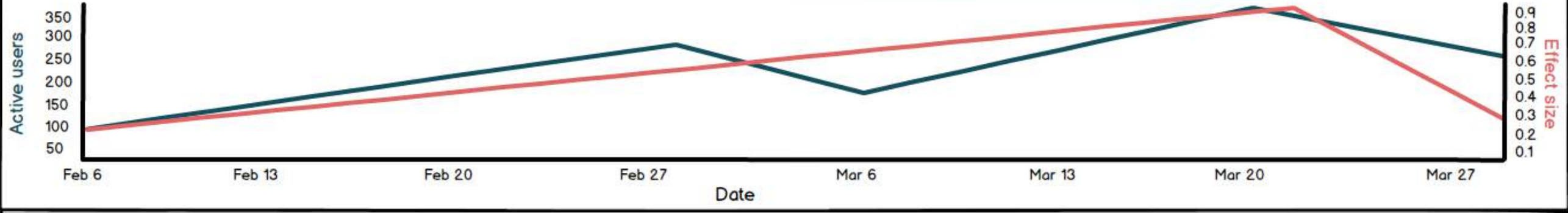
Active Users	Engaged Users	Turnover	Session Duration	Gap
345	245	59%	04:05	9.2hr
-15%	-27%	-8%	+12%	+38min

Retention	Bounce Rate	Total Users	Uninstall	Screens per Session
95%	12%	400	45	6
+2%	+8%	+45 -15	+15%	+12%

Health

OUTCOME	n	PRE	POST	SD	Effect size	Sig.
EPIC-26	350	55	68	5.5	SMALL	.15
CEQ	335	35	--	--	--	--
Memorial	325	22	24	1.5	SMALL	.25
SCN	311	95	72	9.6	LARGE	.05
PCR-QOL	385	55	--	--	--	--






Apeee
Discover
Visualize
Dashboard
Timelion
Machine Learning
APM
Graph
Dev Tools
Monitoring
Management
Quynh Pham
Logout
Collapse
Active Users
123
Check-ins Completed
1,194
Are users experiencing improved or declining health?
738
249
History Feature Accessed
31
Goals Feature Accessed
23
Are users completing set goals?
Count
What types of goals are users setting?
activity
sleep
social
energy
mood
Number of participants
What symptoms are users reviewing in the History feature?
pain
interference
activity
mood
sleep
energy
Count
Where in the world are users accessing iCanCope?
Kitchener
Brantford
Buffalo
Unique count of apache2.access.geoip.city_name
1 – 2,333
2,333 – 3,667
3,667 – 5
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How many check-ins are being completed daily?
per 24 hours
This week 13
Last month 10
Copey001 0
Copey002 1
Copey003 0

