

# Nexthealth

**Digital Health** Strategy | Insight | Investment

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Dutch Life Sciences & Health Conference - November 22, 2017

Digital **Health?**

# Digital Health

## 100 Years Ago

Human Touch



## 25 Years Ago

Machine Assisted / Analog



## Today

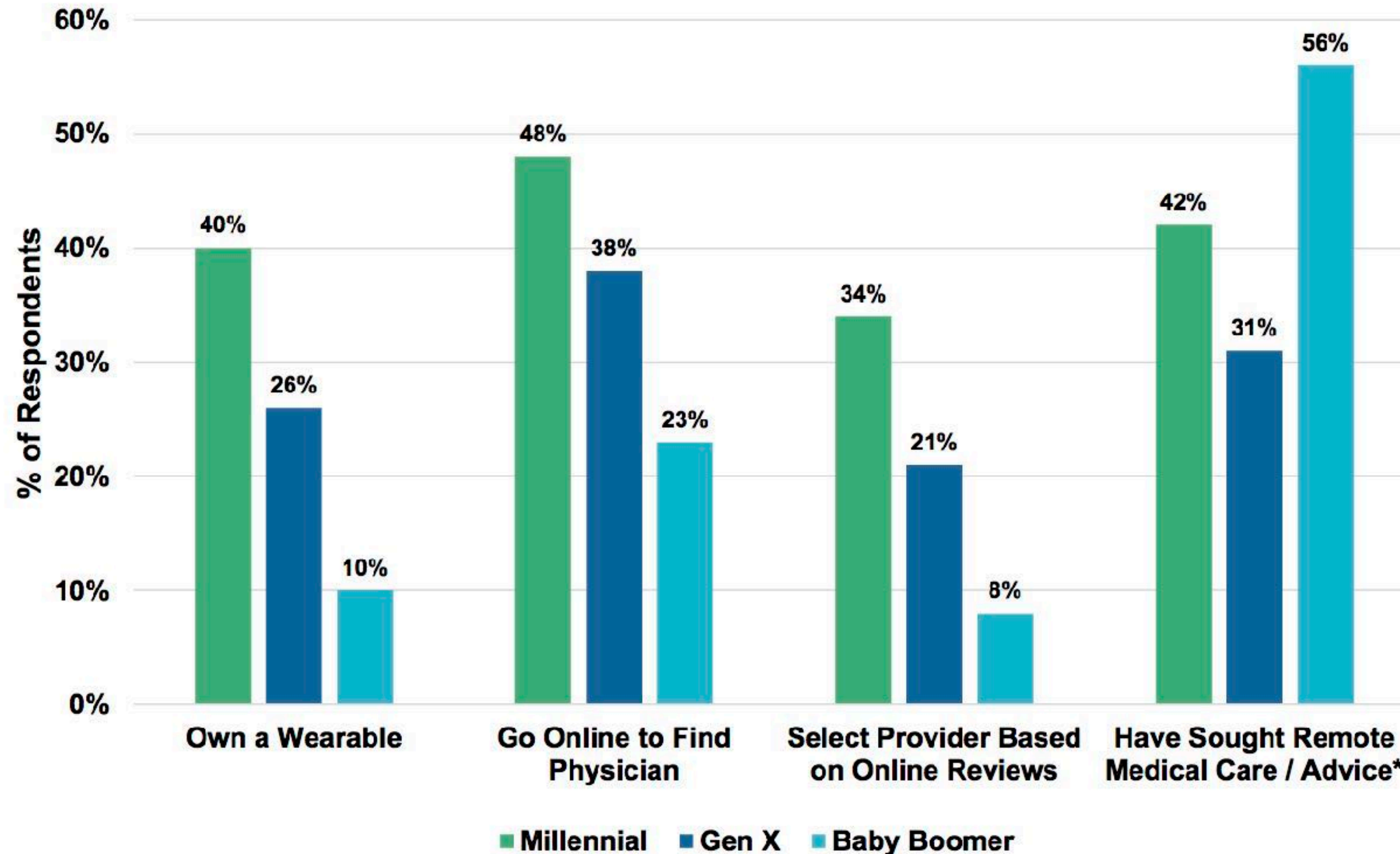
Technology Enabled / Digital





# Consumers = Increasingly Expect Digital Health Services... Especially Millennials...

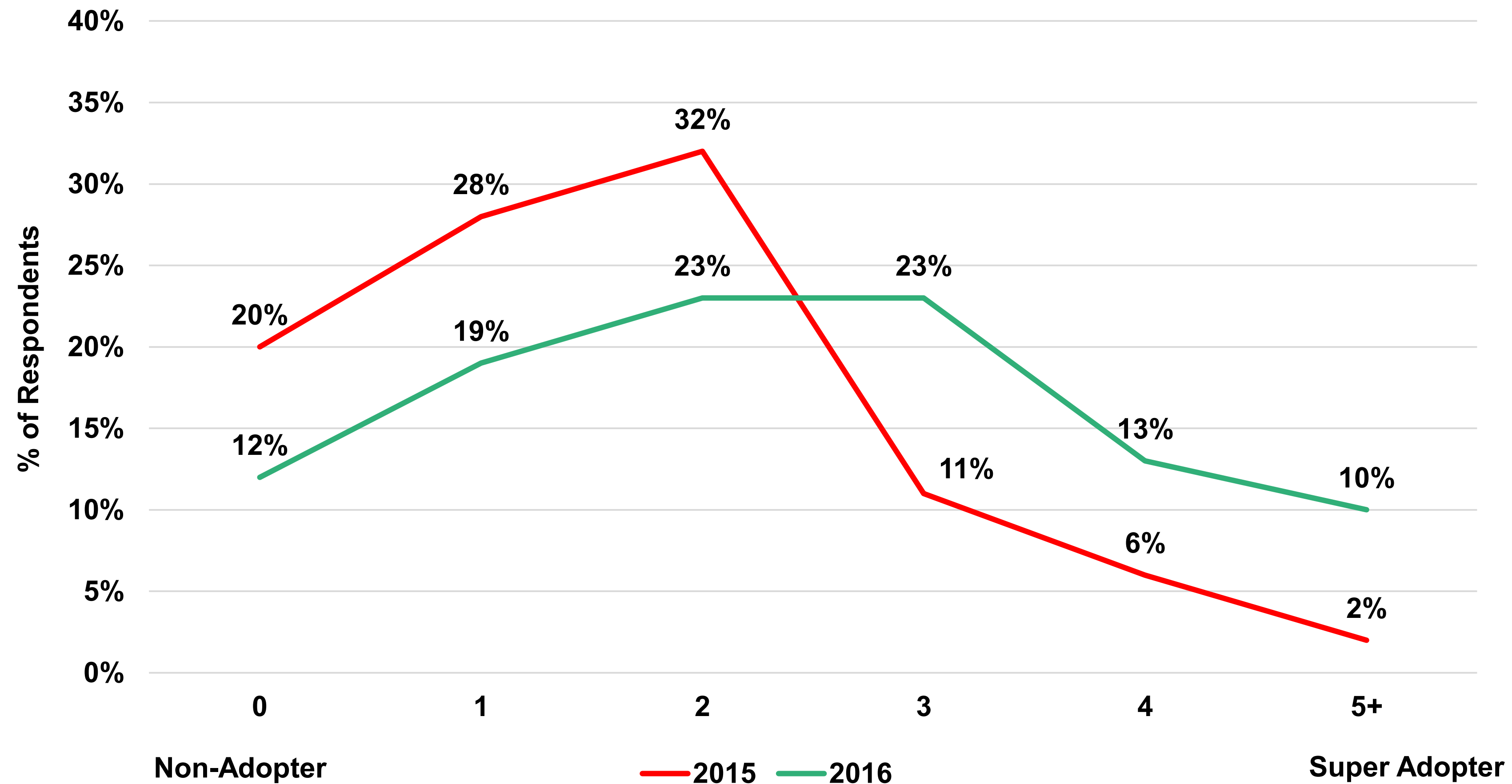
## Digital Health Adoption Across Generations



