LESSONS FROM *breathe*

Understanding Usage Patterns of Asthma Patients

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University Health Network

TECHNA

Healthcare Human Factors
University Health Network

UNIVERSITY of TORONTO

NEW SPACES

YOUR HOME

PHARMACIES

REMOTE COMMUNITIES

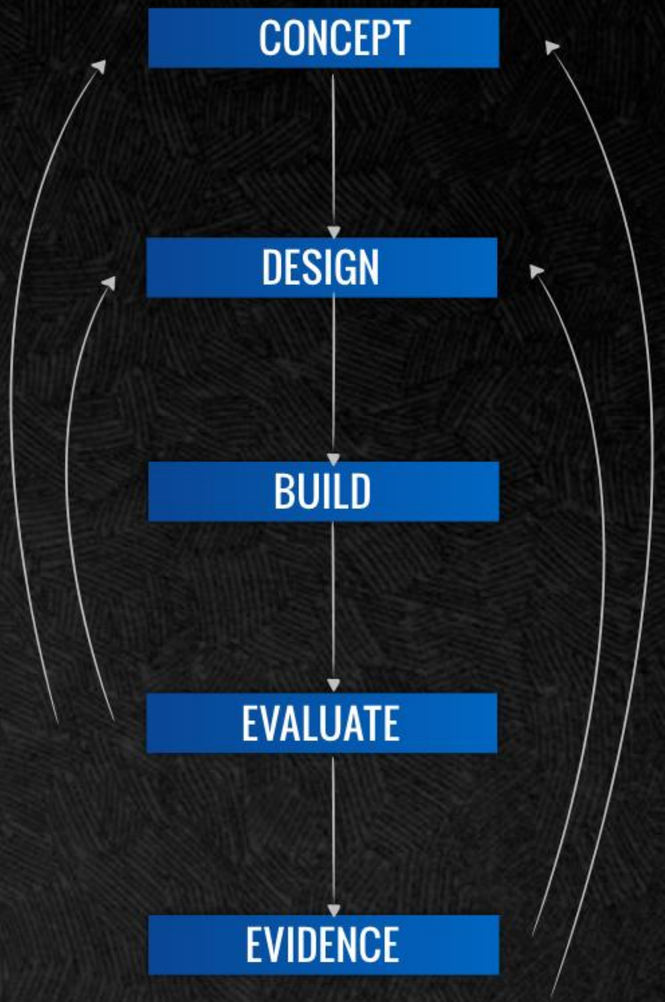
SCHOOL & WORK

CLINICIAN

HEALTH COACH

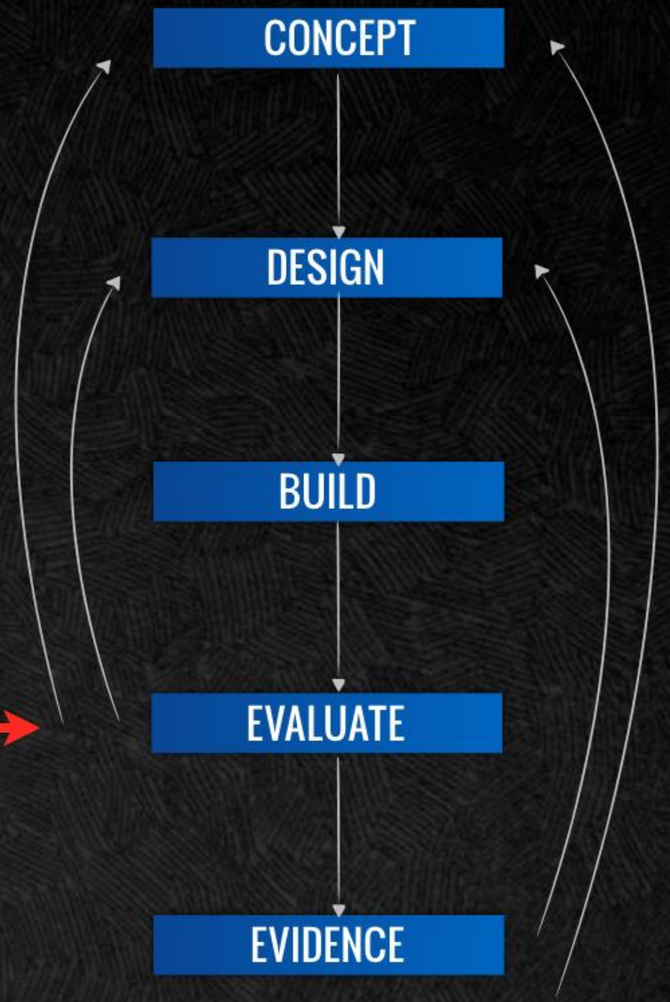
EMPATHY
in design

EMPATHY
in design

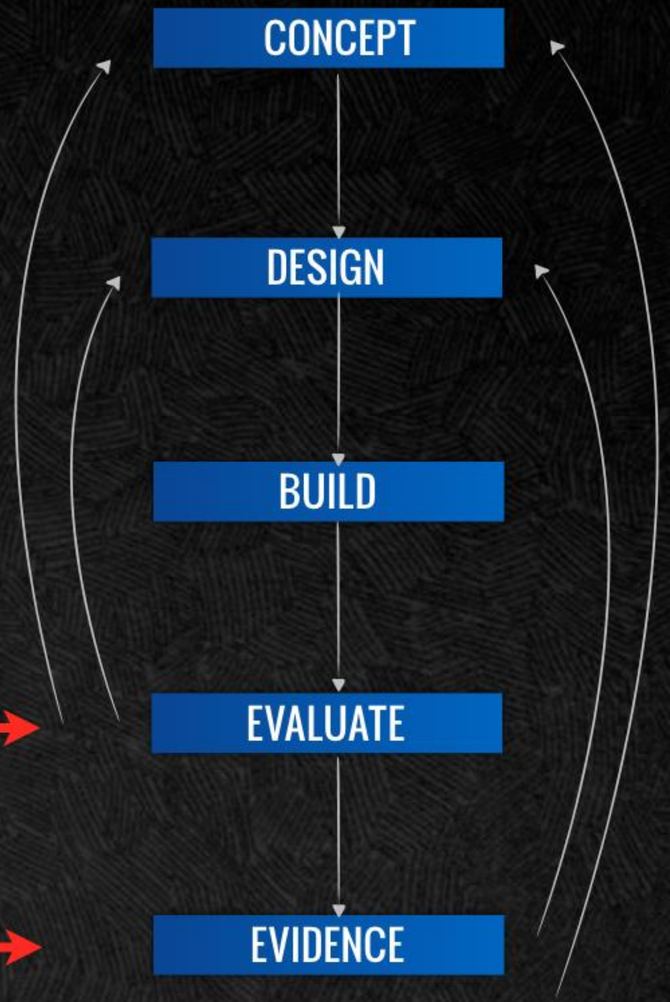


EMPATHY
in design

USABILITY



EMPATHY
in design

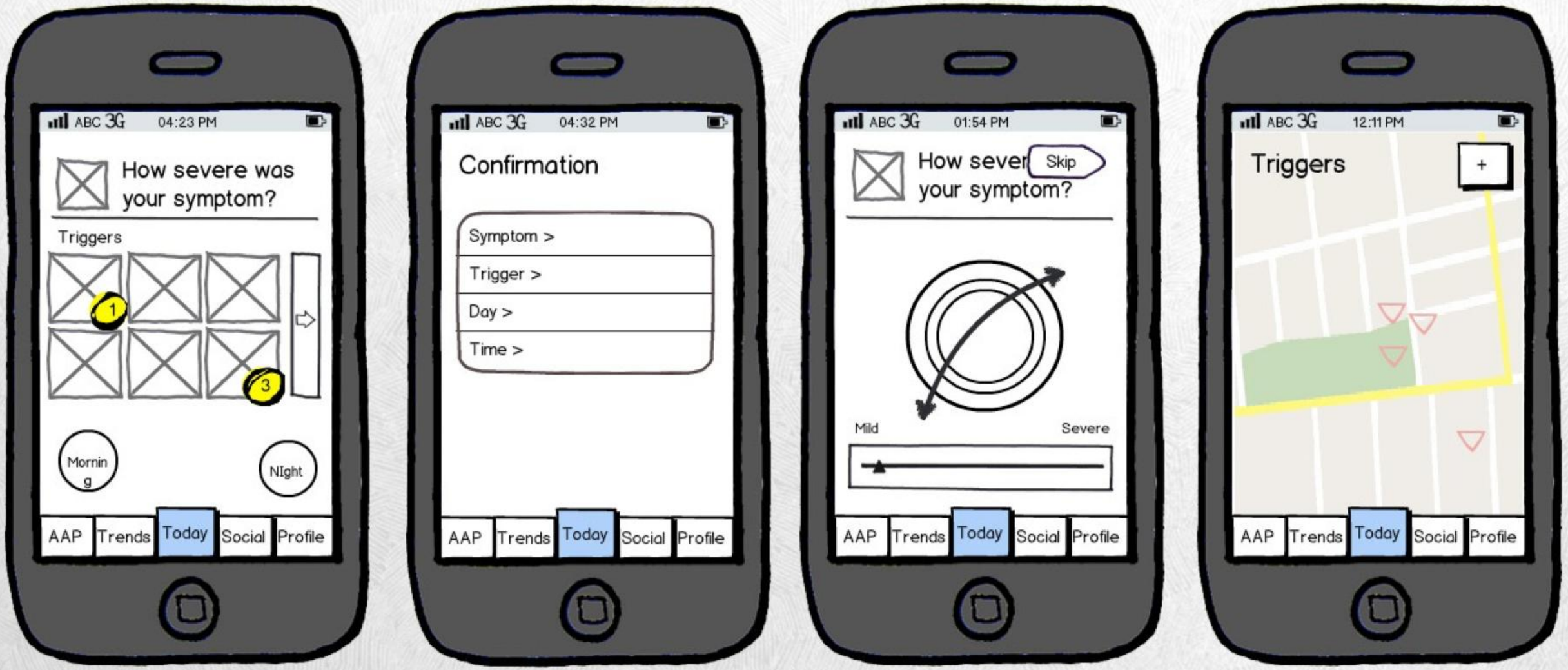


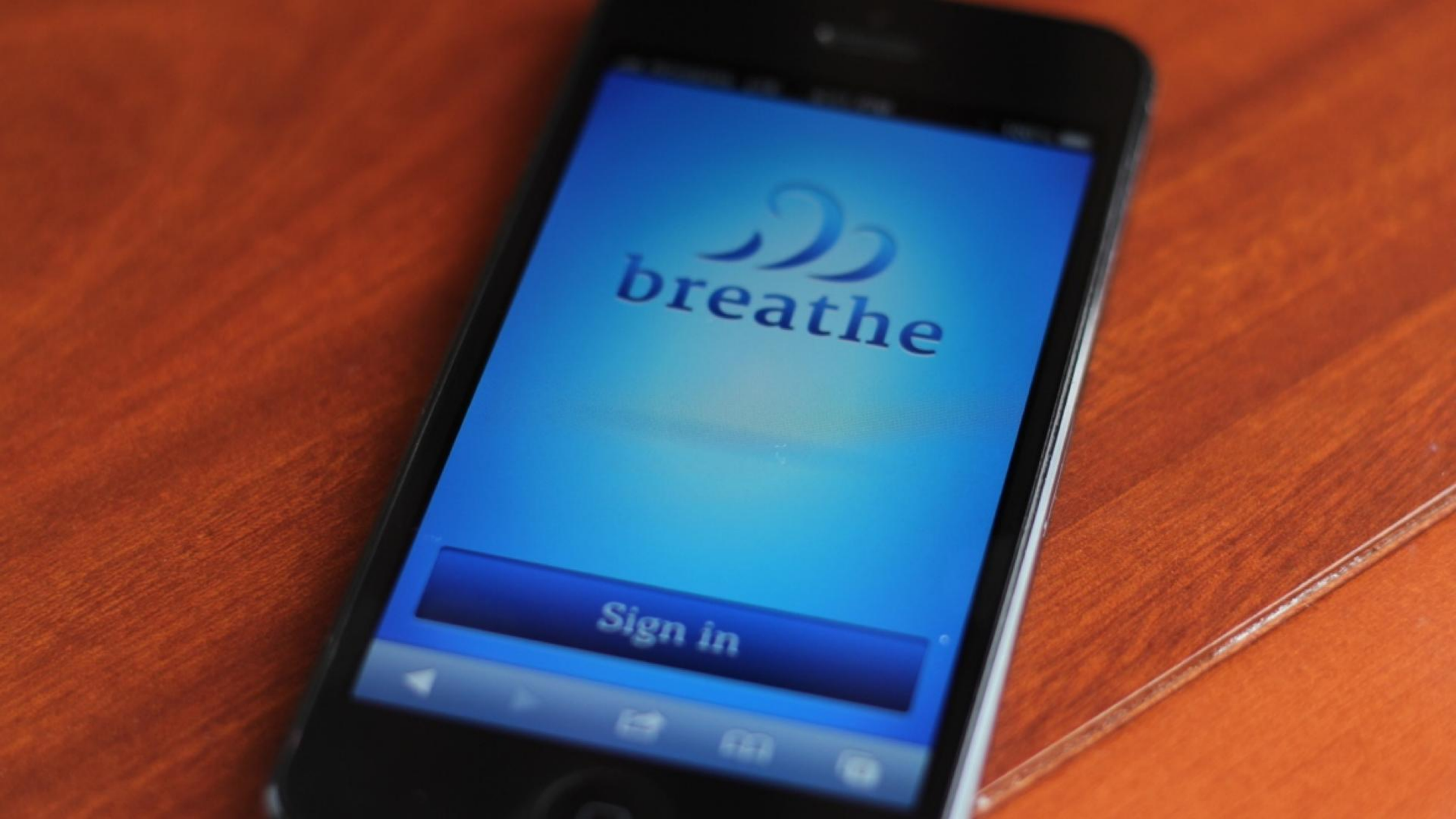
USABILITY →

PILOTS and RCTs →

breathe
- GREEN
- RED
- YELLOW
breathe
breathe
breathe
BREATHE
OPEN LETTERS
b
b
breathe
BREATHE
BREATHE
breathe
INHALE
EXHALE
breathe
RED
YELLOW
GREEN
BADGE
BREATHE
breathe
breath
breathe
breathe
breathe
breathe
breathe
breathe
breathe
MASCOT
OPEN WINDOW
ENVIRONMENT
TORNADO?
LETTING
AIR IN
CHANGING
EXPRESSIONS
breathe
breathe

breathe
ORDER FR
CHAOS
BREATHE
breathe
ESCAPE
breathe
WHITE SPACE
BREATHE
Breathe
- GREEN
- RED
- YELLOW
breathe
breathe
BREATHE
OPEN LETTERS
BREATHE
BREATHE
breathe
INHALE
EXHALE
breathe
RED
YELLOW
GREEN
breathe


ABC 3G 04:23 PM
How severe was your symptom?
Triggers
1
3
Mornin g
NIght
AAP
Trends
Today
Social
Profile
ABC 3G 04:32 PM
Confirmation
Symptom >
Trigger >
Day >
Time >
AAP
Trends
Today
Social
Profile
ABC 3G 01:54 PM
How sever
Skip
your symptom?
Mild
Severe
AAP
Trends
Today
Social
Profile
ABC 3G 12:11 PM
Triggers
+
AAP
Trends
Today
Social
Profile


breathe
Sign in

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

breathe

Asthma Action Plan

For: _____ Doctor: _____ Date: _____

Doctor's Phone Number _____ Hospital/Emergency Department Phone Number _____

GREEN ZONE — Doing Well

- No cough, wheeze, chest tightness, or shortness of breath during the day or night
- Can do usual activities

And, if a peak flow meter is used,

Peak flow: more than _____
(80 percent or more of my best peak flow)

My best peak flow is: _____

Take these long-term control medicines each day (include an anti-inflammatory).

Medicine	How much to take	When to take it
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
Before exercise ❒ _____	❒ 2 or ❒ 4 puffs _____	5 minutes before exercise

YELLOW ZONE — Asthma Is Getting Worse

- Cough, wheeze, chest tightness, or shortness of breath, or
- Waking at night due to asthma, or
- Can do some, but not all, usual activities

-Or-

Peak flow: _____ to _____
(50 to 79 percent of my best peak flow)

First

Add: quick-relief medicine—and keep taking your GREEN ZONE medicine.

_____
(short-acting beta$_2$-agonist)

❒ 2 or ❒ 4 puffs, every 20 minutes for up to 1 hour
❒ Nebulizer, once

Second

If your symptoms (and peak flow, if used) return to GREEN ZONE after 1 hour of above treatment:
❒ Continue monitoring to be sure you stay in the green zone.

-Or- _____

If your symptoms (and peak flow, if used) do not return to GREEN ZONE after 1 hour of above treatment:
❒ Take: _____ ❒ 2 or ❒ 4 puffs or ❒ Nebulizer
(short-acting beta$_2$-agonist)
❒ Add: _____ mg per day For _____(3–10) days
(oral steroid)
❒ Call the doctor ❒ before/ ❒ within _____ hours after taking the oral steroid.

RED ZONE — Medical Alert!