A Web Page

http://

APEEE Home Lab People Filters Joe

Home

Summary | Descriptives

Range: Last 7 days

Filter: All

Daily Consent Rate 3/day

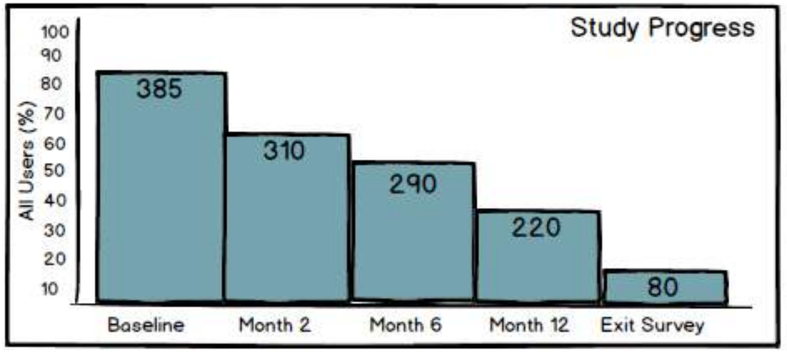
Last Consent 06/June/17 17:30

Last Submitted Outcome
06/June/17 19:25
ID: 347
Outcome: EPIC-26
Score: 66%

Study Onboarding Rate Funnel

Active Sample Size

Study Progress

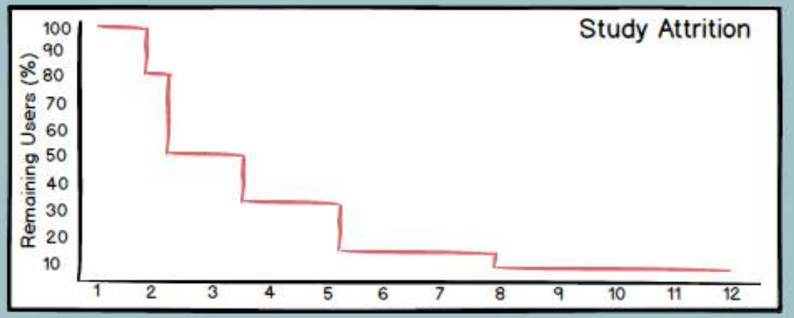


User | Session

Features

Ned's Notes	EPIC-26	FACT-P	PSA	Caregiver
20%	59%	95%	82%	25%
04:55	03:22	02:56	00:45	01:18
-15%	-8%	+12%	+38%	-15%