# ...Consumers = Increasingly Use Digital Health Tools

## Consumers Using Digital Health Tools (Telemedicine, Wearables, etc.)

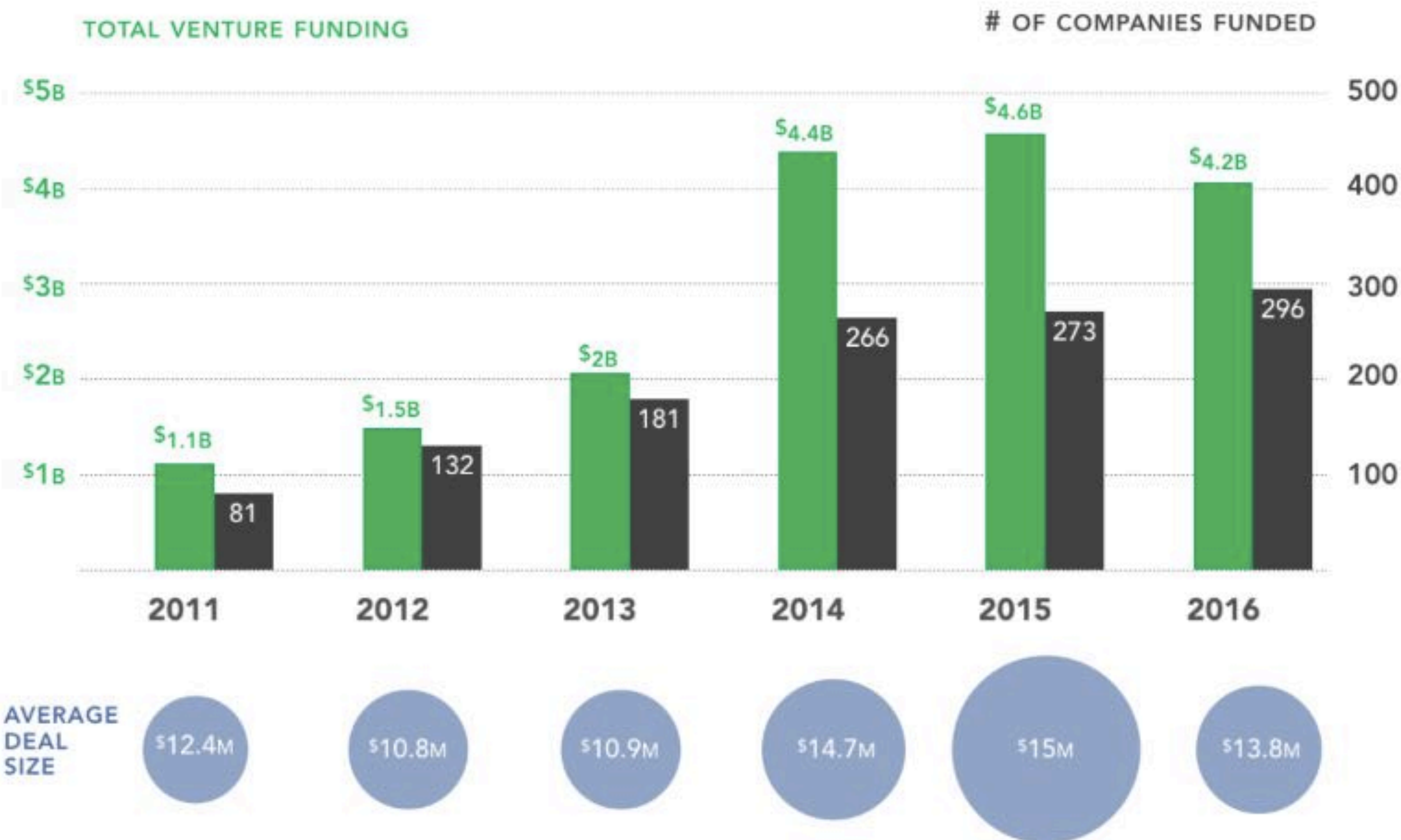
88% Using at Least One Tool, 1 in 10 are Super Adopters





## DIGITAL HEALTH FUNDING

2011 - 2016

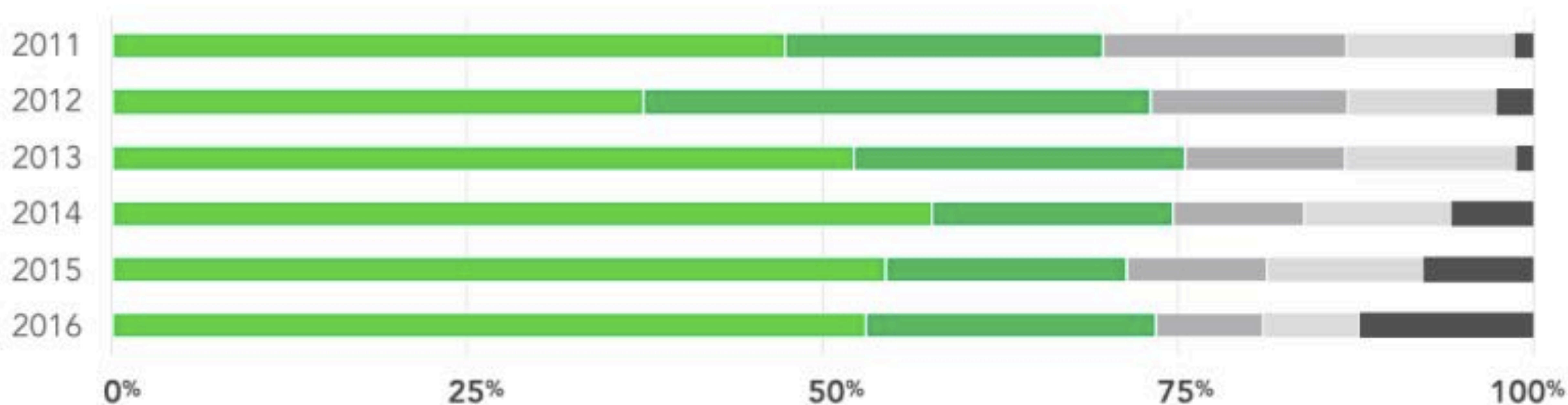


Source: Rock Health Funding Database

Note: Only includes U.S. deals >\$2M; data through December 31, 2016

## DEAL VOLUME BY ROUND

2011 - 2016



### LEGEND



Source: Rock Health Funding Database

Note: Only includes U.S. deals >\$2M; data through December 31, 2016



## MOST FUNDED CATEGORIES

2016

**ROCK**  
**HEALTH**



### GENOMICS AND SEQUENCING

\$410M

Sequencing technologies, including hardware (e.g., sequencing on a chip) and software (data aggregation)