- Very short of breath, or
- Quick-relief medicines have not helped, or
- Cannot do usual activities, or
- Symptoms are same or get worse after 24 hours in Yellow Zone

-Or-

Peak flow: less than _____

Take this medicine:

❒ _____ ❒ 4 or ❒ 6 puffs or ❒ Nebulizer
(short-acting beta$_2$-agonist)

❒ _____ mg
(oral steroid)

Then call your doctor NOW. Go to the hospital or call an ambulance if:
- You are still in the red zone after 15 minutes AND
- You have not reached your doctor.

Asthma Action Plan for Your Child

Name:_____ Personal Best Peak Flow:_____ Date:_____ Triggers:_____

Provider's Name:_____ Provider's Phone:_____ Next Appt.:_____

Green Zone: "GO!"

Peak flow is greater than_____(80%)
See provider every _____ months.

Symptoms:
- No cough or wheeze
- Breathing is good
- Sleep through the night
- Can work and play

Asthma Medications:

Take your daily preventive medicines:	How much	When

Take this medicine **5** minutes before exercise:

Other medication(s):_____

_____

_____

Yellow Zone: "CAUTION"

Peak flow is between_____(50%) and_____(80%)
Call provider if in YELLOW ZONE for _____ hours.

Symptoms:
- Cough
- Wheeze
- Shortness of breath
- Chest tightness

Asthma Medications:

Continue taking your daily preventive medicines. Add quick-relief medicines for symptoms:	How much

If you go back to the **GREEN ZONE** after one hour, continue to watch your symptoms

If your symptoms do not return to the **GREEN ZONE** after one hour of treatment, take:	How much

Add:_____

for_____days

Red Zone: "DANGER!"

Peak flow is less than _____(50%)
Call Provider's Office!

Symptoms:
- Medicine is not helping
- Breathing is hard and fast
- Nose opens wide
- Constant coughing or wheezing
- Can't talk well
- Any severe symptoms

Asthma Medications:

Take quick-relief medicine:	How much
Add:	**How much**

Go to the hospital or call 911 if you are still in the RED ZONE after 15 minutes and you have not reached your doctor

Call 911 if your child:
- Is breathing hard or fast
- Is sucking in chest or abdomen
- Can't walk or can't talk
- Has blue lips or fingers

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.	**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 reccomended by your doctor.

Asthma Action Plan

Asthma and Allergy Foundation of America www.aafa.org

Name	Date
Doctor	Medical Record #
Doctor's Office Phone #: Day	Night/Weekend
Emergency Contact	
Doctor's Signature	

The Colors of a traffic light will help you use your asthma medicines.

Green means **Go Zone!**
Use preventive medicine.

Yellow Means **Caution Zone!**
Add quick-relief medicine.

Red means **Danger Zone!**
Get help from a doctor.

Personal Best Peak Flow _____

GO

You have *all* of these:
- Breathing is good
- No cough or wheeze
- Sleep through the night
- Can work and play

Peak flow from _____ to _____

CAUTION

You have *any* of these:
- First signs of a cold
- Exposure to known trigger
- Cough
- Mild wheeze
- Tight chest
- Coughing at night

Peak flow from _____ to _____

DANGER

Your asthma is getting worse fast:
- Medicine is not helping
- Breathing is hard and fast
- Nose opens wide
- Ribs show
- Can't talk well

Peak flow reading below _____

Use these daily preventive anti-inflammatory medicines:

MEDICINE	HOW MUCH	HOW OFTEN/WHEN

For asthma with exercise, take:

Continue with green zone medicine and add:

MEDICINE	HOW MUCH	HOW OFTEN/WHEN

CALL YOUR PRIMARY CARE PROVIDER.

Take these medicines and call your doctor now.

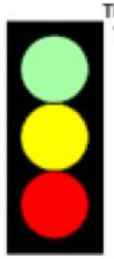
MEDICINE	HOW MUCH	HOW OFTEN/WHEN

GET HELP FROM A DOCTOR NOW! Do not be afraid of causing a fuss. Your doctor will want to see you right away. It's important! If you cannot contact your doctor, go directly to the emergency room. DO NOT WAIT.

Make an appointment with your primary care provider within two days of an ER visit or hospitalization.

Massachusetts Asthma Action Plan

Name:		Date:
Birth Date:	Doctor/Nurse Name	Doctor/Nurse Phone #
Patient Goal:		Parent/Guardian Name & Phone
Important! Avoid things that make your asthma worse:		



The colors of a traffic light will help You use your asthma medicine.

Green means **Go Zone!**
Use controller medicine.

Yellow means **Caution Zone!**
Add quick-relief medicine.

Red means **Danger Zone!**
Get help from a doctor.

Personal Best Peak Flow: _____

GO – You're Doing Well! ➡ Use these daily controller medicines:

You have *all* of these:
- Breathing is good
- No cough or wheeze
- Sleep through the night
- Can go to school and play

MEDICINE/ROUTE	HOW MUCH	HOW OFTEN/ WHEN

CAUTION – Slow Down! ➡ Continue with green zone medicine and add:

You have *any* of these:
- First signs of a cold
- Cough
- Mild wheeze
- Tight Chest
- Coughing, wheezing, or trouble breathing at night

MEDICINE/ROUTE	HOW MUCH	HOW OFTEN/ WHEN

CALL YOUR DOCTOR/ NURSE: _____

DANGER – Get Help! ➡ Take these medicines and call your doctor now.

Your asthma is getting worse fast:
- Medicine is not helping
- Breathing is hard and fast
- Nose opens wide
- Ribs show
- Can't talk well

MEDICINE/ROUTE	HOW MUCH	HOW OFTEN/ WHEN

GET HELP FROM A DOCTOR NOW! Do not be afraid of causing a fuss. Your doctor will want to see you right away. It's important! If you cannot contact your doctor, go directly to the emergency room and bring this form with you. DO NOT WAIT.

Make an appointment with your doctor / nurse within two days of an ER visit or hospitalization.

Doctor /NP/PA Signature: _____ Date:_____

I give permission to the school nurse, my child's doctor/NP/PA or _____ to share information about my child's asthma

Parent/Guardian Signature:_____ Date:_____

****SEE BACK OF SCHOOL COPY FOR STUDENT MEDICATION ADMINISTRATION AUTHORIZATION****

Asthma Action Plan (Sample)

Name: _____

Doctor's Name: _____

Date: _____

Hospital/Emergency Room Phone Number: _____

Doctor's Phone Number: _____

This Action Plan is a guide only. Always see a doctor if you are unsure what to do.

Green Zone – I have symptom-free asthma

I have no symptoms:

- I have no cough, wheeze, chest tightness or shortness of breath
- I do not cough or wheeze when I exercise or sleep
- I can do all my usual activities
- I do not need to take days off work

To remain symptom-free, I need to take these controller medications every day

Medication	How much to take	When to take it

Yellow Zone – I have asthma symptoms

- I cough, wheeze, have chest tightness or shortness of breath during the day, when I exercise, or sleep
- I feel like I am getting a cold or the flu
- I need to use my reliever inhaler more than three times a week for my asthma symptom

I need to either increase my controller medication, or add on a different controller

First ■ Take _____ 2 puffs, every ____ hours, as needed.
(Reliever)

Second ■ Increase _____ to ____ day, for ____ days, or until you are back in the green zone.
(Controller)

If no improvement in _____ hours, call or visit your Doctor.

Red Zone – I am in danger and need help

Any of the following:

- I have been in the Yellow Zone for 24 hours
- My asthma symptoms are getting worse
- My reliever does not seem to be helping
- I can not do any type of activity
- I am having trouble walking or talking
- I feel faint or dizzy
- I have blue lips or fingernails
- I am frightened
- This attack came on suddenly

Go directly to the nearest Emergency Room of your local hospital

First This is an emergency. Dial 911.

Second While waiting for the ambulance, take

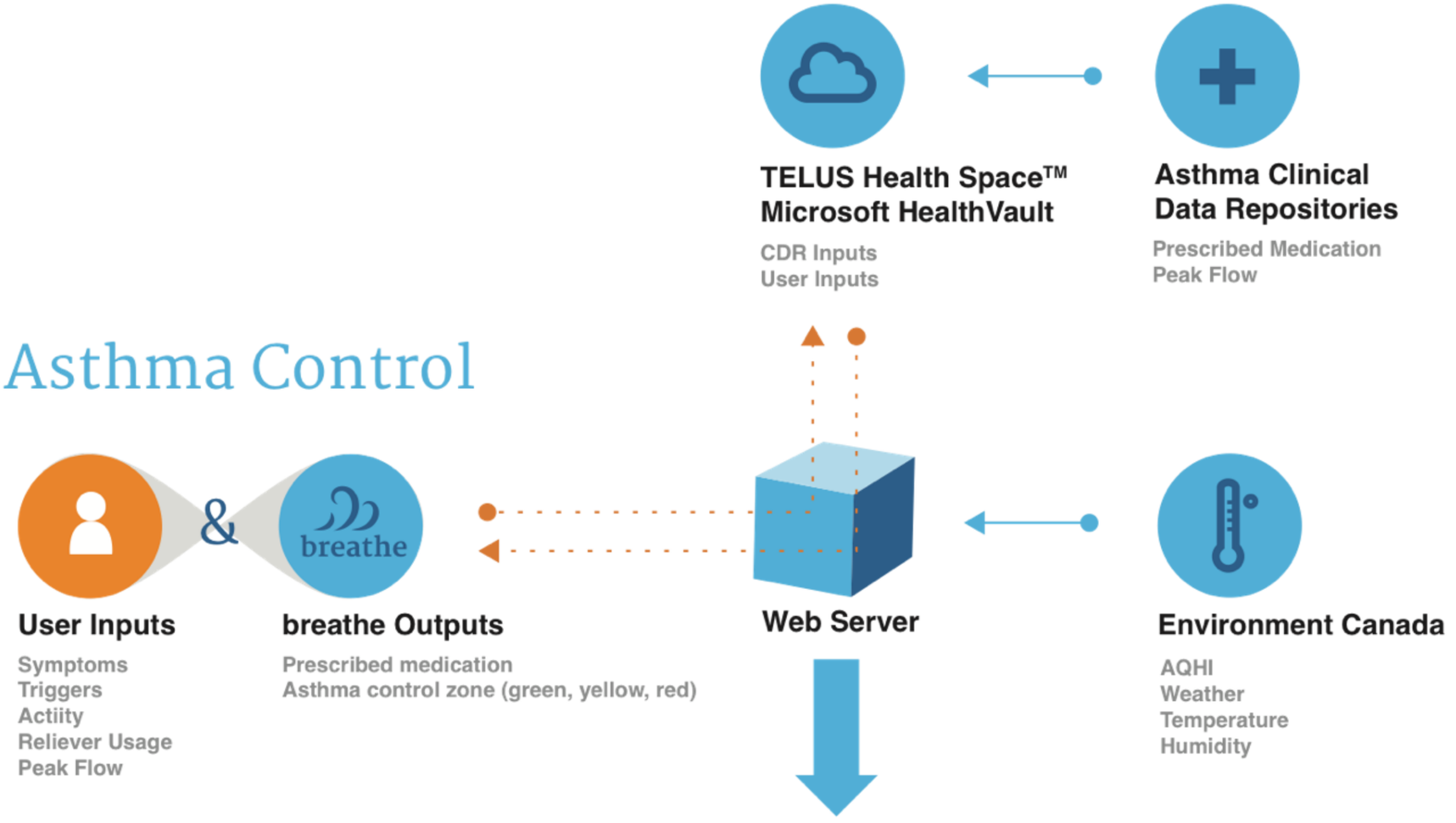
■ 2 puffs of _____ every 10 minutes.
(Reliever inhaler)

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.

Asthma Control



OLA "Zone Calculator" Algorithm

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 _____

App Definition Statement

Help people **control** their Asthma through tracking, reminders, trend analysis, environmental health factors, and easy access to their Asthma Action Plan.

Bell 3G
3:30 PM
Journal
Save
Wed, November 31
Symptoms:
None
Record
Medications used today:
Controller
Advair 250 mcg
--- times
Reliever
--- times
Peak Flow
--- L/min

Bell 3G
3:30 PM
Home
Your Zone
Environment
Trends
Journal
Account
Sign out
Your Zone

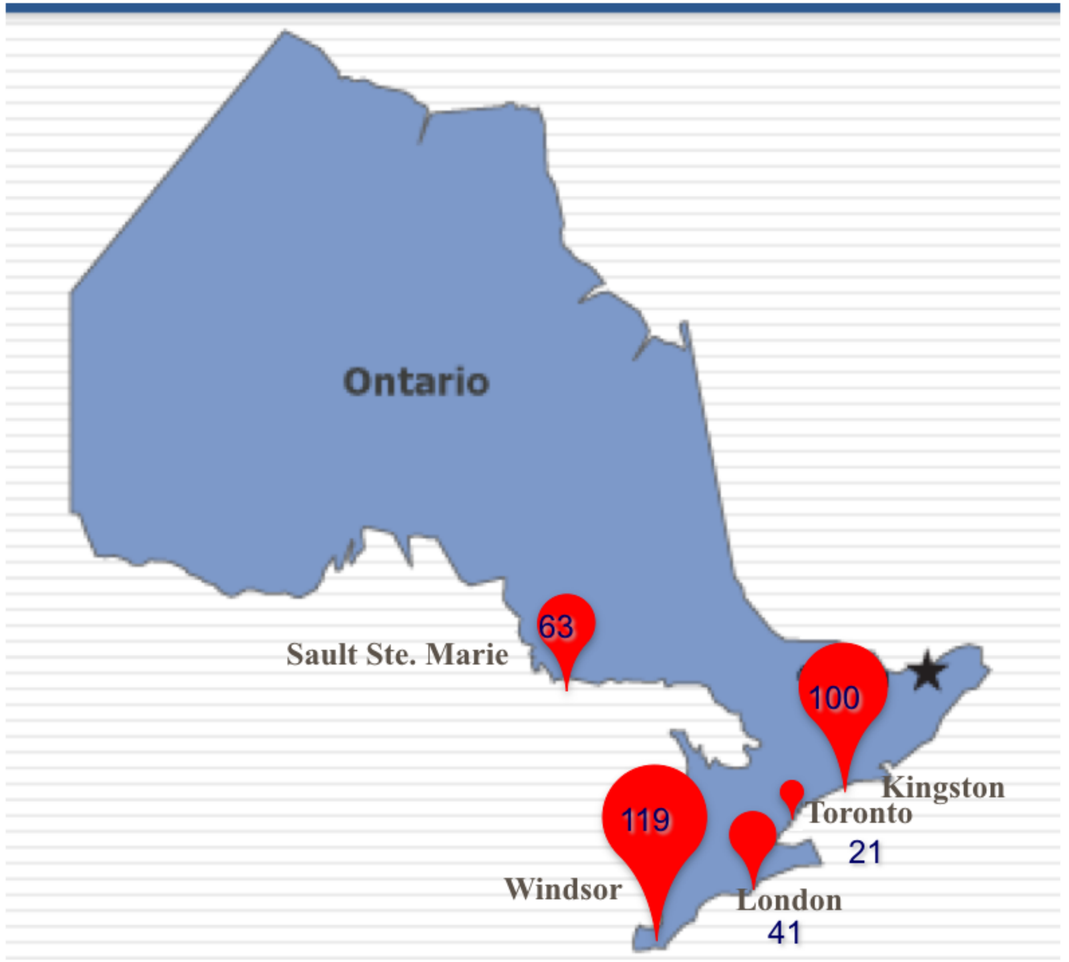
Bell 3G
3:30 PM
Your Plan
Your Zone
Today
CONTROLLED
Your Current Meds
Wed, November 31
Ongoing
Advair (controller) 250 mcg
2 puffs twice a day
Until Nov 31
Ventolin/Salbutamol (reliever) 100 mcg
2 puffs as needed
Until Nov 31
Advair Controller 250 mcg
2 puffs twice a day
Until Nov 31
Advair Controller 250 mcg
2 puffs twice a day

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

Sign in
breathe
An app for your asthma.
Your Zone
See how you're doing with your asthma.
Environment
Get the latest conditions including Air Quality Health Index.
Trends
Get to know your asthma better.
breathe
Sign in
breathe
Sign in

Implementation

TOTAL – **391 participants** (344 patients, 37 clinical users + 10 clinical)



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Event Data

Type	Description	Total
Emails	*breathe* emails sent to a user	74612
Access	A user successfully logged into *breathe*	22055
Zone	*breathe* calculated zone control based on symptoms reported and control algorithm	2901
Episodes	User reported symptoms (i.e. good day or Awake/Asleep episode)	2779
Medication Usage	User reported medication usage	2278
Peak Flow Measured	User reported peak flow	1156
Medication (prescription)	Medication provided by the clinic via clinical data repository	754
Predicted Peak Flow	Peak flow predicted from the clinic and provided via clinical data repository	56
Total Events		**106591**