Study Attrition

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Kitchener
Brantford
Buffalo
Unique count of apache2.access.geoip.city_name
1 – 2.333
2.333 – 3.667
3.667 – 5
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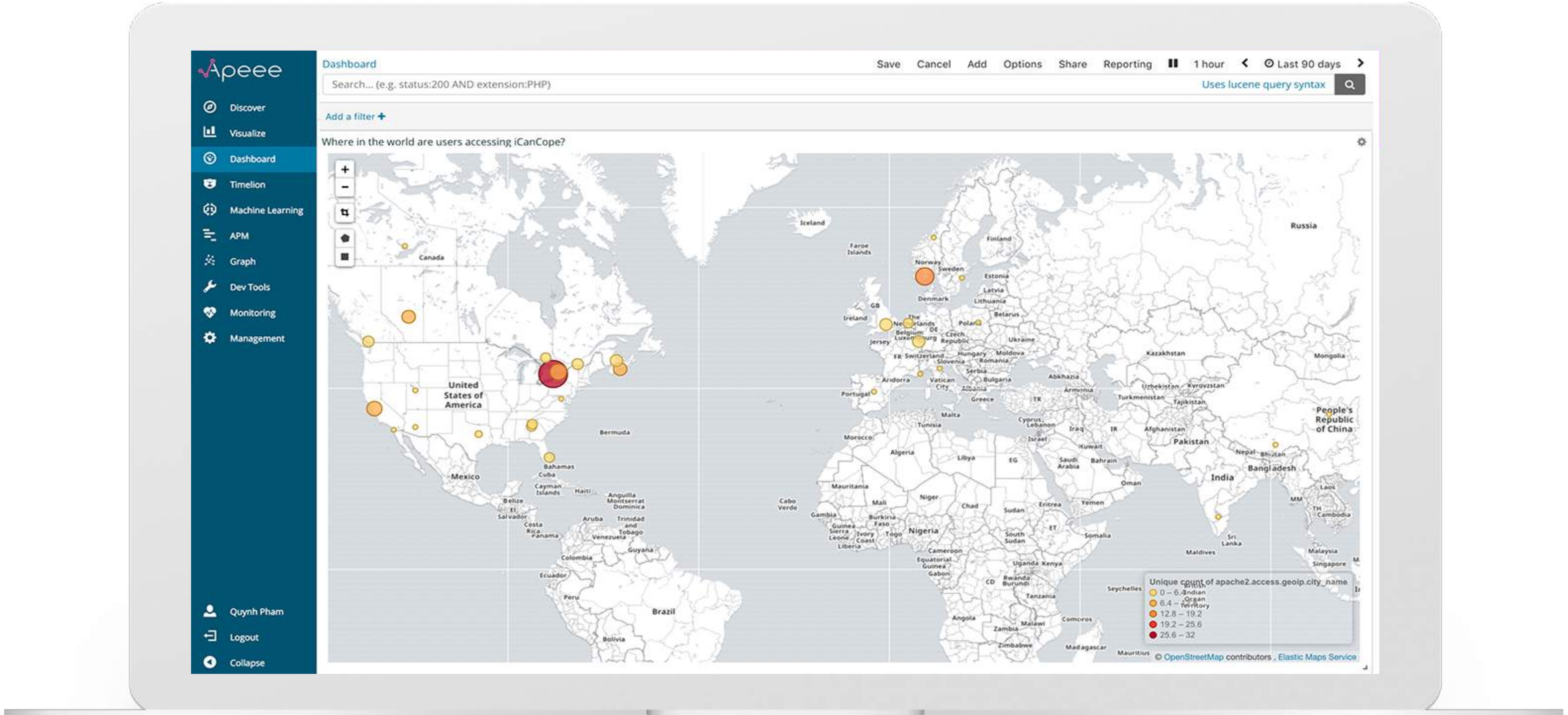
What types of goals are users setting?
activity
sleep
social
energy
mood
Number of participants
How many check-ins are being completed daily?
This week 13
Last month 10
Copey001 0
Copey002 1
Copey003 0
per 24 hours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Collapse
Dashboard
Save
Cancel
Add
Options
Share
Reporting
1 hour
Last 90 days
Search... (e.g. status:200 AND extension:PHP)