### ANALYTICS AND BIG DATA

\$341M

Data aggregation and/or analysis to support a wide range of healthcare use cases



### WEARABLES AND BIOSENSING

\$312M

Wearable or accessory devices that detect specific biometrics and are designated for consumers



### TELEMEDICINE

\$287M

Delivery of healthcare services (synchronous or asynchronous) through non-physical means (e.g. telephone, digital imaging, video)



### DIGITAL MEDICAL DEVICES

\$268M

Hardware/software designed to cure/mitigate/treat/prevent a specific disease or condition



### POPULATION HEALTH MANAGEMENT

\$198M

Comprehensive delivery system tools to manage the health of populations under the shift to ACO models

Source: Rock Health Funding Database

Note: Only includes U.S. deals >\$2M; data through December 31, 2016



Digital **Biomarkers**

Digital **Diagnostics**

Digital **Therapeutics**

# Digital Biomarkers











2:48

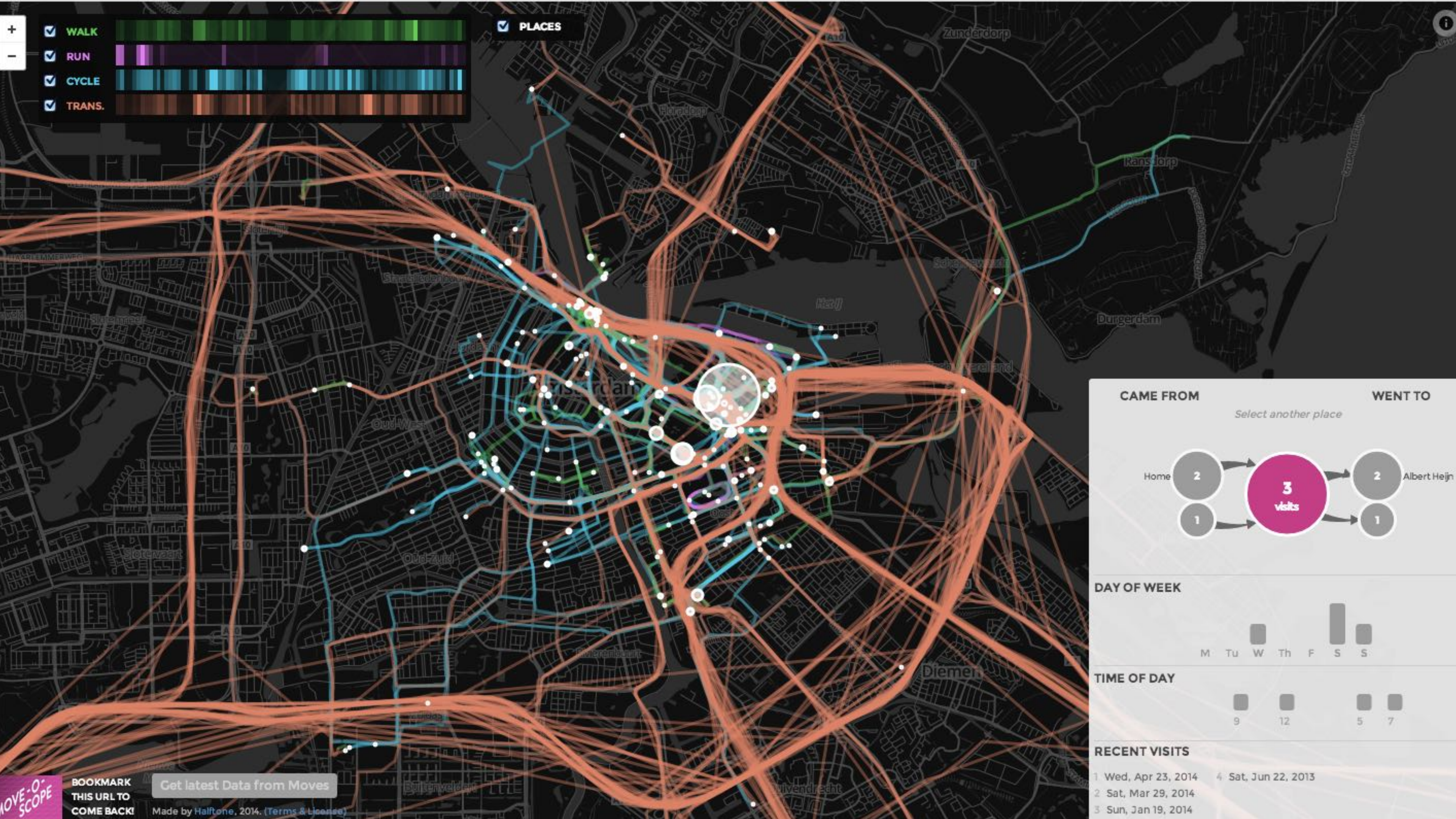


# Exercise

Accumulate 30 min  
of activity at or  
above a brisk walk.