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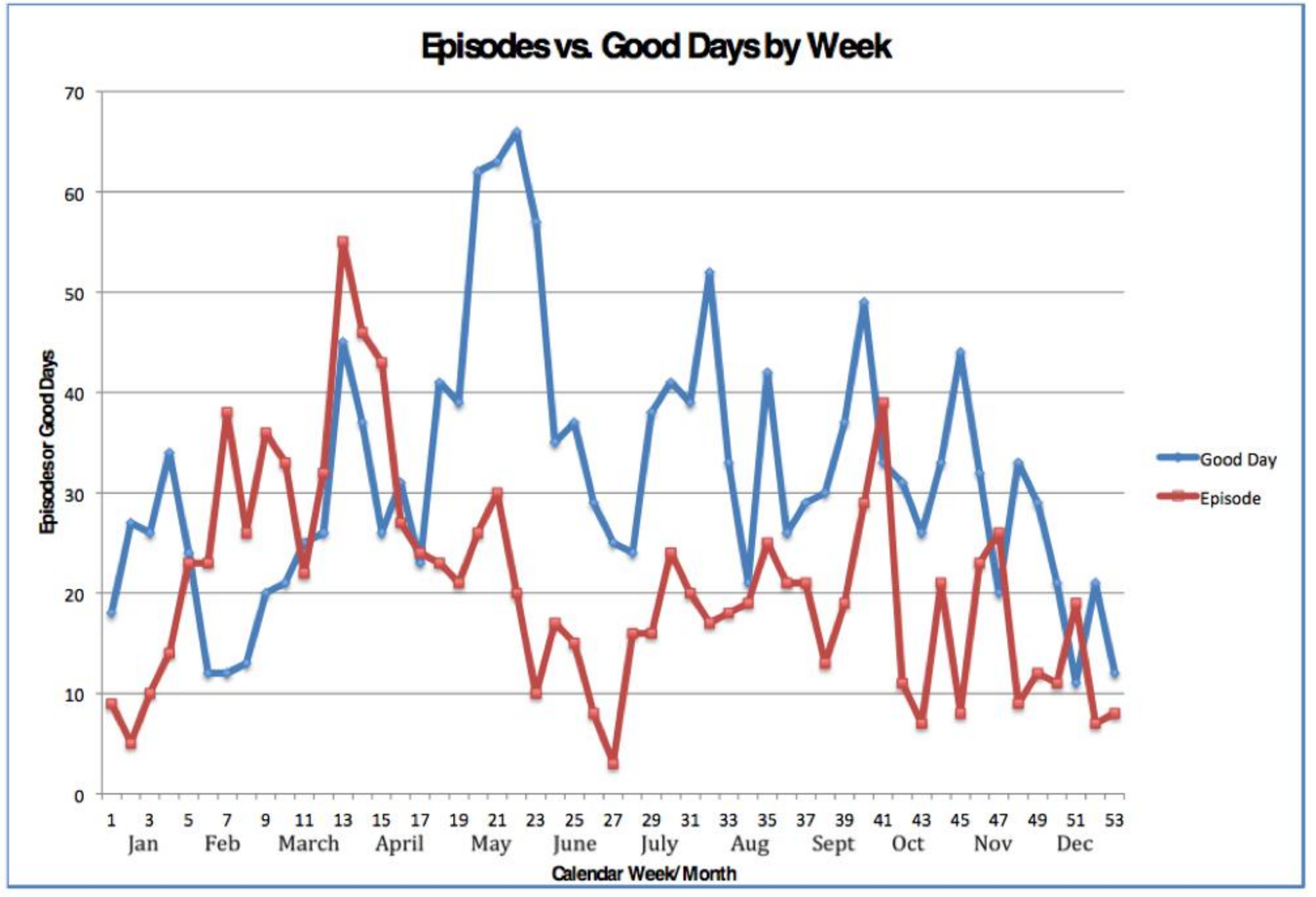
Symptom Episode Data



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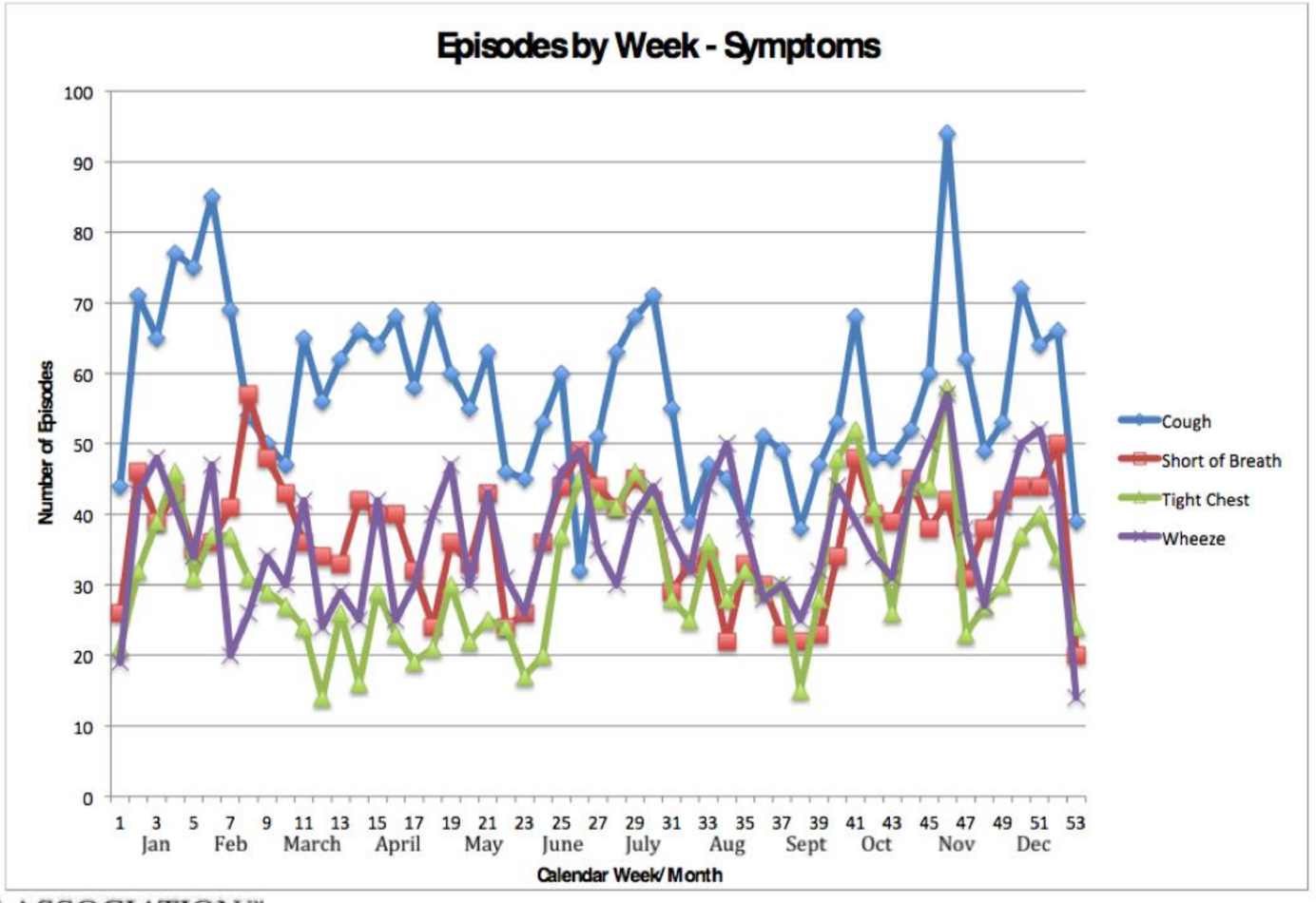
Symptom Episode Data



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Asthma Trigger

Triggers greater than 200 occurrences

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Unknown	98	145	86	92	116	84	148	94	149	150	123	98	1383
Colds	139	106	118	131	110	84	77	66	76	99	130	126	1262
Changes in weather	62	26	81	78	92	47	62	57	45	72	75	112	809
Exercise	74	69	67	69	41	29	32	37	16	30	38	55	557
Stress	43	33	49	46	39	36	34	60	32	61	42	72	547
Humidity	1	5	16	18	60	86	149	81	32	14	21	20	503
Cold air	75	51	50	35	36	10	15	13	12	20	51	49	417
Rhinitis	11	14	34	24	65	49	36	27	23	23	50	25	381
Other	43	27	13	11	18	13	18	24	24	9	11	14	225

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Asthma Trigger

Triggers less than 200 occurrences

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Wind	5	5	21	22	33	13	14	15	12	10	32	13	195
Dust	18	9	6	7	13	11	28	8	20	5	4	7	136
Work	4	15	6	7	3	12	15	13	15	17	14	2	123
Pollen	0	0	4	5	28	40	21	10	6	4	1	0	119
Pets	10	3	16	11	2	10	16	15	10	8	5	7	113
Second hand smoke	4	2	10	6	2	17	14	7	5	9	9	3	88
Grass	0	0	0	2	5	9	21	16	12	1	0	0	66
Outdoor pollution	0	1	5	1	4	6	11	6	1	0	0	2	37
Fumes	0	1	2	1	8	2	8	0	0	3	3	5	33
Mould	4	5	1	2	0	0	0	0	2	0	0	8	22
Perfumes	0	0	6	0	1	2	3	3	2	0	0	0	17
Smoking	0	0	2	0	1	1	0	4	0	0	1	0	9
Cockroaches	0	0	0	0	0	0	0	0	1	0	0	0	1
Drugs	0	0	0	0	0	0	0	0	0	0	0	0	0

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Asthma Medication

Prescribed Action Plan

Medication	Total
Ventolin/Salbutamol	206
Symbicort	117
Advair	73
Singulair	40
Flovent	26
Prednisone	22
Alvesco	20
Spiriva	11
Pulmicort	5
Bricanyl	4
Airomir	2
Oxeze	2
Serevent	2
Qvar	1

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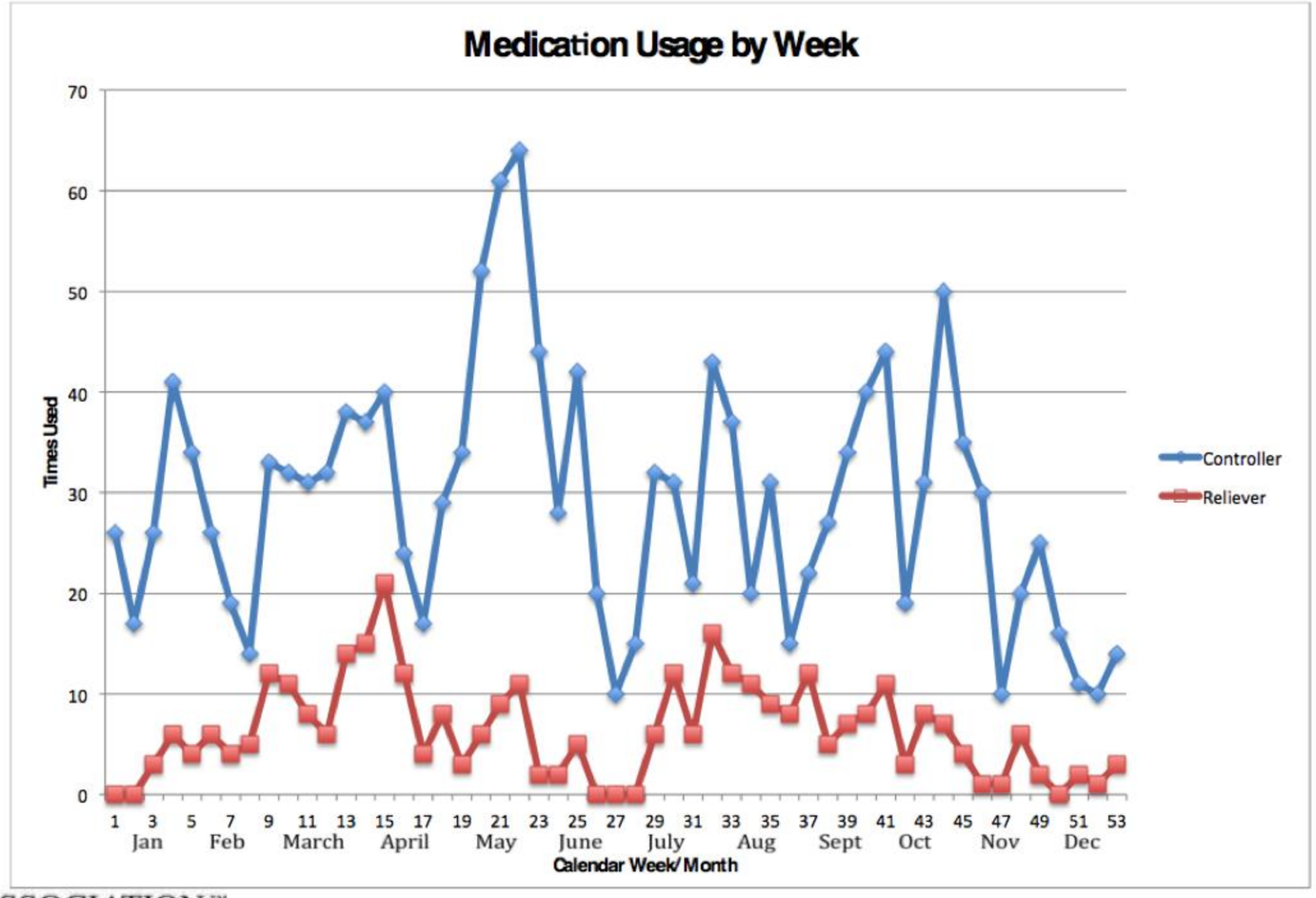
Asthma Medication

Self-Reported Usage



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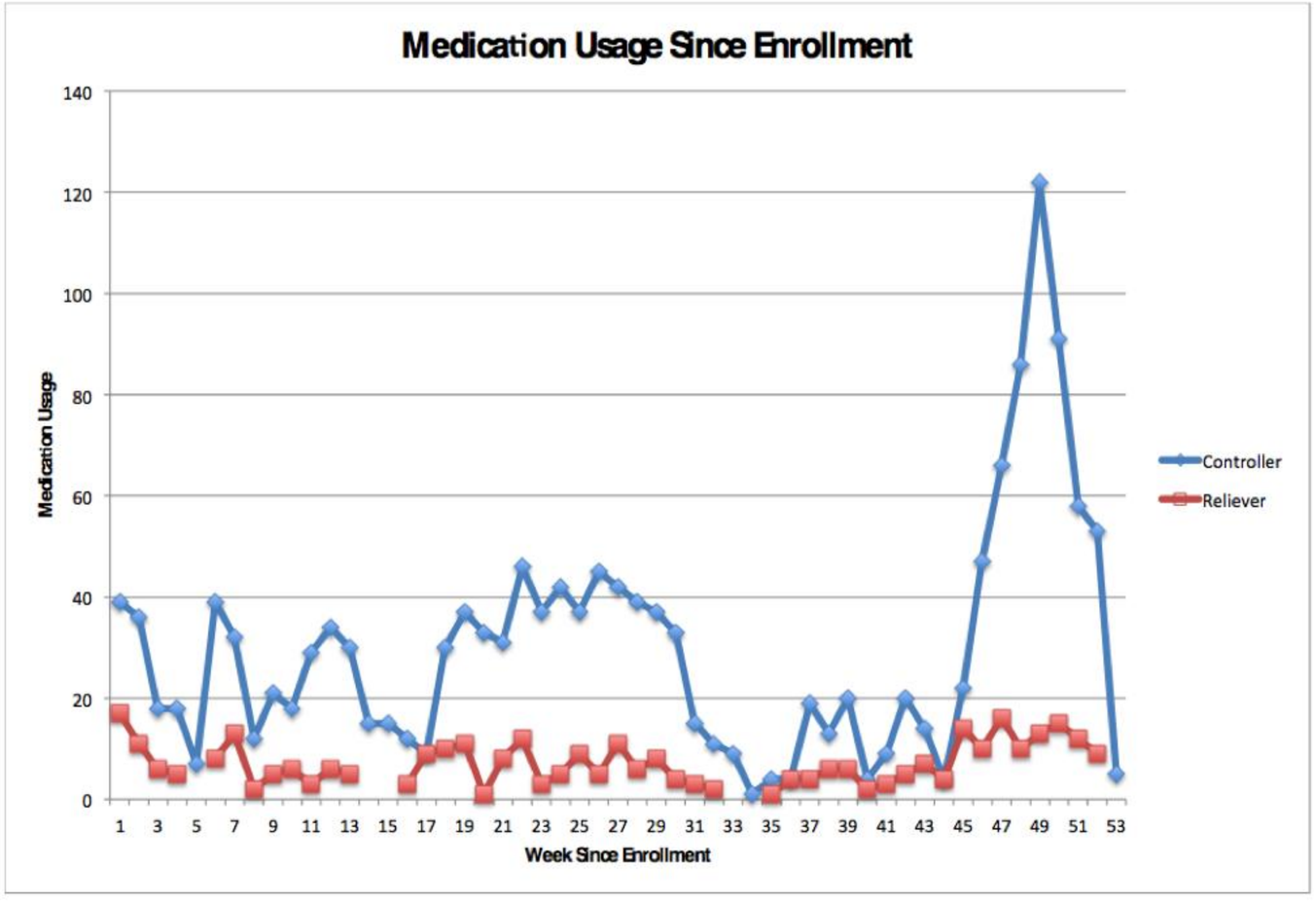
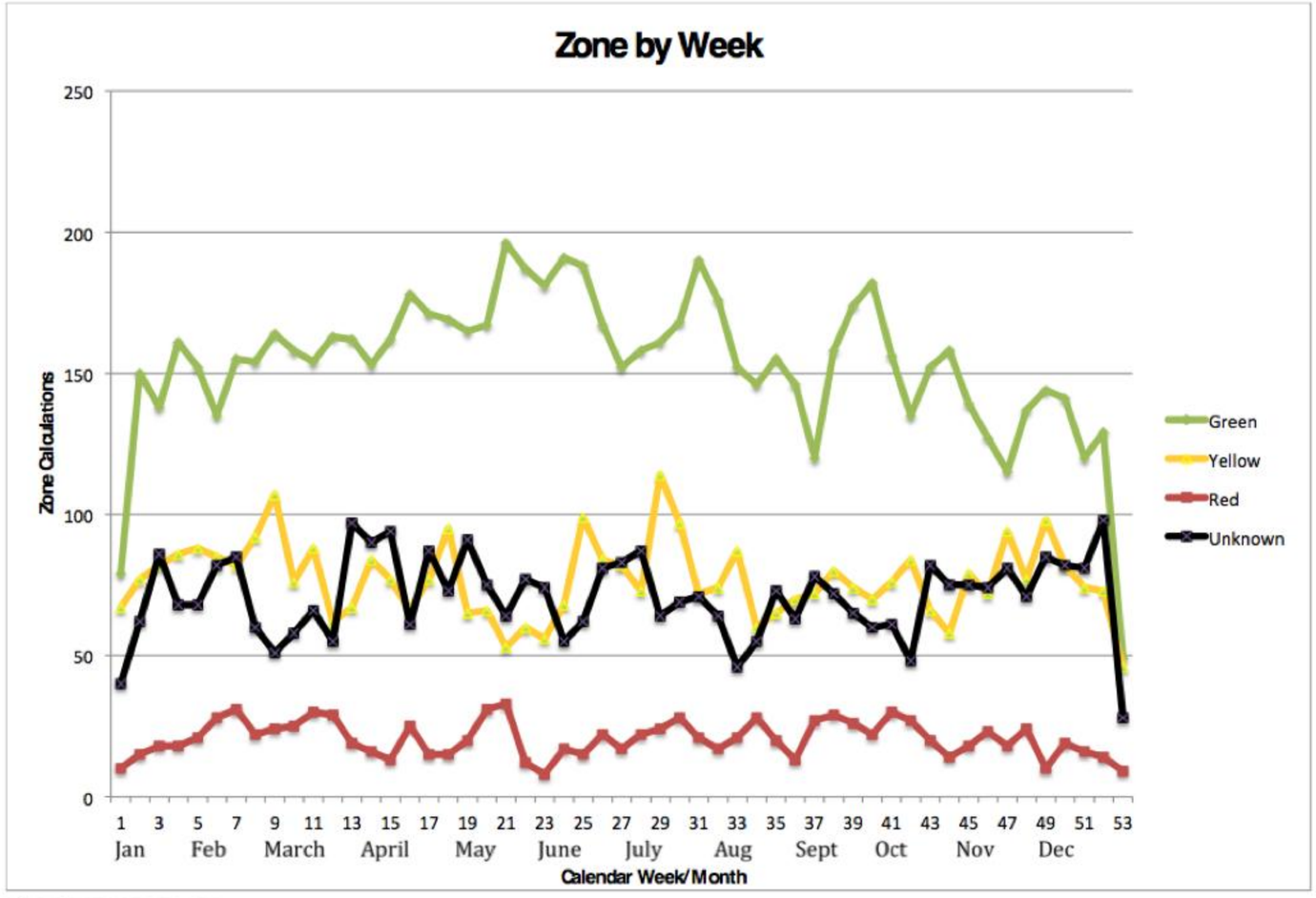
Asthma Medication