Uses lucene query syntax
Add a filter +
Where in the world are users accessing iCanCope?
Unique count of apache2.access.geoip.city_name
0 – 6.4
6.4 – 12.8
12.8 – 19.2
19.2 – 25.6
25.6 – 32
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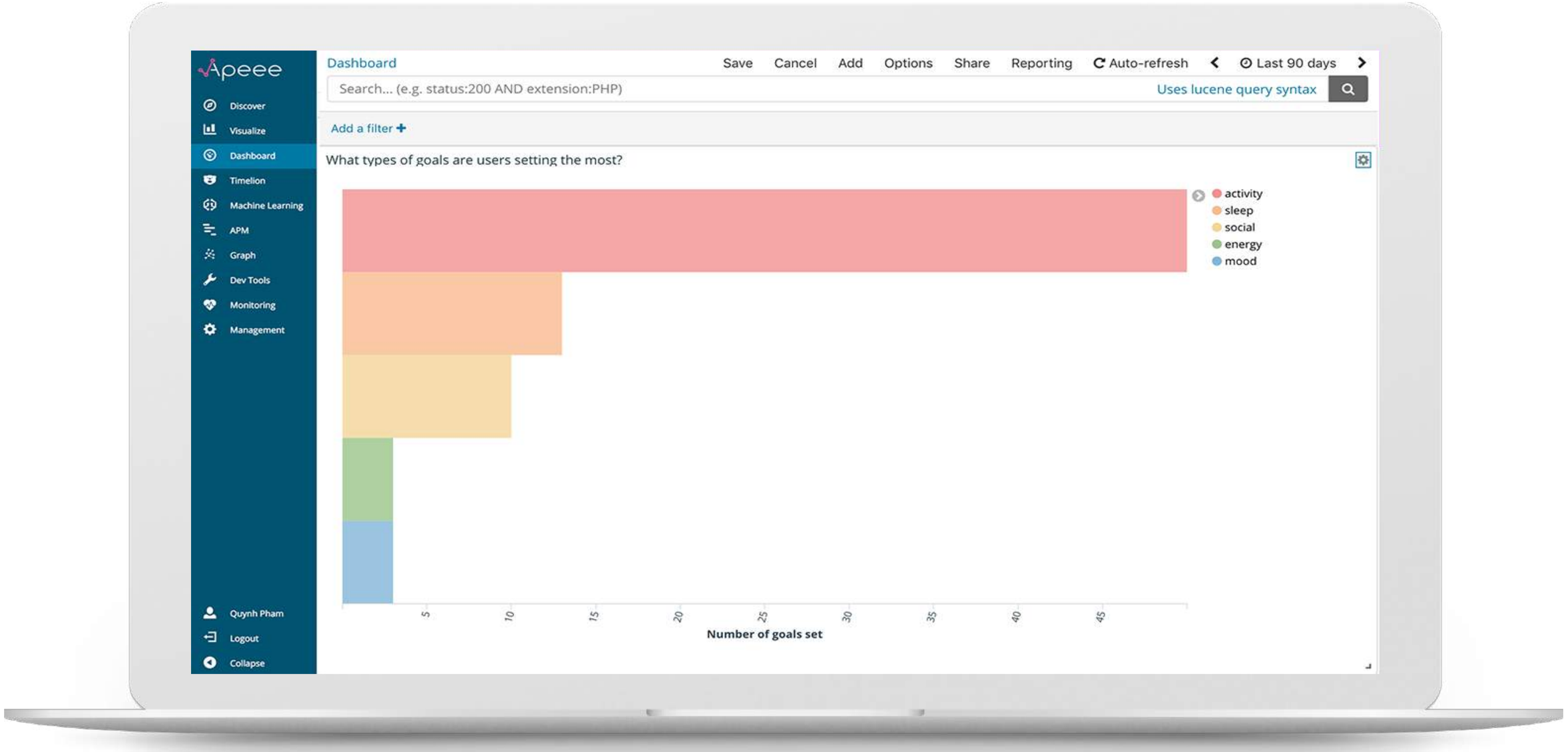
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Monitoring
Management
Quynh Pham
Logout
Collapse
Dashboard
Save
Cancel
Add
Options
Share
Reporting
Auto-refresh
Last 90 days
Search... (e.g. status:200 AND extension:PHP)
Uses lucene query syntax
Add a filter +
What types of goals are users setting the most?
activity
sleep
social
energy
mood
5
10
15
20
25
30
35
40
45
Number of goals set