CAME FROM

WENT TO

Select another place



DAY OF WEEK



TIME OF DAY



RECENT VISITS

- 1 Wed, Apr 23, 2014
- 2 Sat, Mar 29, 2014
- 3 Sun, Jan 19, 2014
- 4 Sat, Jun 22, 2013

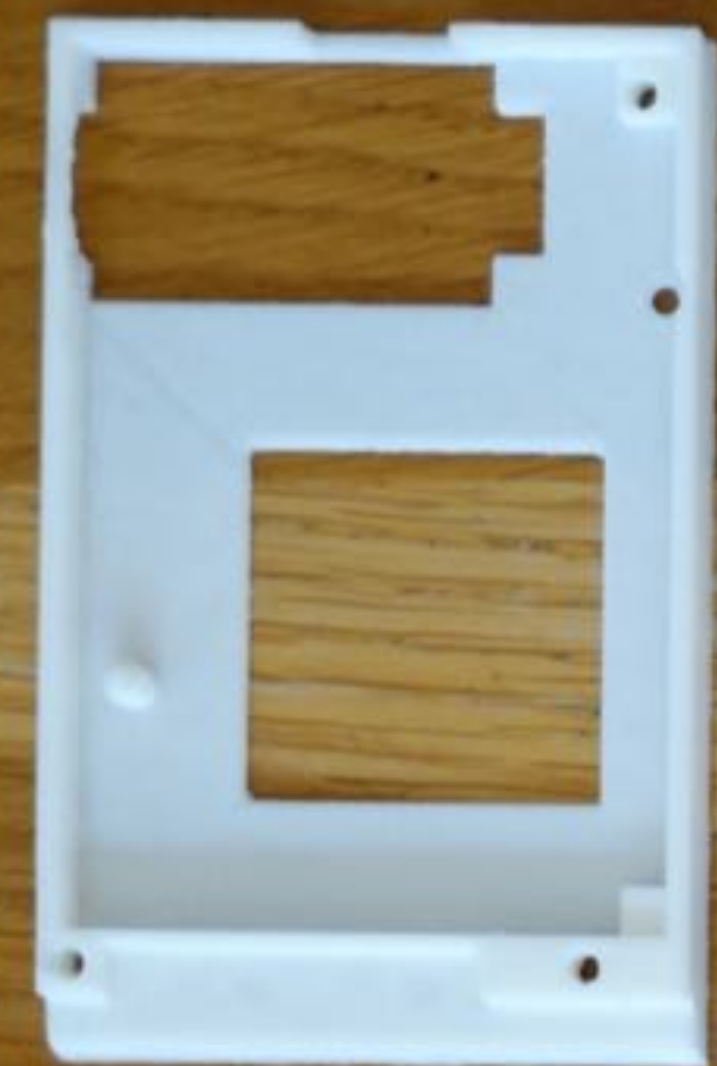
MOVE-O-SCOPE

BOOKMARK THIS URL TO COME BACK!  
Get latest Data from Moves  
Made by Halftone, 2014. (Terms & License)

