Self-Reported Usage



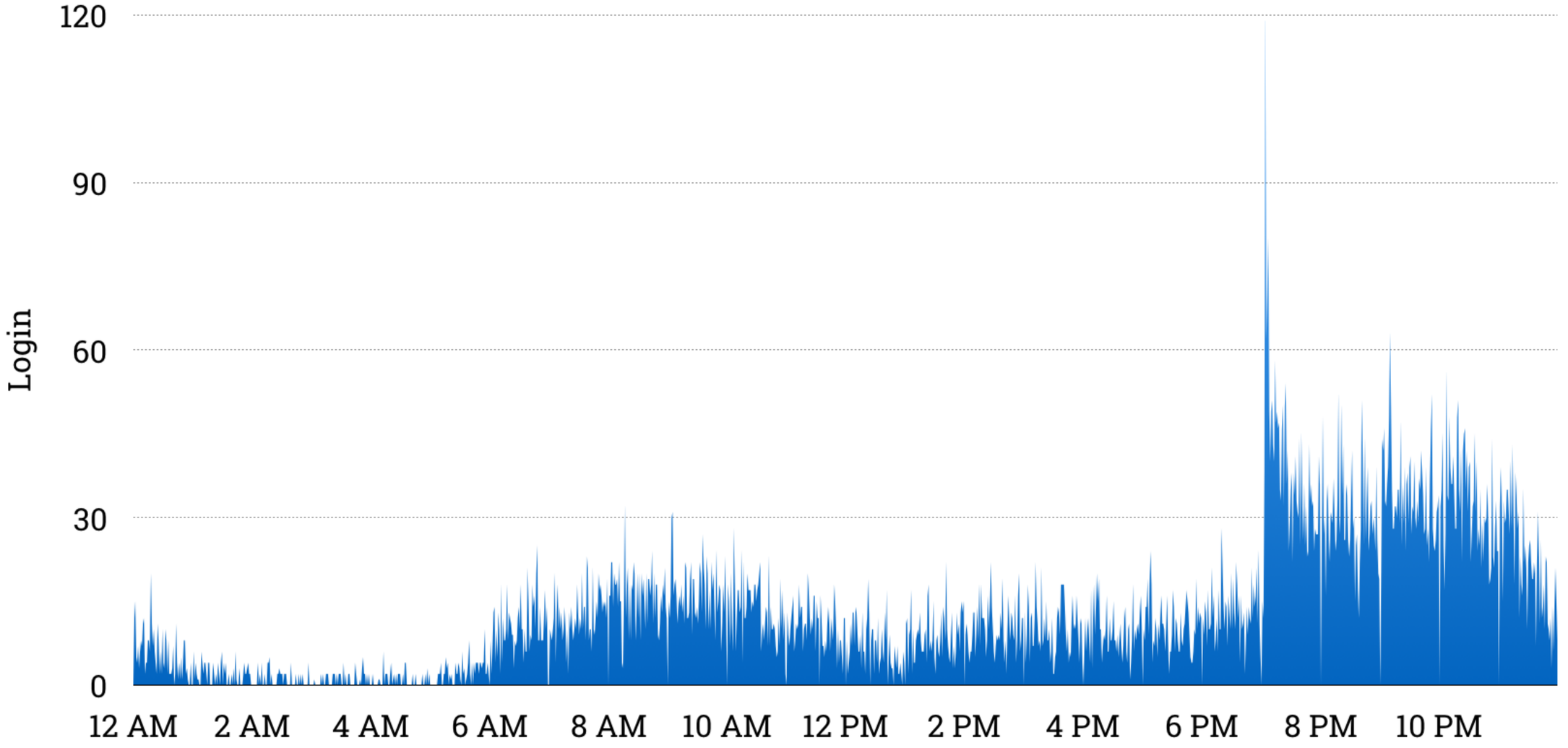
THE LUNG ASSOCIATION™

Asthma Control Zone



THE LUNG ASSOCIATION™

Breathe | Reminders



BLOOD PRESSURE TRANSMITTED AUTOMATICALLY TO BLACKBERRY

132
SYS.
78
DIA.
69
PUL.
START

132
SYS.
78
DIA.
69
PUL.
START

+

BlackBerry
Last Reading
168
81
Your bp is above your goal.
Please take your medications
and follow a healthy lifestyle.
Press ↑ for menu

NO CHANGE

- 9.1 mmHg systolic

- 4.6 mmHg diastolic

NO ADDITIONAL MEDS

NO ADDITIONAL VISITS

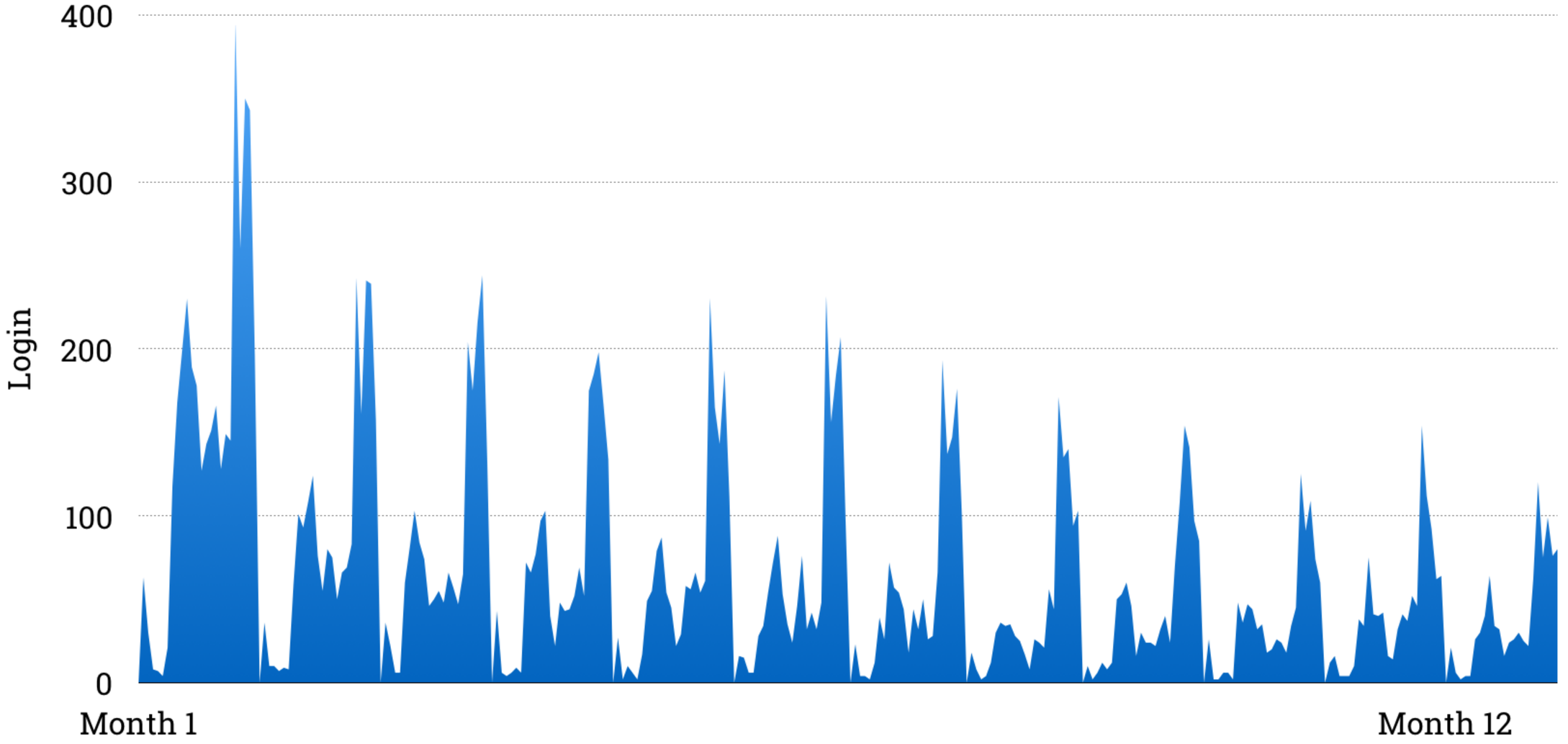
SELF AWARENESS

MED ADHERENCE

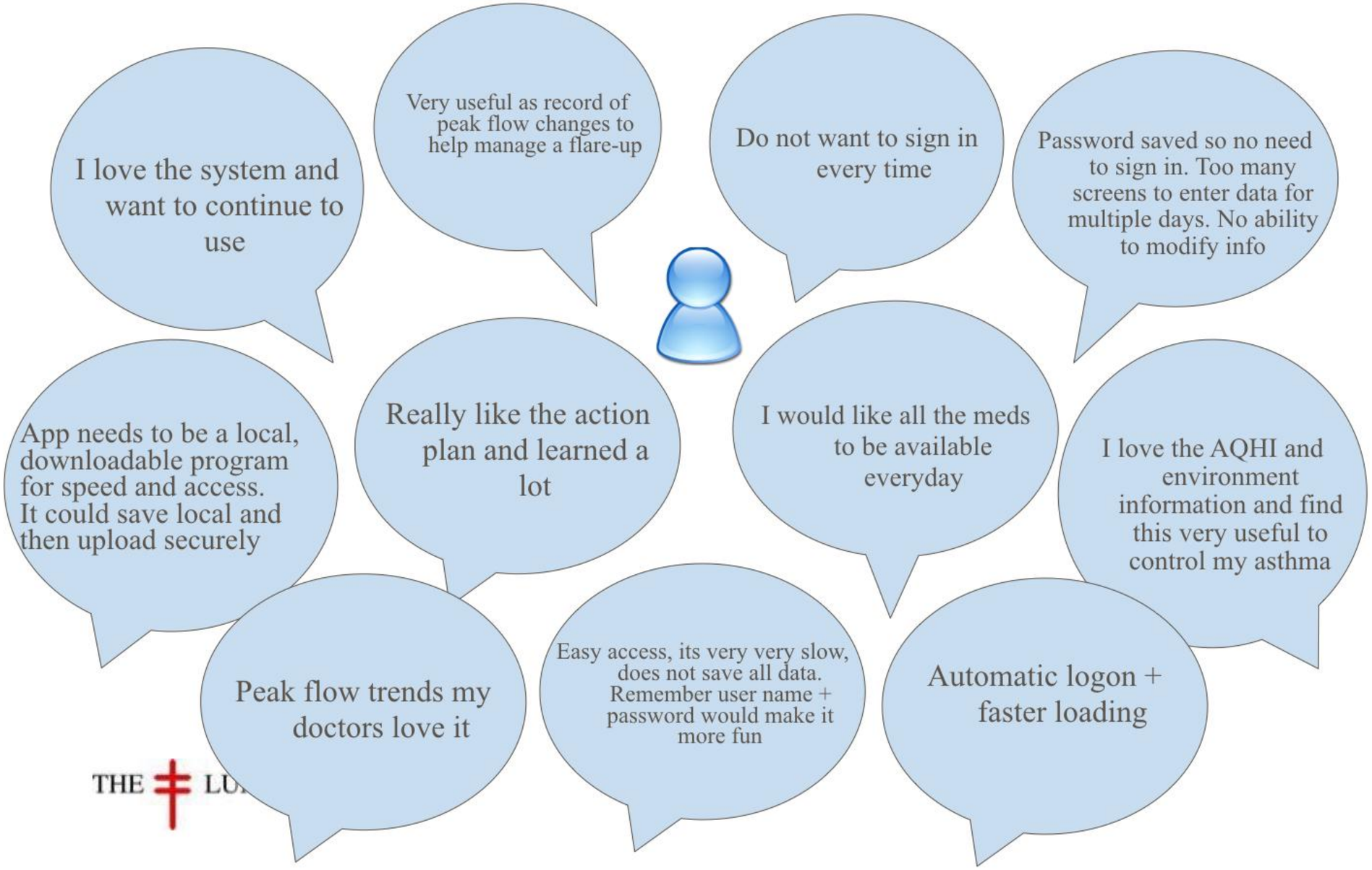
Table 8: *breathe* Email Logic

Welcome Email	New user has logged in for the first time.
New user who does not use the app after registration	New user has not logged in 7 days after registration.
Check-In	Returning user has not accessed the app in 7 days.
Location-based symptom(s) with unknown trigger	User has reported 5 episodes at the same location with unknown trigger.
Non-weather related symptom(s) with known trigger	User has reported non-weather related triggers
Daily reminders	User has chosen to receive emails to remind them daily to take their controller medication.