Apeee
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Dashboard
Timelion
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APM
Graph
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Management
Quynh Pham
Logout
Collapse
Dashboard
Save
Cancel
Add
Options
Share
Reporting
Auto-refresh
Last 2 years
Search... (e.g. status:200 AND extension:PHP)
Options
Add a filter +
Are users adhering to the check-in protocol?
control
intervention
Number of users who completed a check-in
Days in Study


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APM
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Dev Tools
Monitoring
Management
Quynh Pham
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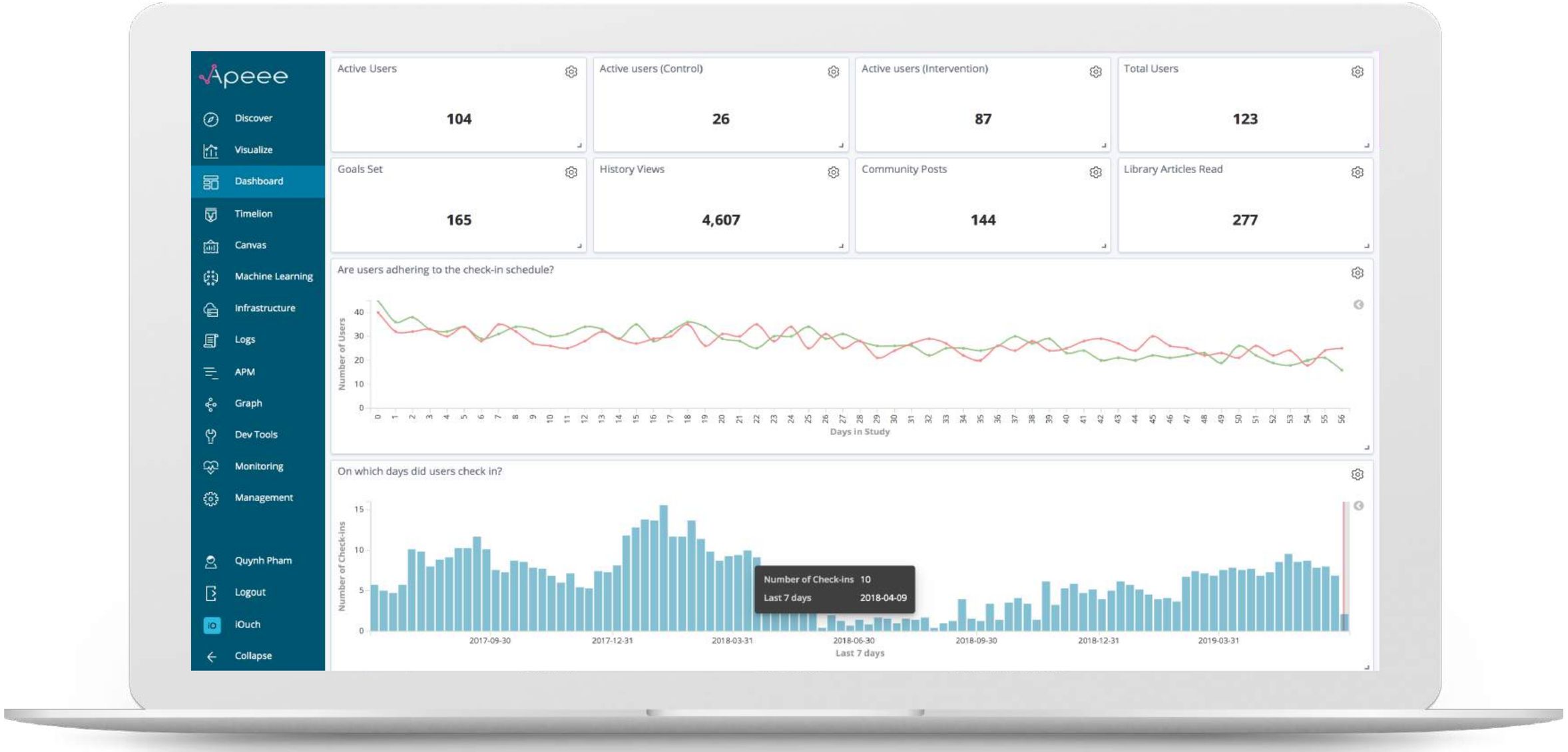
Collapse
Dashboard
Save
Cancel
Add
Options
Share
Reporting
Auto-refresh
Last 2 years
Search... (e.g. status:200 AND extension:PHP)
Options
Add a filter +
Are intervention and control users reporting different pain scores?
control
intervention
Pain Score
Days in Study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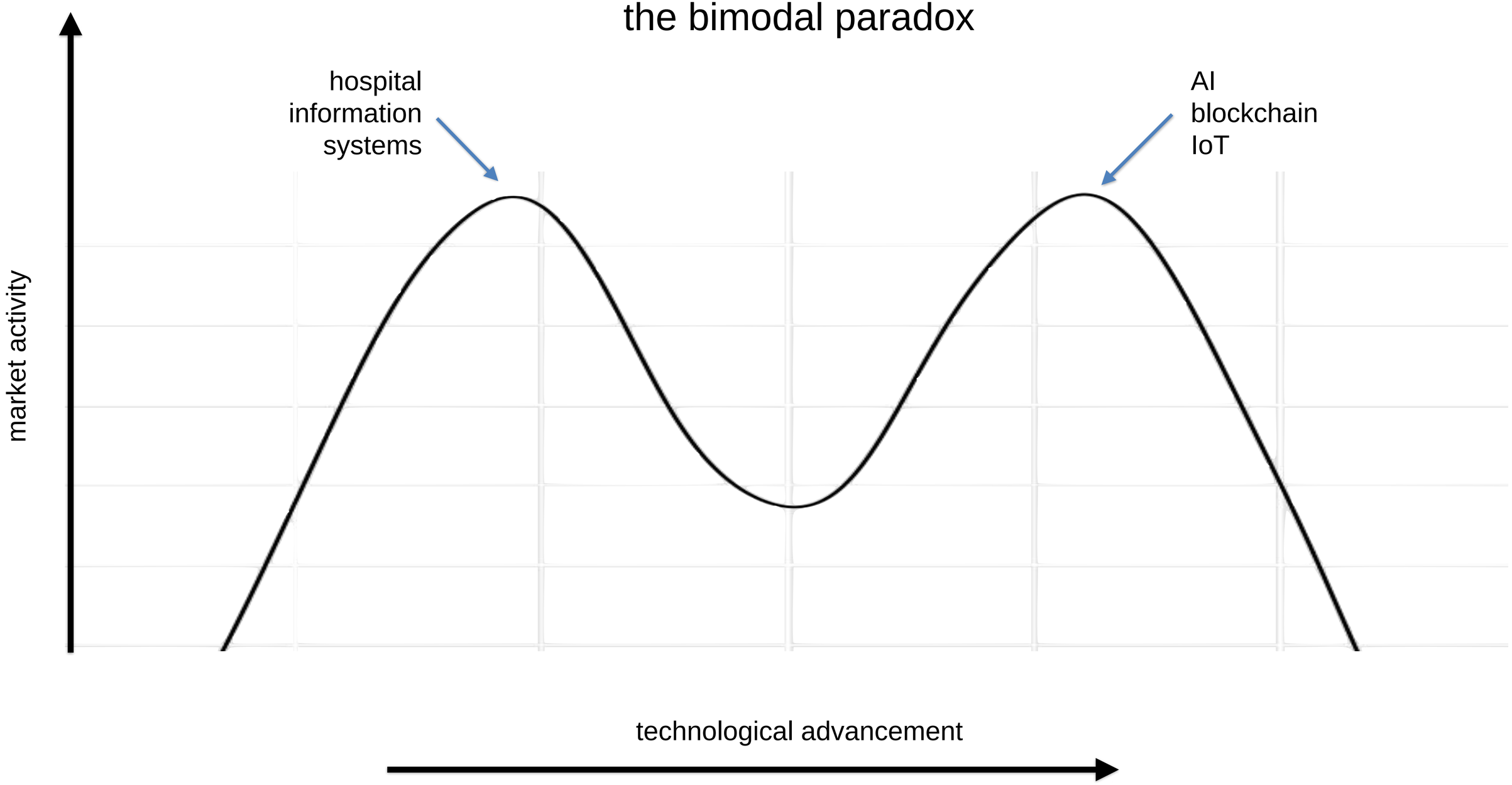
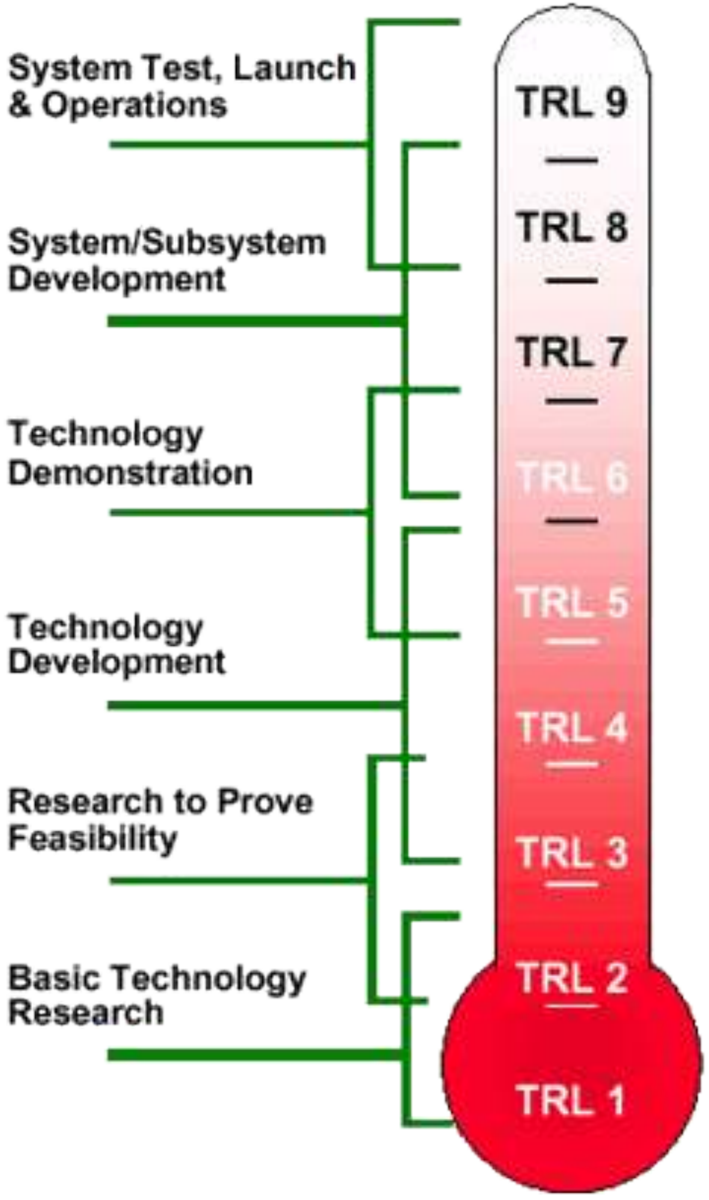
Timelion
Canvas
Machine Learning
Infrastructure
Logs
APM
Graph
Dev Tools
Monitoring
Management
Quynh Pham
Logout
iOuch
Collapse
Active Users
104
Active users (Control)
26
Active users (Intervention)
87
Total Users
123
Goals Set
165
History Views
4,607
Community Posts
144
Library Articles Read
277
Are users adhering to the check-in schedule?
Number of Users
Days in Study
On which days did users check in?
Number of Check-ins
Number of Check-ins 10
Last 7 days 2018-04-09
2017-09-30
2017-12-31
2018-03-31
2018-06-30
2018-09-30
2018-12-31
2019-03-31
Last 7 days