# Patient Vitals Dashboard

WINTER 2020

Current Status

Temperature: 98.6°F  
Heart Rate: 72 bpm  
Blood Pressure: 120/80 mmHg

HR

BP

HR

BP

HR

BP

HR

BP



Patient Since **Mar 17, 2014**

Last 30 Days **0 Events**

### Event Details

◀ Prev
Aug 5 10:12 AM
Next ▶

High

 New
Review Event

**Clinical Event**

**Morning Pulse Rate (Oximeter) at 107.0 bpm**

The 3 day Ave is 34.6 % above baseline of 79.5 bpm

**Clinical Event**

**Total Steps at 320.3 steps/day**

The 3 day Ave is 78.8 %  
below baseline of 1509.5  
steps/day



# WE'VE MAPPED THE WORLD. NOW LET'S MAP HUMAN HEALTH.

## MY MOOD TODAY



Enthusiastic  
**80%**  
Scared  
**20%**

## MY SLEEP LAST NIGHT



Times awakened  
**2**  
Sleep duration  
**7.5 hr**

## MY HEARING TEST



Left ear  
**Normal**  
Right ear  
**Normal**

## MY ECG TODAY



Heart rate  
**72 bpm**  
PR Interval  
**0.17**

## MY DIET TODAY



Coffee  
**2 cups**  
Water  
**8 cups**

## MY IMMUNIZATION RECORD



Tetanus  
**Yes**  
Pertussis  
**Yes**

## MY MOVEMENT TODAY



Strenuous activity  
**Often**  
Minutes walked  
**45 min**





Drug	Disease	Phase II findings	Phase III findings	<i>N</i>	Duration	Sponsor	Conservative estimates of phase III costs <sup>a</sup>
Solanezumab	Alzheimer disease	Alzheimer's Disease Assessment Scale-Cognitive subscale score showed 1.9 points improvement over placebo for lowest dosage	Failed, unchanged Alzheimer's Disease Assessment Scale-Cognitive subscale score	2,100	18 months	Eli Lilly	~\$600 million
Gammagard	Alzheimer disease	Alzheimer's Disease Assessment Scale-Cognitive subscale score showed 5.4 points improvement over placebo	Failed, unchanged Alzheimer's Disease Assessment Scale-Cognitive subscale score	390	18 months	Baxter	~\$30 million
Dexpramipexole	Amyotrophic lateral sclerosis	Decline as measured by ALS Functional Rating Scale-Revised total score reduced by 20% in highest dosage group	Failed, no effect on decline in ALS Functional Rating Scale-Revised total score compared to placebo	943	18 months	Biogen Idec	~\$300 million
Coenzyme Q <sub>10</sub>	Huntington disease	Total Functional Capacity score showed 0.34 improvement over placebo	Failed, study terminated early due to futility, no improvement in Total Functional Capacity score	609	5 years	National Institutes of Health	~\$22 million
Dimebon	Huntington disease	Mini-Mental State Examination score showed 1.0 point improvement over placebo	Failed, no significant change in Mini-Mental State Examination score compared to placebo	403	6 months	Medivation	~\$10 million
Coenzyme Q <sub>10</sub>	Parkinson disease	Total Unified Parkinson's Disease Rating Scale score showed 1.2–5.3 points improvement over placebo	Failed, study terminated early due to futility, Unified Parkinson's Disease Rating Scale score 0.6–1.1 points worse than placebo	600	16 months	National Institutes of Health	~\$14 million
Creatine	Parkinson disease	Total Unified Parkinson's Disease Rating Scale score showed 2.8 points improvement over placebo	Failed, study terminated early due to futility, no improvement in a composite of clinical outcome measures	1,741	5 years	National Institutes of Health	~\$25 million

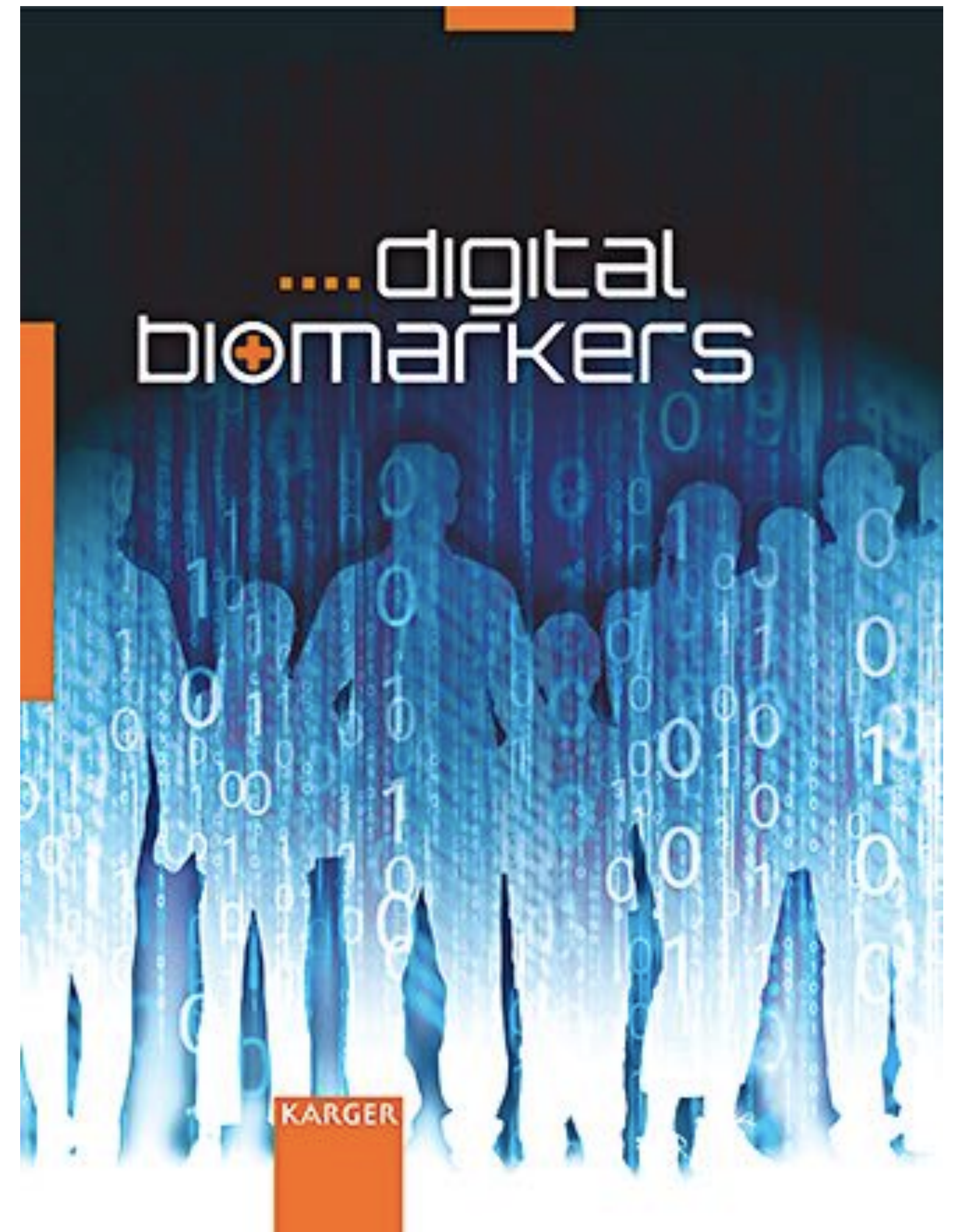
<sup>a</sup> Costs are estimates based on publicly available data where possible. Sources: [7, 19, 46–60].