Breathe | Reminders

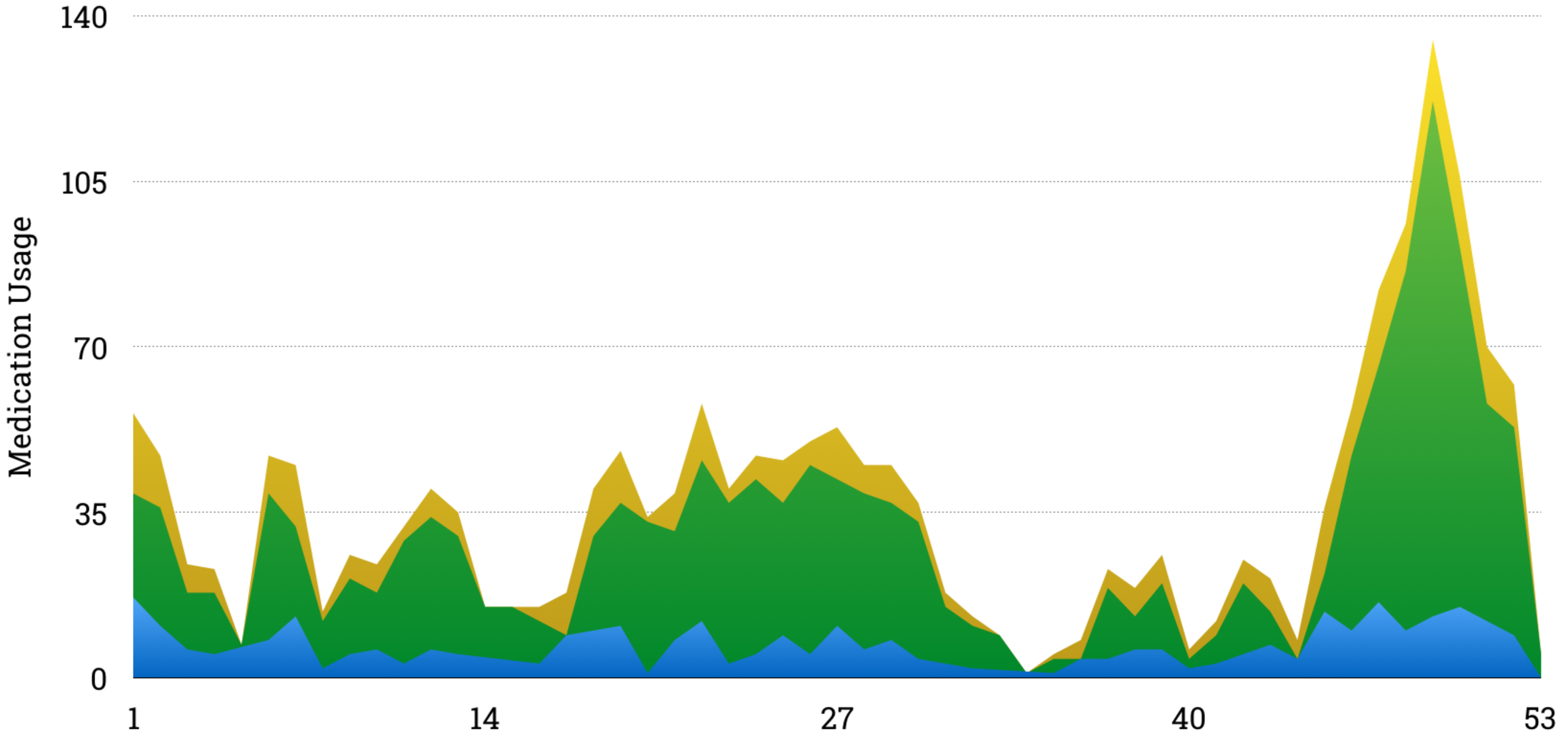


User Feedback

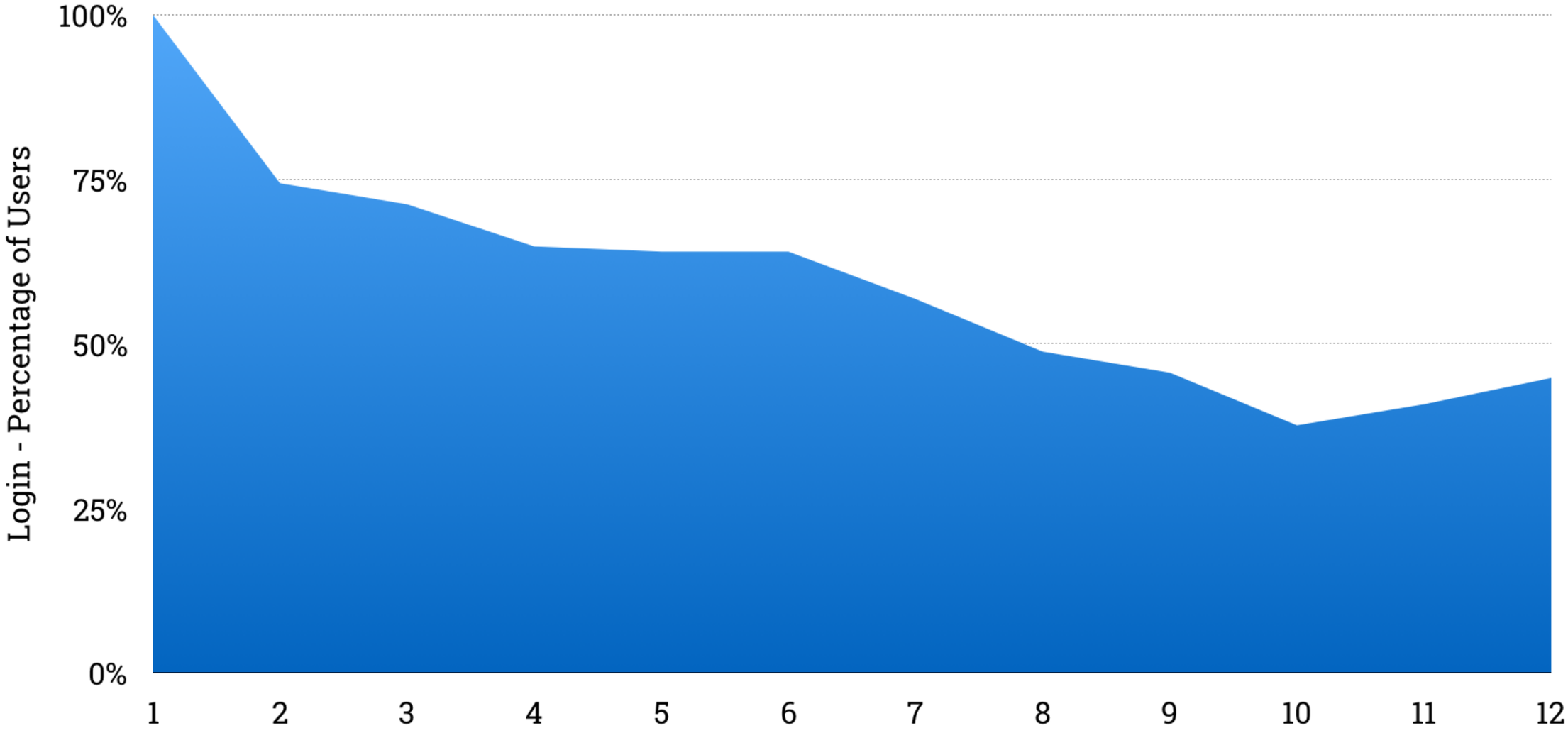


THE LU

Breathe | Clinic Visits



Breathe | Adherence



Average Time in App

3m 22sec

13 screens

Subject: Breathe

Date: Wednesday, September 4, 2013 at 8:00:10 PM Eastern Daylight Time

From: breatheapp.ca

To: myeung@ehealthinnovation.org

Hello,

We haven't heard from you in a while and just want to make sure that everything is OK.

Let us know how you're doing by entering your daily medication usage into *breathe.* Tracking your daily medication usage can also be done simply and easily by using the daily reminders.

If you've experienced any symptoms lately, tracking when, where and why this happened can let breathe help you figure out some trends that you may not have noticed. This information can also let *breathe* help you figure out what zone you're in and what steps to take to get you back into your green zone and breathing easy.

Click here to let us know how you're doing.

Breathe easy and take care!

Patient has a smartphone	181 (62.2%)
Frequency of use of the smartphone for those with smartphone	
Frequently	165 (56.7%)
Sometimes	11 (3.8%)
Rarely	4 (1.4%)
Never	1 (0.3%)
Reported comfort level with smartphone use for those with smartphone	
Not comfortable	3 (1.0%)
Somewhat comfortable	24 (8.2%)
Comfortable	44 (15.1%)
Very Comfortable	109 (37.5%)
Patient has a desktop or laptop computer	284 (97.6%)
Frequency of use of desktop or laptop computer	
Constantly	149 (51.2%)
Frequently	73 (25.1%)
Sometimes	51 (17.5%)
Rarely	8 (2.7%)
Never	2 (0.7%)

WHAT'S NEXT?