There is a need for clinical evaluation to keep pace with the level of mHealth innovation if it is to have meaningful impact in informing payers, providers, policy makers, and patients.

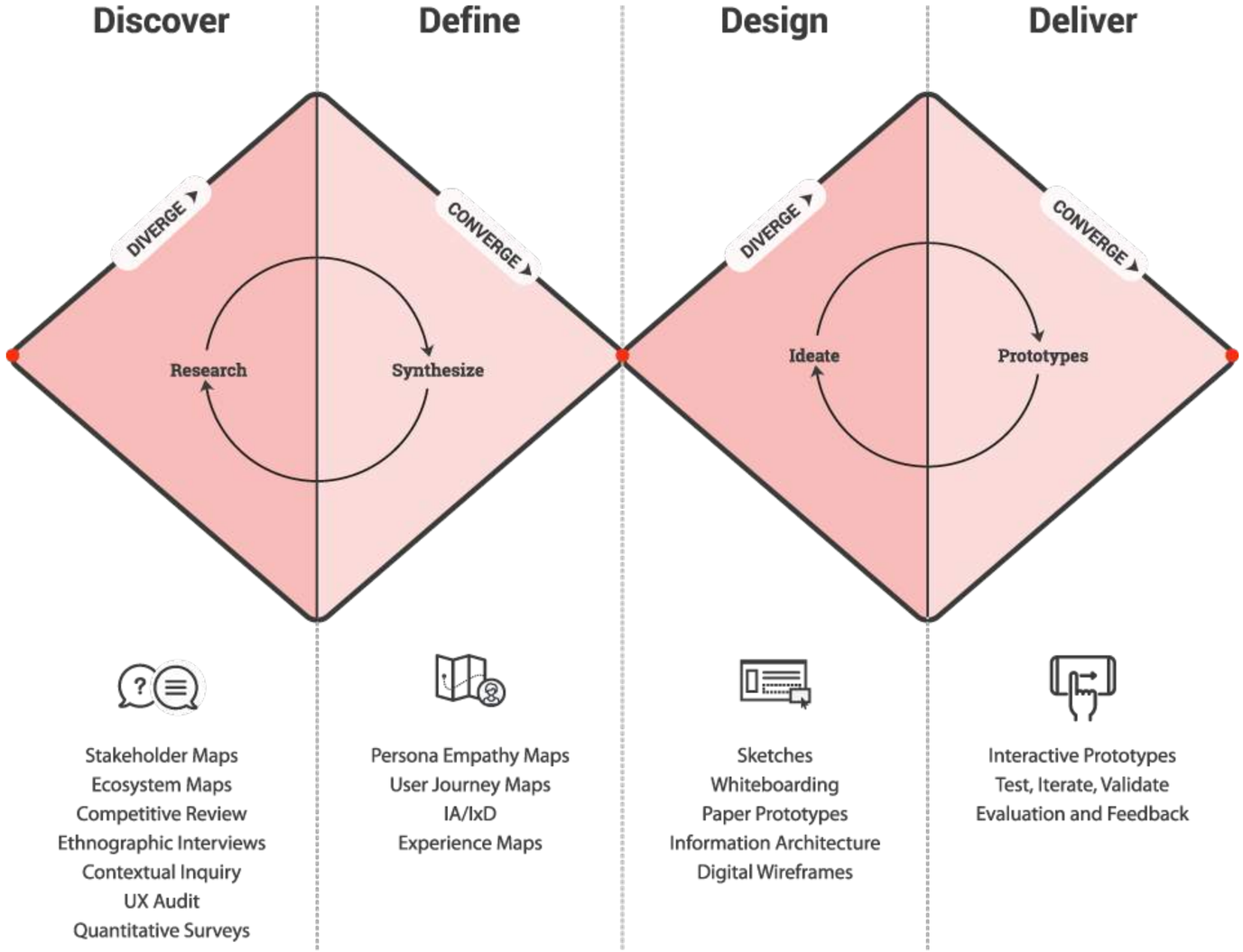
the bimodal paradox




System Test, Launch & Operations
System/Subsystem Development
Technology Demonstration
Technology Development
Research to Prove Feasibility
Basic Technology Research
TRL 9
TRL 8
TRL 7
TRL 6
TRL 5
TRL 4
TRL 3
TRL 2
TRL 1

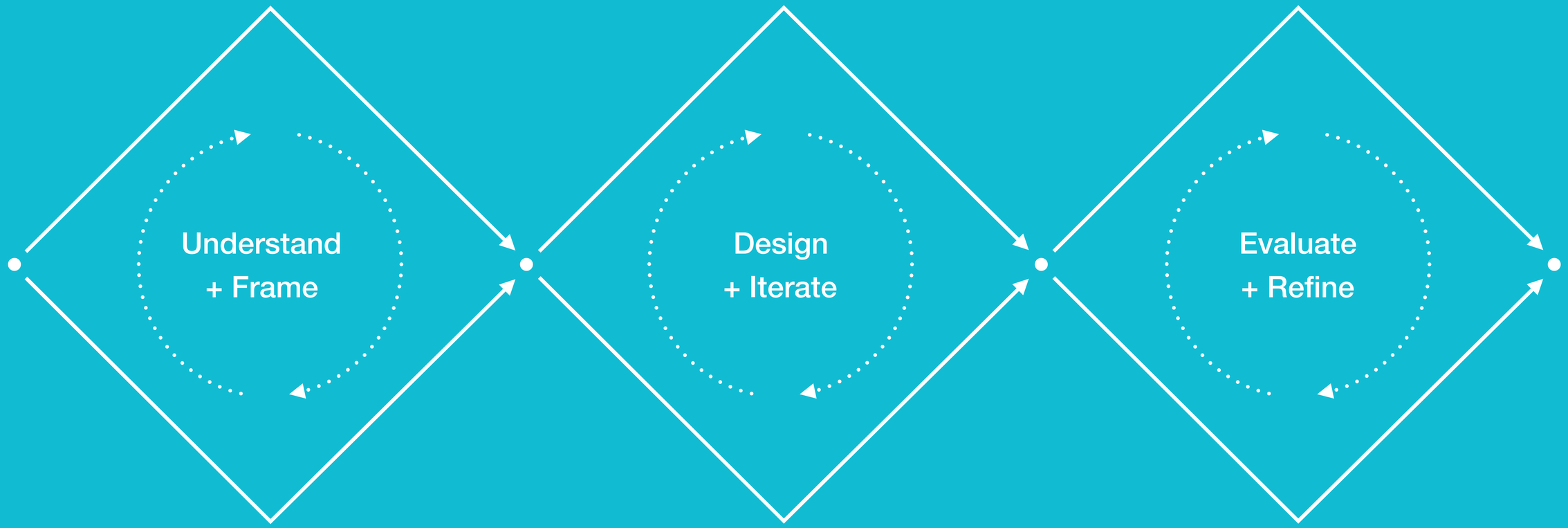

POLITICAL
ORGANIZATIONAL
TEAM
PSYCHOLOGICAL
PHYSICAL

Double Diamond Design Model



Our Design Process

Design the Right Thing → Design the Thing Right → Implement And Evolve



New dimensions of design for user experience and evaluation in digital health

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

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