PERVASIVE TECH

WEARABLES

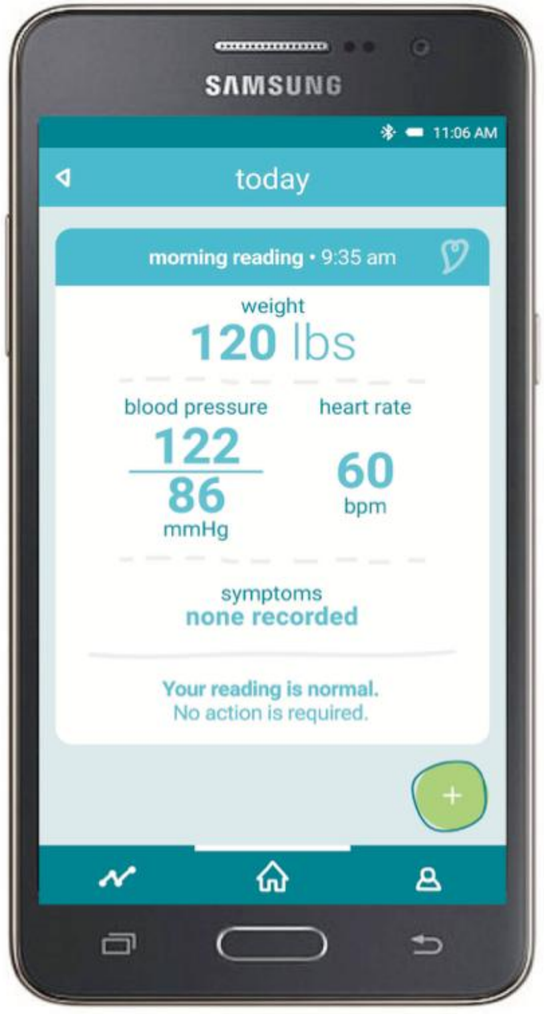
PERVASIVE TECH

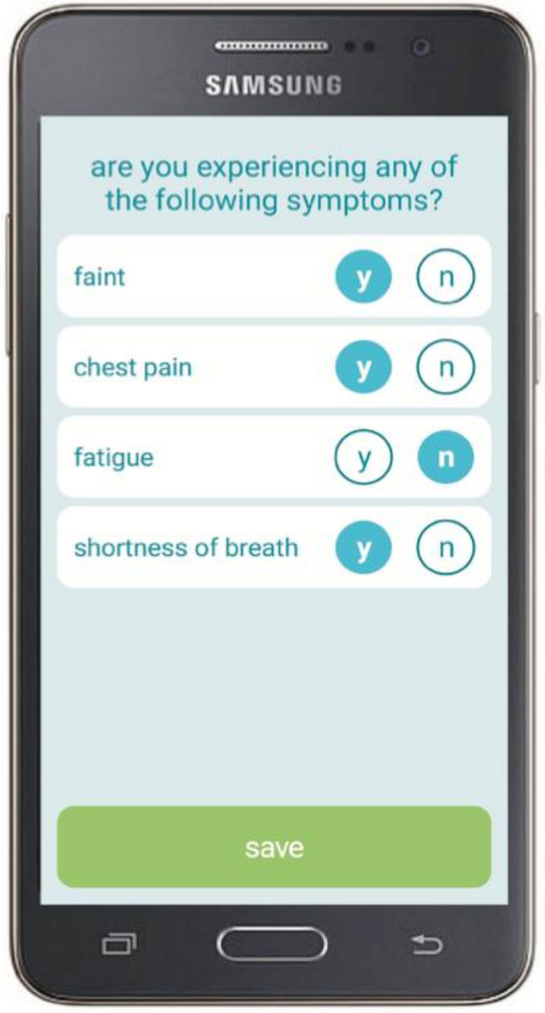
WEARABLES

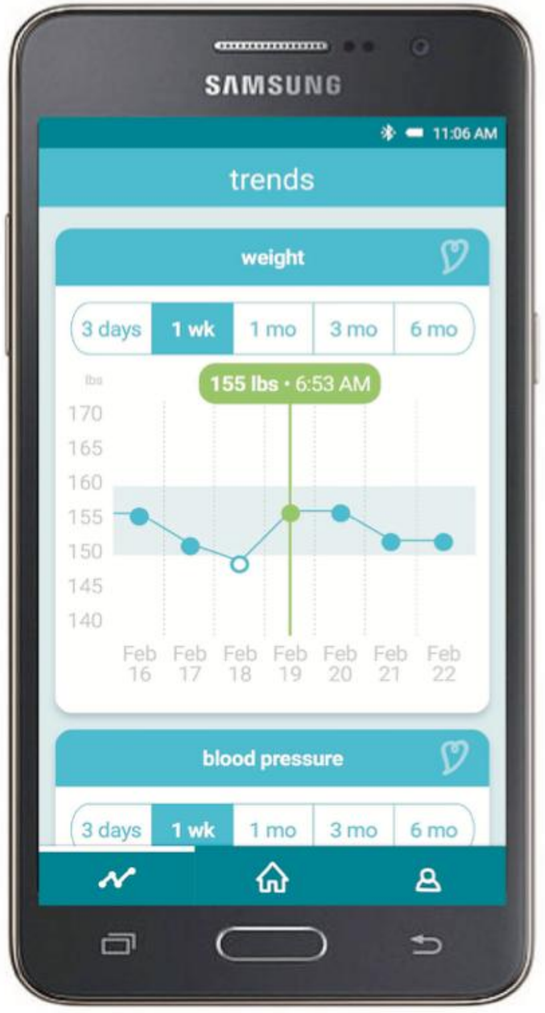
medly

MEDLY CONGESTIVE HEART FAILURE

FROM TRIALS TO DEPLOYMENT

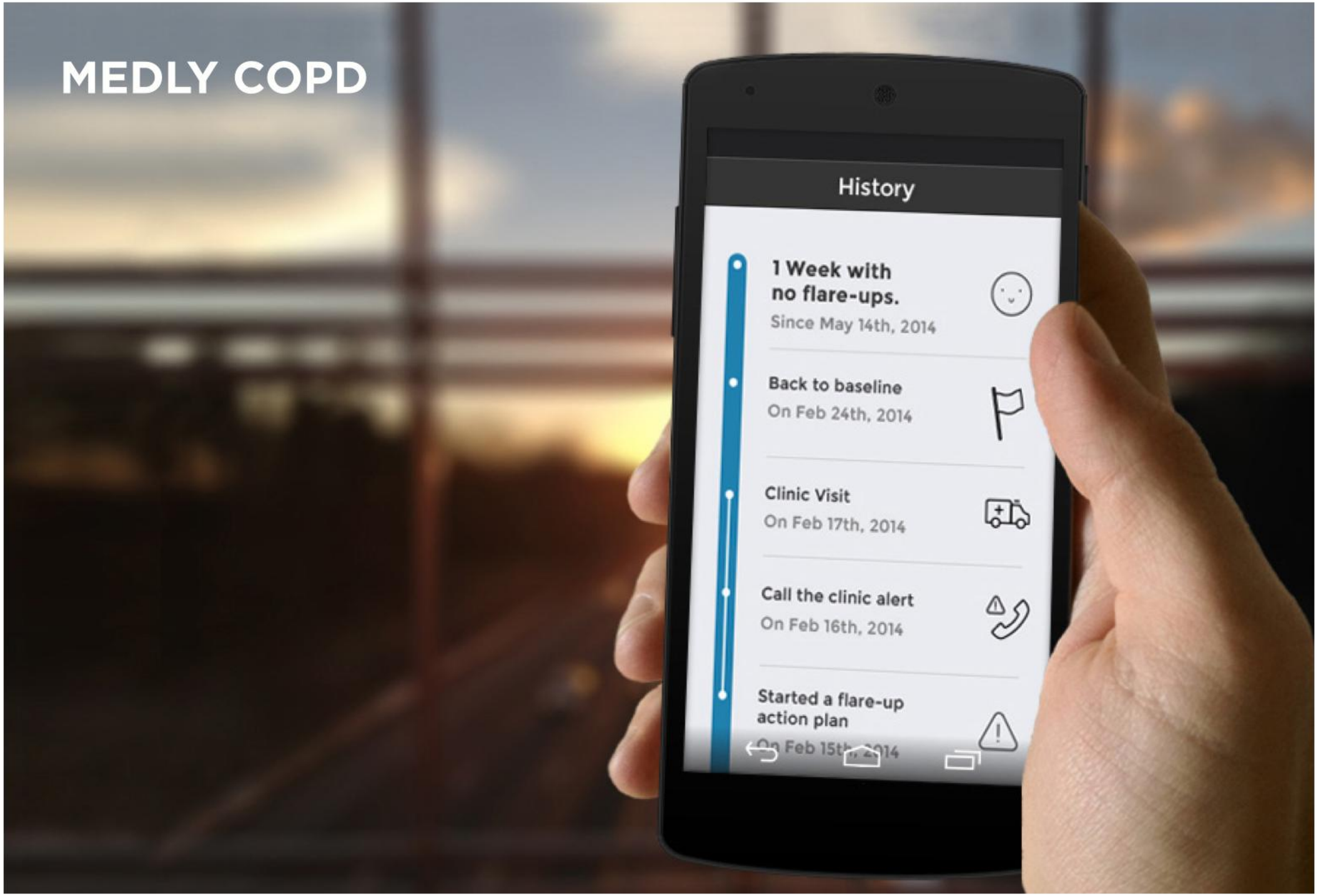


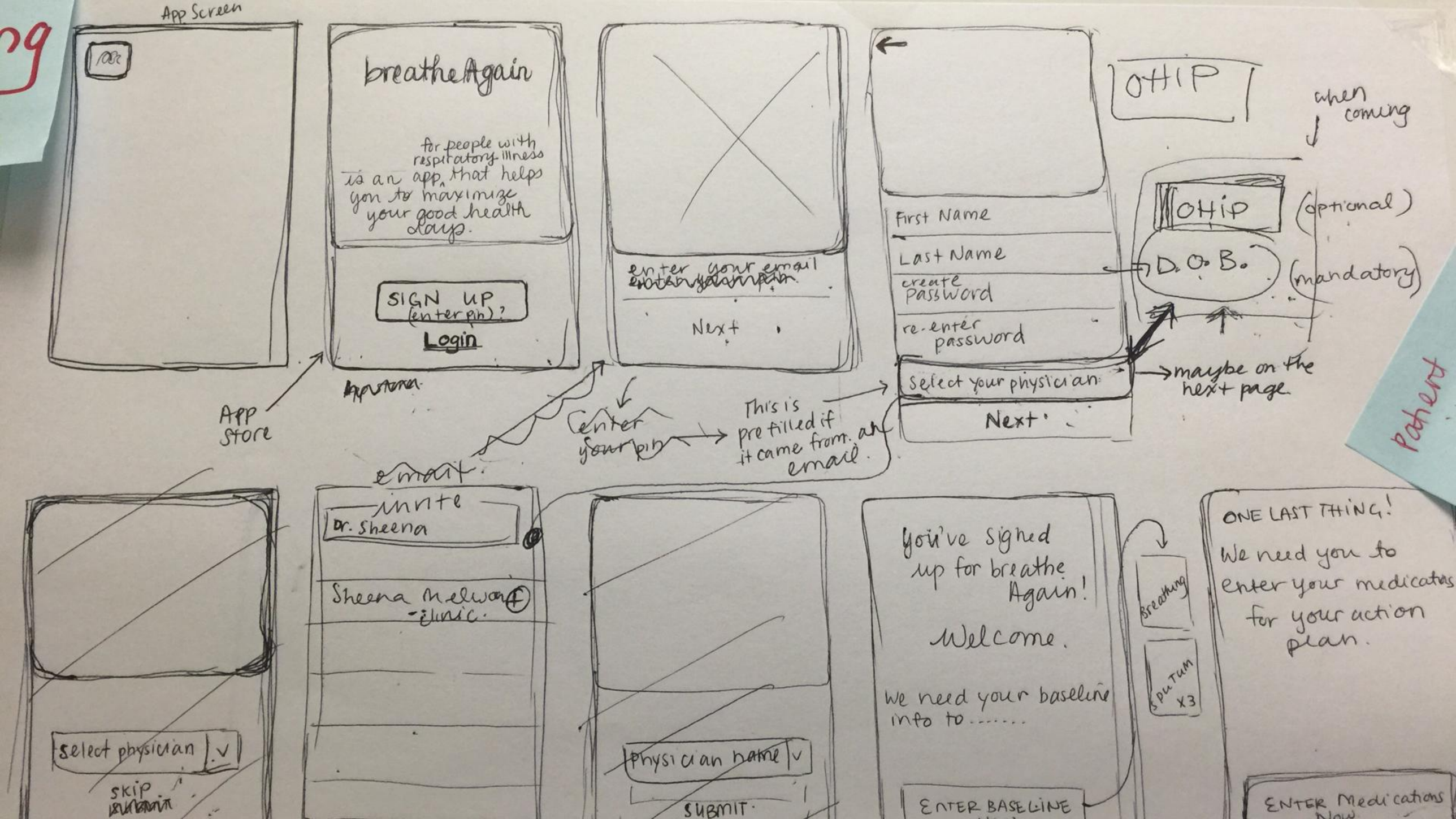




MEDLY CKD

eKidneyCare
Clinic visit May 4, 2016 at 1:00 pm
Blood Pressure
Symptoms
Medication
Lab Results
New results available
CARE TEAM
INFO CENTRE
htc


MEDLY COPD
History
1 Week with no flare-ups.
Since May 14th, 2014
Back to baseline
On Feb 24th, 2014
Clinic Visit
On Feb 17th, 2014
Call the clinic alert
On Feb 16th, 2014
Started a flare-up action plan


App Screen
breatheAgain
for people with respiratory illness is an app that helps you to maximize your good health days.
SIGN UP (enter pin)?
Login
App Store
enter your email
Next
email
enter your pin
This is pre filled if it came from an email.
First Name
Last Name
create password
re-enter password
Select your physician
Next
OHIP
when coming
OHIP
(optional)
D.O.B.
(mandatory)
maybe on the next page
Patient
select physician
SKIP
invite
Dr. Sheena
Sheena Melwani
clinic
physician name
SUBMIT
You've signed up for breathe Again!
Welcome.
We need your baseline info to.....
ENTER BASELINE
Breathing
SPUTUM X3
ONE LAST THING!
We need you to enter your medications for your action plan.
ENTER Medications

BREATHE AGAIN

ANDROID + IOS APPLICATION

EXACERBATION DETECTION THROUGH SYMPTOM ENTRY

EXACERBATION TREATMENT THROUGH ACTION PLAN MESSAGING WITH MEDICATIONS

AIR QUALITY HEALTH INDEX INFORMATION

RESPIRATORY REHABILITATION THROUGH GOAL SETTING

THE PLATFORM

Launched 2012

breathe

Med adherence
Symptom tracker
Action plan
Education
Environment

Phase 1

breatheAgain

Med adherence achievements
Symptom tracker
Action plan
Education
Environment

Phase 2

Additional features unlocked within **breathe** & **breatheAgain**

Goal setting
Activity tracker
Environment

DISEASE SELF-MANAGEMENT

UNDIAGNOSED

Patient need:
To obtain a diagnosis

UNCONTROLLED

Patient need:
To enhance quality of life through controlling symptoms of respiratory illness & recognizing and self-manage flare-ups

WELL CONTROLLED

Patient need:
To enhance quality of life through physical activity

breatheAgain

COPD Patients

breatheAgain

Asthma Patients

breathe

App delivered with medication in ER

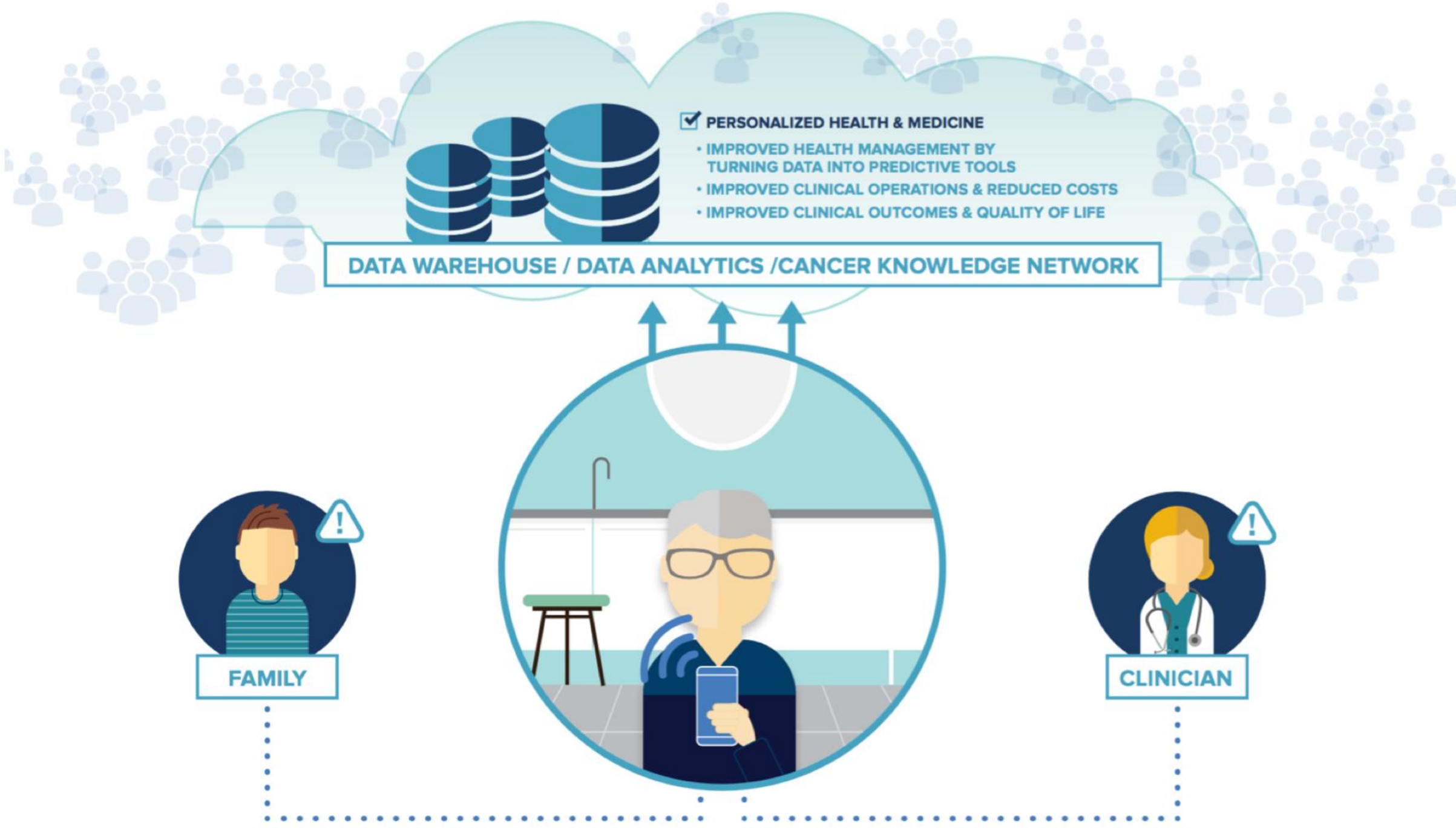
App prescribed by Specialist / Primary Care Physician

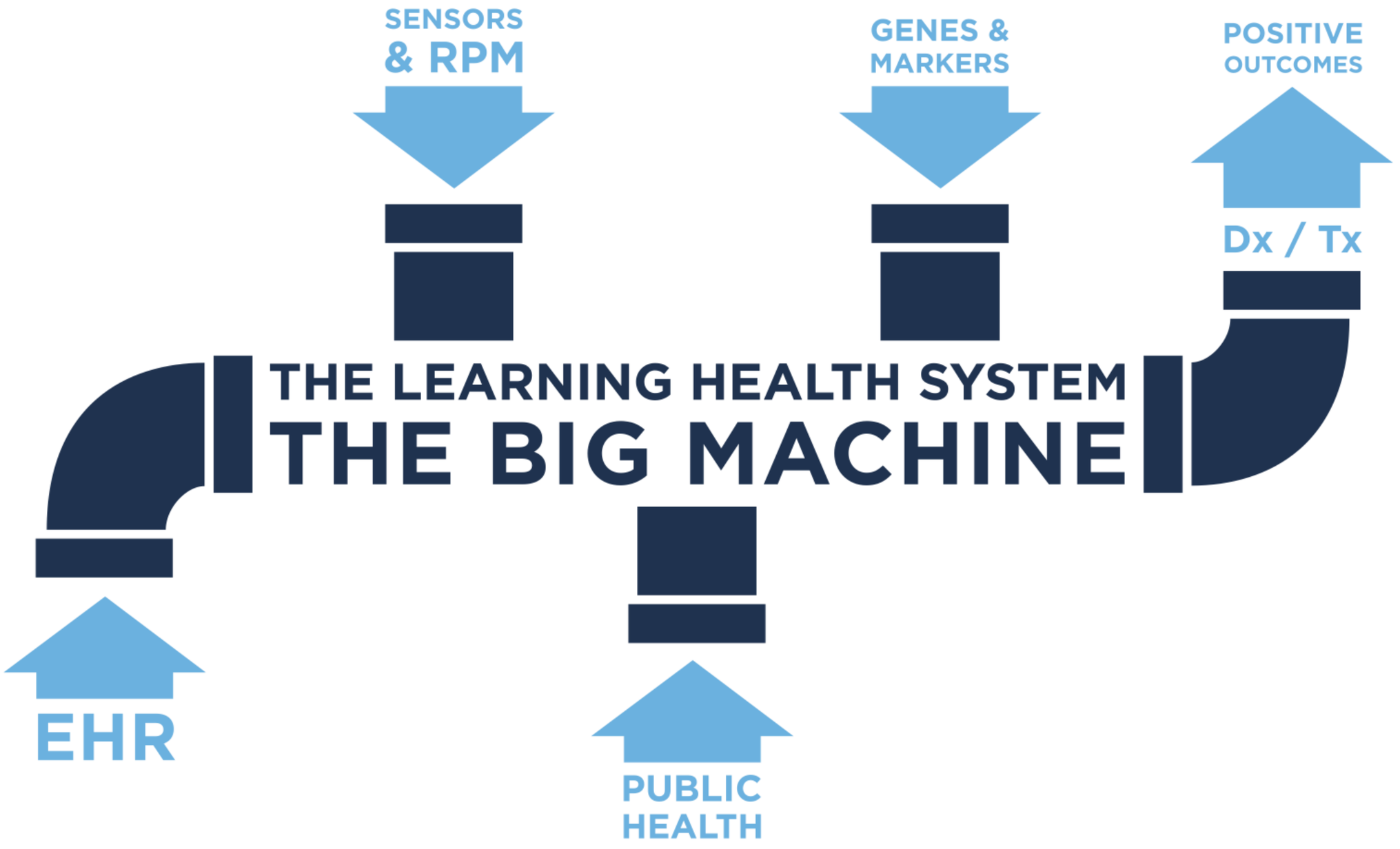
Feature unlocked by patient

Last Used
1 hour
ago

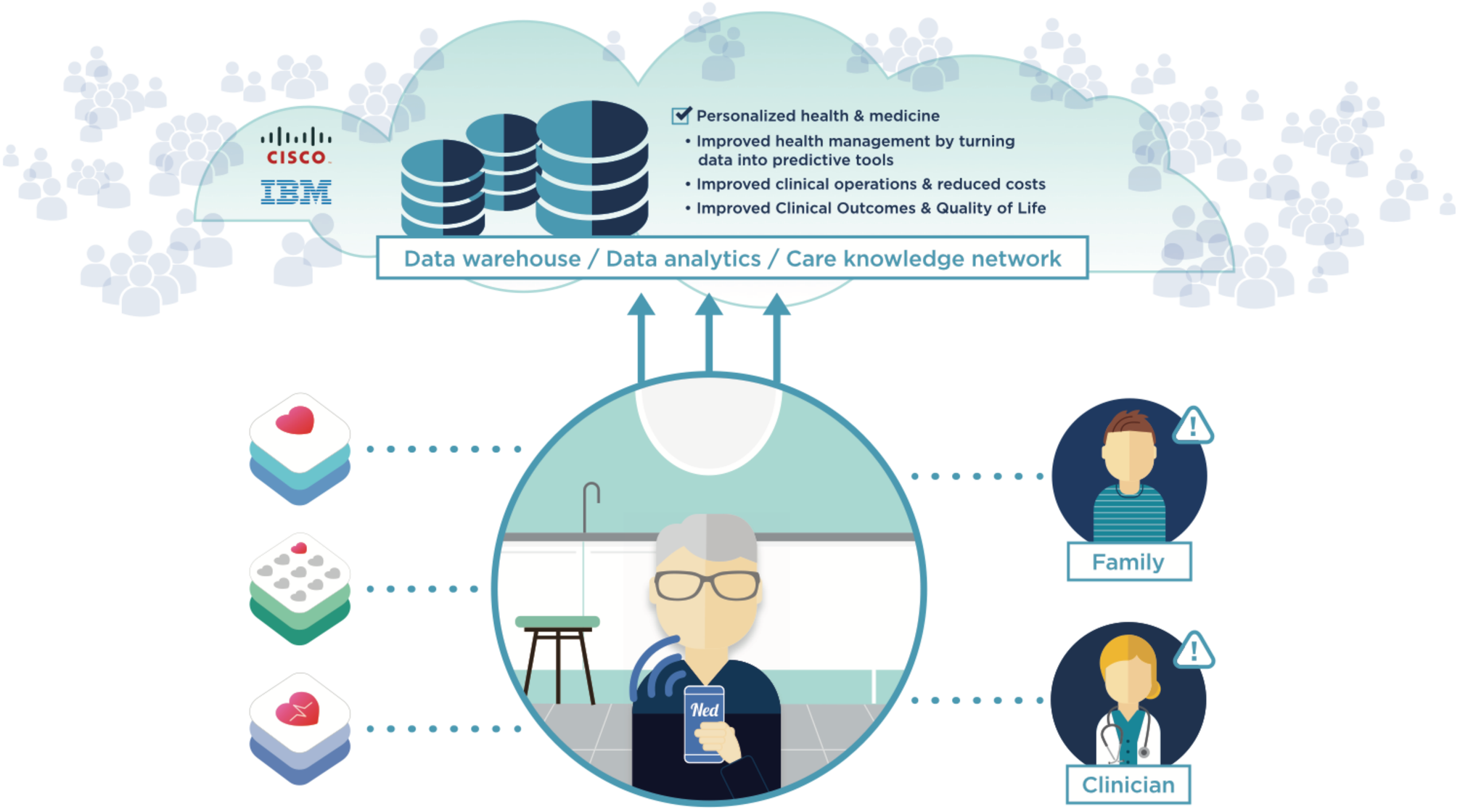
CARRIER
4:20 PM
bant
Bell 3G
4:20 PM
30 Days
to a healthier heart
HEART & STROKE FOUNDATION
Bell 3G
3:30 PM
breathe
Sign in

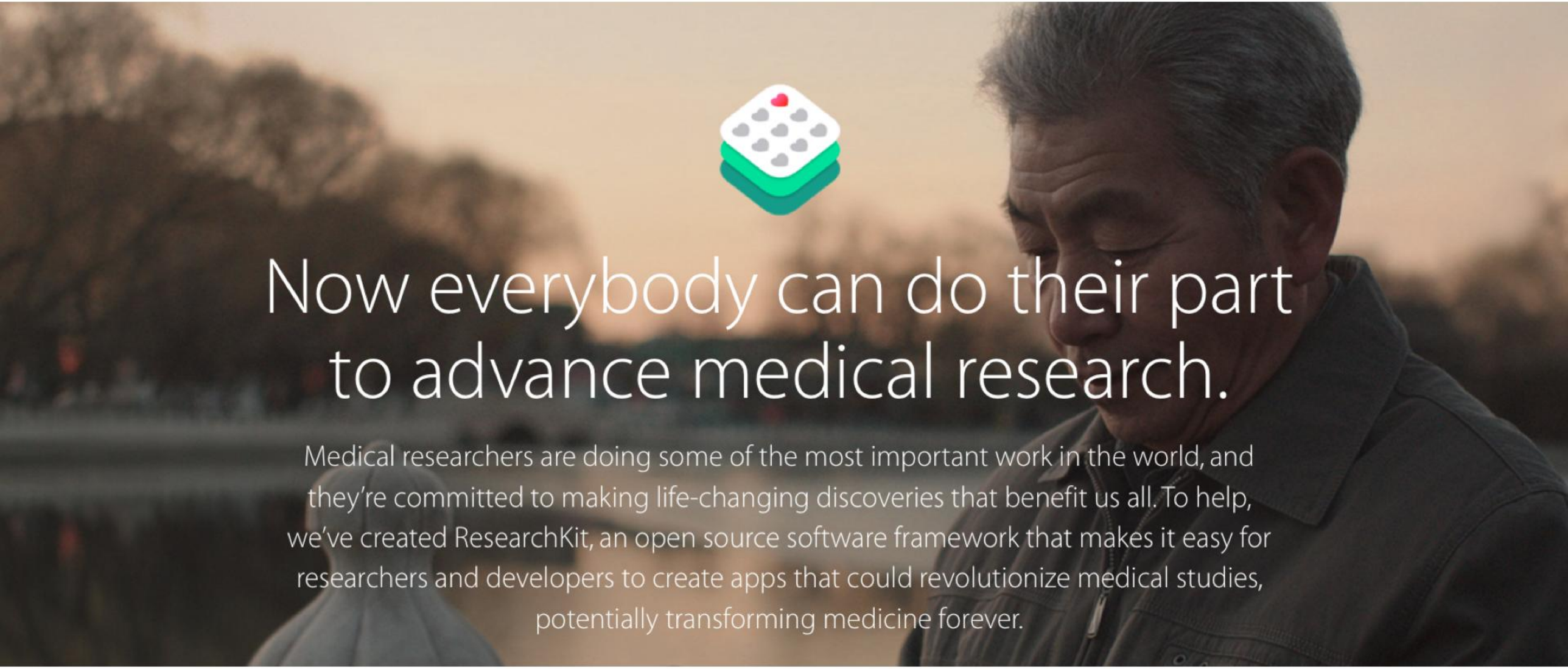
2 days ago
12:00
6am
9am
12pm
3pm
6pm
9pm
12am
12.4 mmol/l
lunch 12:05 pm
5.0
10.0
mmol/l
TELUS 3G 2:20 PM
staging.breatheapp.ca
Not enough info
Your Zone
Environment
Trends
Journal
Account
Sign out
SAMSUNG
2:20 PM
Medly HF
TODAY
MORNING 9:59 AM
WEIGHT
152 lbs
160
140
SYMPTOMS
None
BLOOD PRESSURE
120
80
mmHg
HEART RATE
70
bpm
Record Symptoms
BELL
9:11 AM
Today
98%
Post-Breakfast
8.3 mmol/l
4:15 pm
Goal
Low
4am
5am
6am
7am
8am
9am
1,243 Steps
Sync


PERSONALIZED HEALTH & MEDICINE
• IMPROVED HEALTH MANAGEMENT BY TURNING DATA INTO PREDICTIVE TOOLS
• IMPROVED CLINICAL OPERATIONS & REDUCED COSTS
• IMPROVED CLINICAL OUTCOMES & QUALITY OF LIFE
DATA WAREHOUSE / DATA ANALYTICS /CANCER KNOWLEDGE NETWORK
FAMILY
CLINICIAN


SENSORS
& RPM
GENES &
MARKERS
POSITIVE
OUTCOMES
Dx / Tx
THE LEARNING HEALTH SYSTEM
THE BIG MACHINE
EHR
PUBLIC
HEALTH

The vision: Mass customization & scalable personalization





Now everybody can do their part to advance medical research.

Medical researchers are doing some of the most important work in the world, and they're committed to making life-changing discoveries that benefit us all. To help, we've created ResearchKit, an open source software framework that makes it easy for researchers and developers to create apps that could revolutionize medical studies, potentially transforming medicine forever.

Download the mobile app

The mobile app will help gather sensor data, freeing you up from having to enter lots of info.

Give consent to enroll

Understand the risks and benefits of participating.

Read the consent form

Perform simple tasks

We'll ask you to do a few tasks and answer some questions about your health

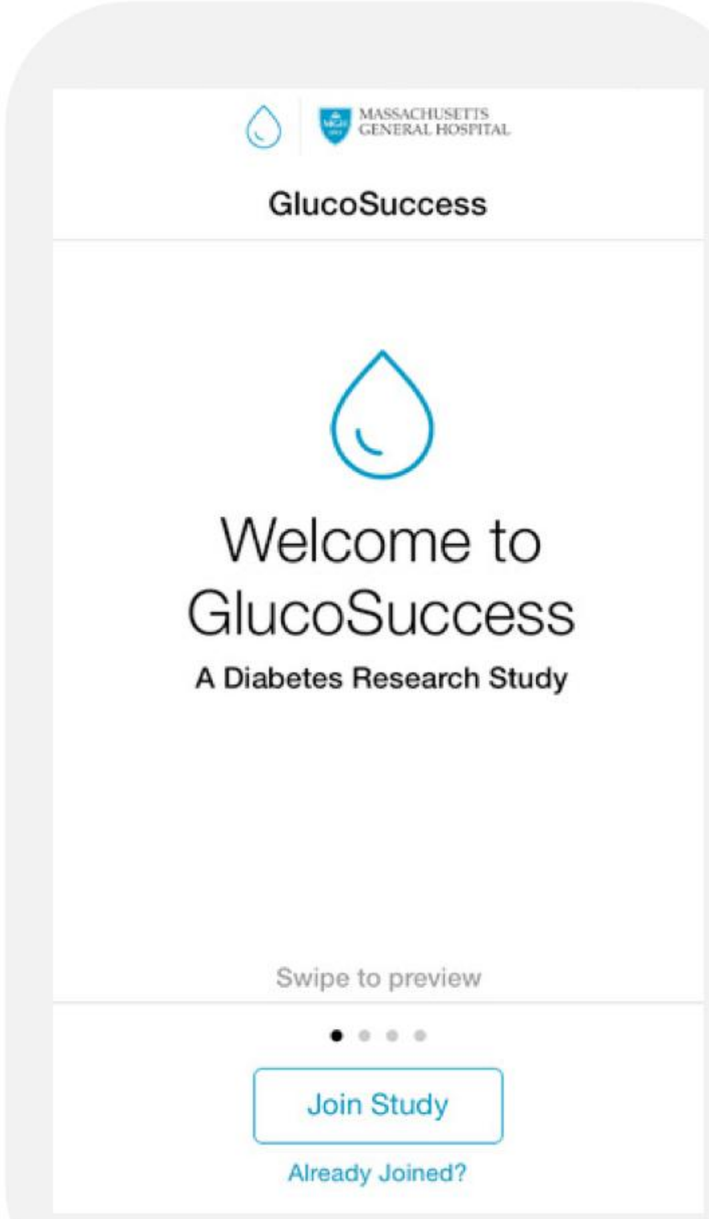
Track your health

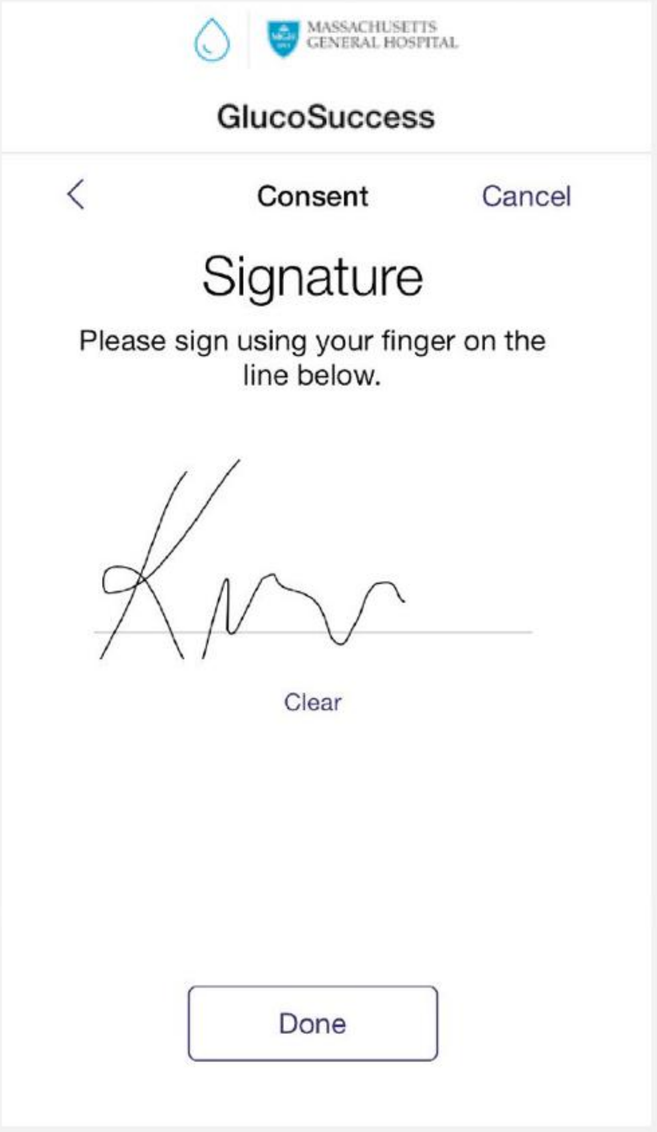
You can use the health dashboard to track your health data

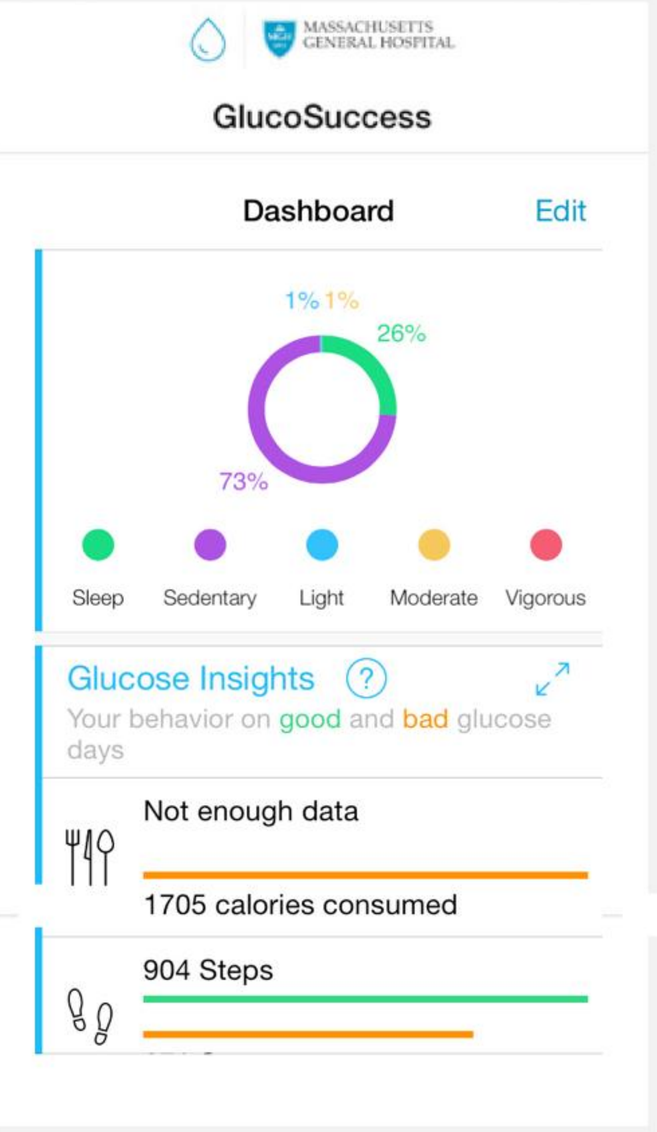
Scientists make discoveries

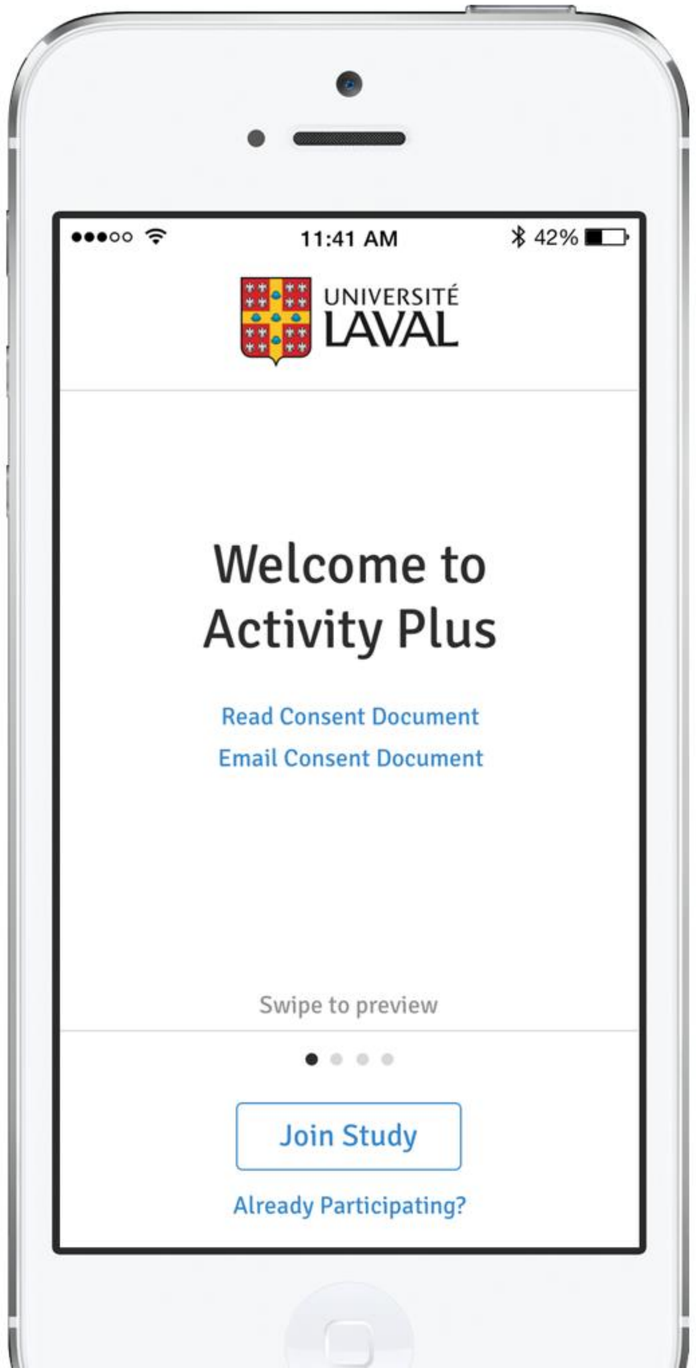
Scientists will use your data to make break-throughs in medical research and treatments

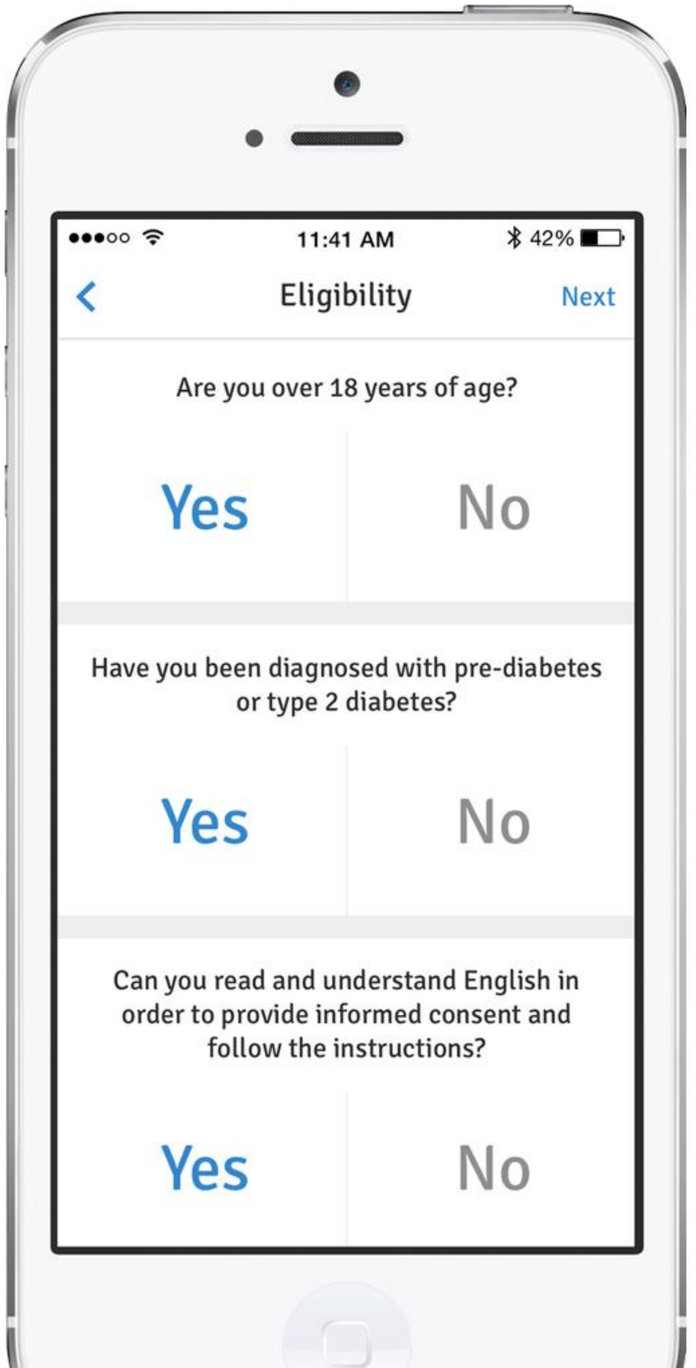
http://glucosuccess.org/

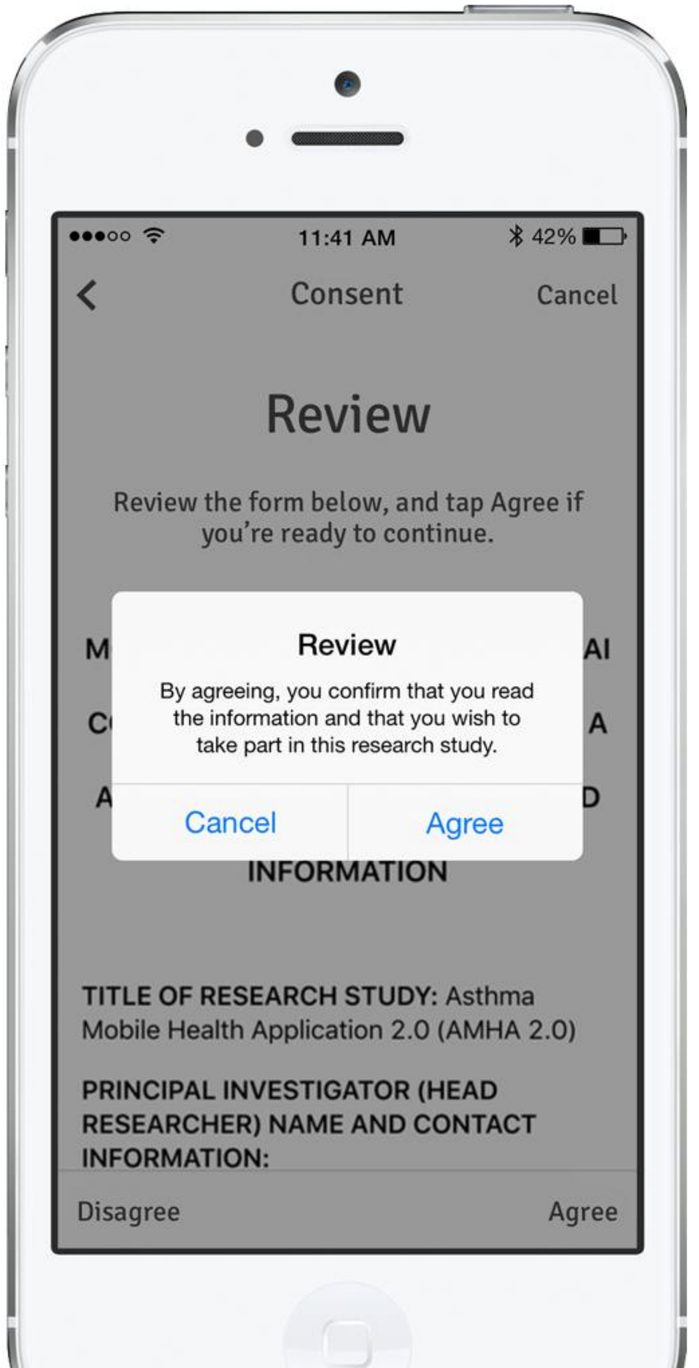

MASSACHUSETTS GENERAL HOSPITAL
GlucoSuccess
Welcome to GlucoSuccess
A Diabetes Research Study
Swipe to preview
Join Study
Already Joined?

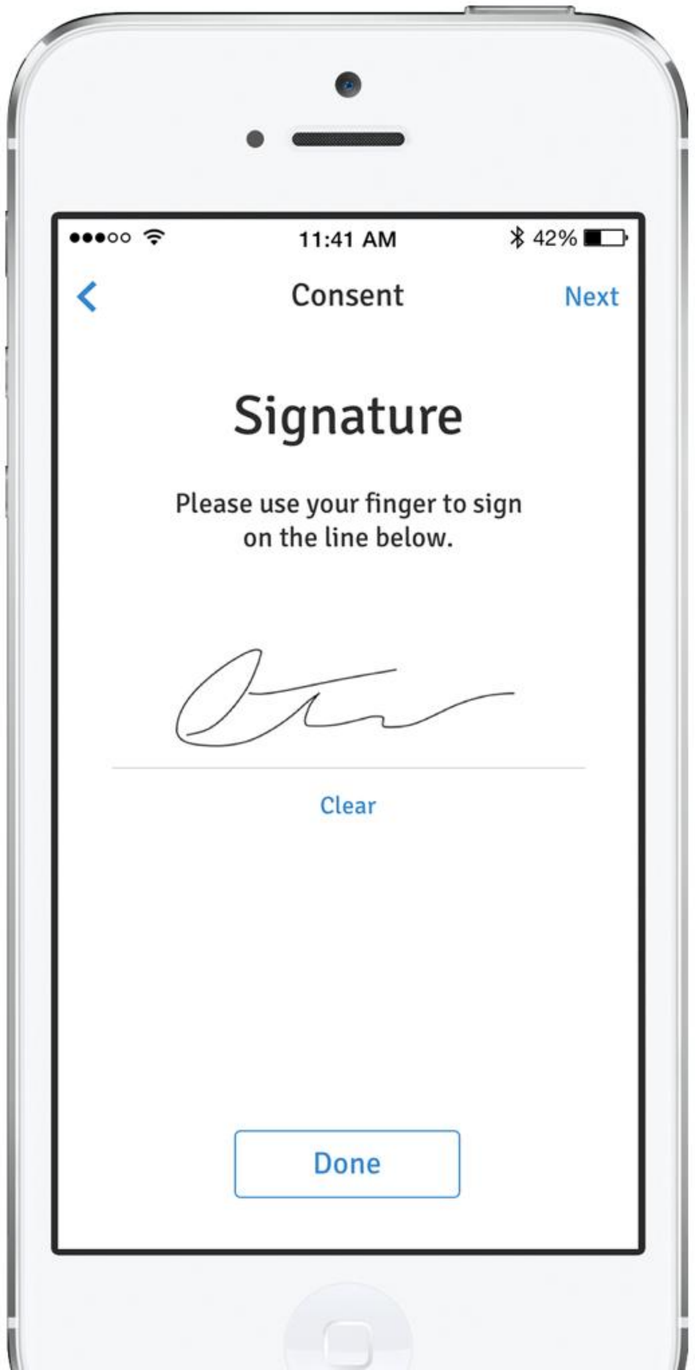

MASSACHUSETTS GENERAL HOSPITAL
GlucoSuccess
Consent
Cancel
Signature
Please sign using your finger on the line below.
Clear
Done

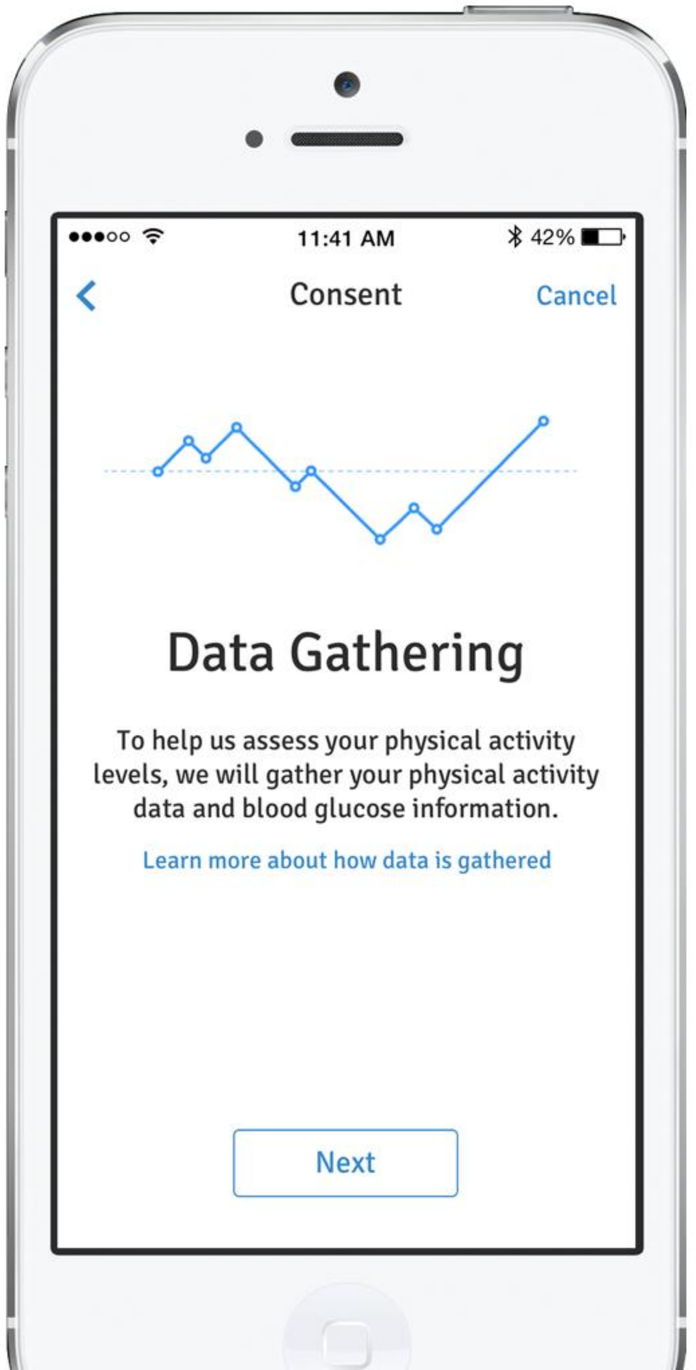

MASSACHUSETTS GENERAL HOSPITAL
GlucoSuccess
Dashboard
Edit
1%
1%
26%
73%
Sleep
Sedentary
Light
Moderate
Vigorous
Glucose Insights
Your behavior on good and bad glucose days
Not enough data
1705 calories consumed
904 Steps

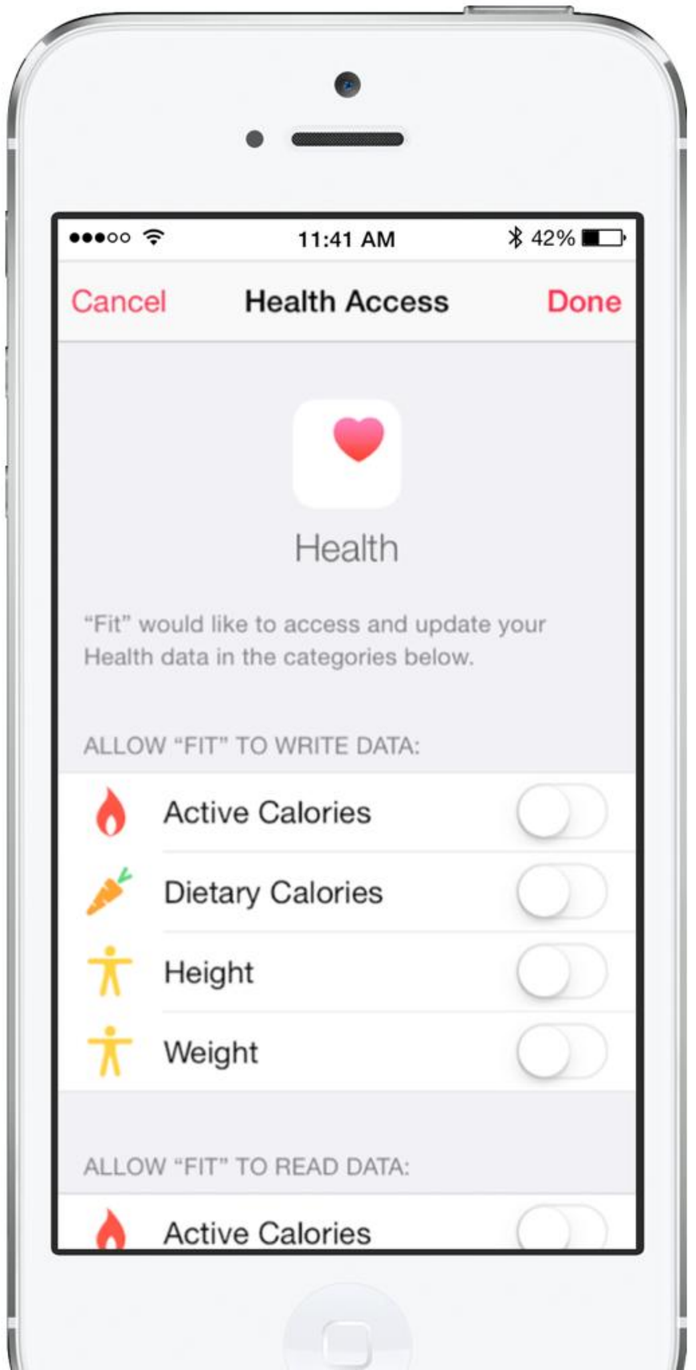

11:41 AM
42%
UNIVERSITÉ LAVAL
Welcome to Activity Plus
Read Consent Document
Email Consent Document
Swipe to preview
Join Study
Already Participating?


11:41 AM
42%
Eligibility
Next
Are you over 18 years of age?
Yes
No
Have you been diagnosed with pre-diabetes or type 2 diabetes?
Yes
No
Can you read and understand English in order to provide informed consent and follow the instructions?
Yes
No


11:41 AM
42%
Consent
Cancel
Review
Review the form below, and tap Agree if you're ready to continue.
Review
By agreeing, you confirm that you read the information and that you wish to take part in this research study.
Cancel
Agree
INFORMATION
TITLE OF RESEARCH STUDY: Asthma Mobile Health Application 2.0 (AMHA 2.0)
PRINCIPAL INVESTIGATOR (HEAD RESEARCHER) NAME AND CONTACT INFORMATION:
Disagree
Agree


11:41 AM
42%
Consent
Next
Signature
Please use your finger to sign on the line below.
Clear
Done


11:41 AM
42%
Consent
Cancel
Data Gathering
To help us assess your physical activity levels, we will gather your physical activity data and blood glucose information.
Learn more about how data is gathered
Next


11:41 AM
42%
Cancel
Health Access
Done
Health
"Fit" would like to access and update your Health data in the categories below.
ALLOW "FIT" TO WRITE DATA:
Active Calories
Dietary Calories
Height
Weight
ALLOW "FIT" TO READ DATA:
Active Calories

UHN

THE LUNG
ASSOCIATION™
Ontario

ARGI
ASTHMA RESEARCH GROUP
WINDSOR-ESSEX COUNTY INC

SickKids

KGH
Kingston
General
Hospital

St. Michael's

London Health Sciences Centre

Canada Health Infoway
Inforoute Santé du Canada

LESSONS FROM *breathe*

Understanding Usage Patterns of Asthma Patients

@JosephCafazzo PhD PEng

Centre for Global eHealth Innovation
University Health Network

TECHNA

Healthcare Human Factors
University Health Network

UNIVERSITY of TORONTO