## Opportunity for Digital Biomarkers:

Current clinical outcome measures for neurodegenerative disorders are limited because they are (1) **rater dependent**, (2) **highly variable**, and (3) **episodic**. By their nature, rating scales are dependent on the raters, who have variable expertise and experience.

Source: <https://www.karger.com/Article/FullText/477383>





# Zonder context geen bewijs

Over de illusie van  
evidence-based  
practice in de zorg



***Aanbeveling 1: De Raad pleit voor context-based practice in plaats van evidence based practice. Bewijs speelt weliswaar een rol als bron van informatie, maar doet dat naast vele andere bronnen van informatie. De concrete context bepaalt hoe deze kennisbronnen met elkaar worden verbonden.***



# Digital Diagnostics





### Kinsa Smart Thermometer

- Tells you your **temperature**
- Offers personalized guidance on how to **soothe symptoms** and when to **call the doc**
- Reminds you when to **take meds** and at what dosage
- Keeps your family's **health details** in your pocket whenever you need them
- Shows which **illnesses are circulating** nearby for a better idea of what bug you're fighting

See how Kinsa can help you.



Kinsa for Families



Kinsa for Schools



Kinsa for All







## Smarter Family Care

Starting with the Oto for Better Ear Health

Buy Now







PRODUCTS

SERVICES

APPLICATIONS

GET STARTED

PUBLICATIONS

## LATEST NEWS

Featured video: How to sequence a human on a GridION X5

About GridION >



## Prepare

Automated and manual library preparation solutions

> Find out more



## Sequence

From miniature devices to high-throughput installations

> Find out more



## Analyse

Analysis of real-time data while your experiment progresses

> Find out more

Explore

Resource

Leave a message





# TytoHome<sup>™</sup>

A comprehensive exam and telehealth visit, anytime and anywhere

## Features

- TytoHome device for examining the ears, throat, heart, lungs, abdomen, skin, and capturing heart rate and temperature data
- TytoApp for live video telehealth exams with your physician or “exam and forward” for later diagnosis
- Guidance technology ensures anyone can capture exam data safely and accurately
- Includes: otoscope (ears), stethoscope (heart, lung and abdomen), basal thermometer, digital camera (skin and throat), rechargeable battery

## Uses

- Enable your doctor to remotely diagnose conditions such as: ear infections, flu, upper respiratory infections, sinus infections, pink eye, rashes, bug bites, wounds, sore throat and pneumonia
- Monitor chronic conditions without leaving home
- Use at home, on vacation, or in the office – Tyto travels with you!

## Benefits







# CLOUD DX

WINNER OF THE  
**QUALCOMM**  
TRICORDER **XPRIZE**<sup>®</sup>  
BOLD EPIC INNOVATOR AWARD







**PHILIPS**

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# Lumify

Exceptional portable ultrasound  
from **your smart device**

Philips' ultrasound app brings diagnostic capabilities  
to your compatible smartphone or handheld device

Accolades for Lumify:





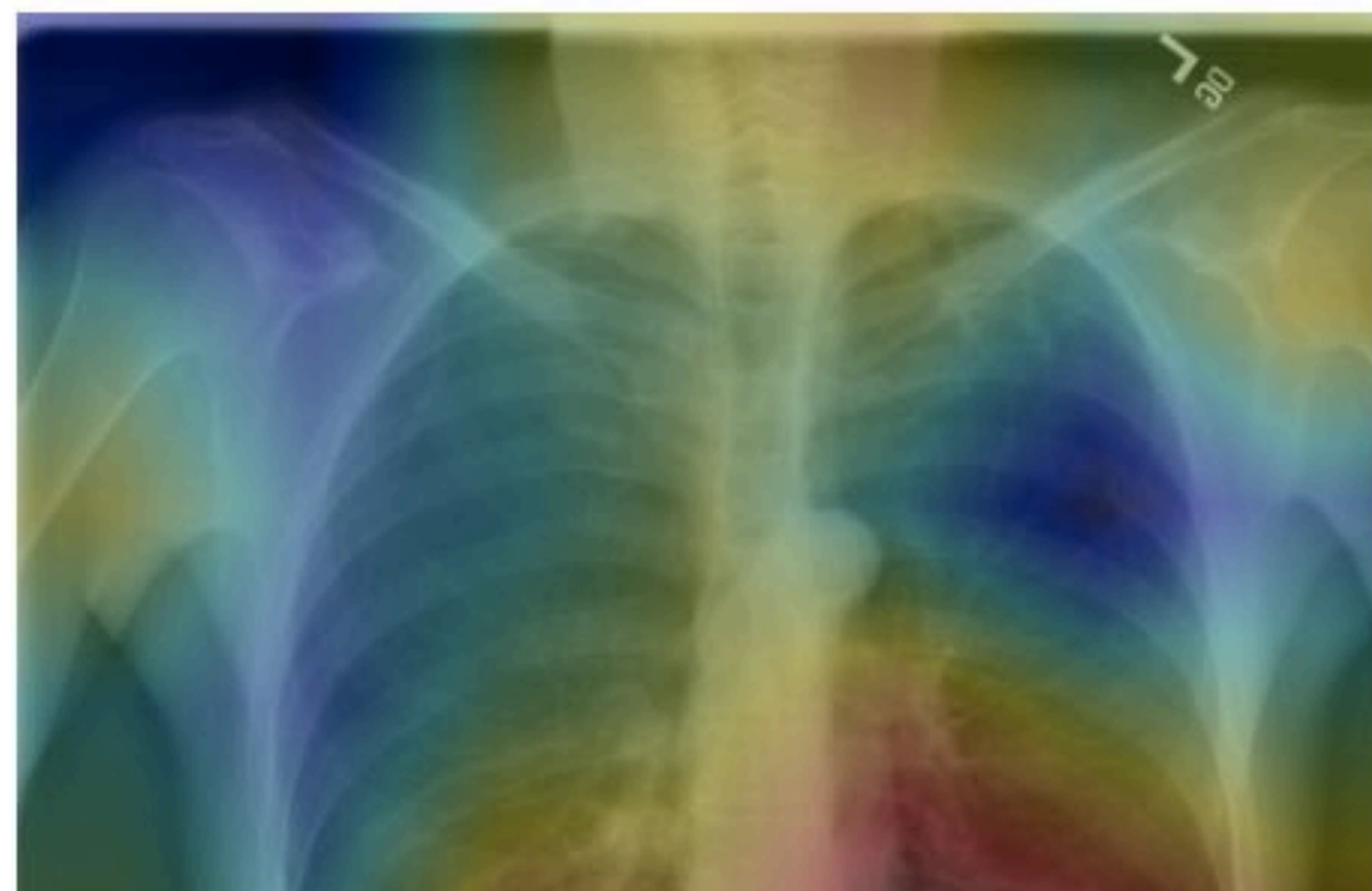
# CheXNet: Radiologist-Level Pneumonia Detection on Chest X-Rays with Deep Learning

Pranav Rajpurkar\*, Jeremy Irvin\*, Kaylie Zhu, Brandon Yang, Hershel Mehta, Tony Duan, Daisy Ding, Aarti Bagul, Curtis Langlotz, Katie Shpanskaya, Matthew P. Lungren, Andrew Y. Ng

We develop an algorithm that can detect pneumonia from chest X-rays at a level exceeding practicing radiologists.

Chest X-rays are currently the best available method for diagnosing pneumonia, playing a crucial role in clinical care and epidemiological studies. Pneumonia is responsible for more than 1 million hospitalizations and 50,000 deaths per year in the US alone.

[READ OUR PAPER](#)





# PRODUCT



## AUTOMATED MEDICAL IMAGE ANALYSIS

Aidence provides radiologists with a software platform that automatically detects and classifies various disorders on multiple imaging modalities



## DEEP LEARNING

We are using Deep Learning, a revolutionary form of Artificial Intelligence, to learn computers to read medical images and automatically provide structured reports



## HIGH ACCURACY

Our software platform embodies the knowledge of hundreds of medical specialists. Based on a vast amount of medical images and clinical reports our platform provides automated diagnostics with outstanding sensitivity and specificity



## EFFICIENT WORKFLOW

Our software platform is Vendor Neutral. Aimed at reducing your reading times it seamlessly integrates with your existing PACS and workstations allowing you to increase workflow efficiency



## Medical Imaging Artificial Intelligence Companies



ARTERYS



**RADLogic**



I M A G E N

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Number of Peer-Reviewed Publications

0



# Your skin looks good. But is it also healthy?

Perform regular self-checks for skin cancer with your phone.

[Download app](#)

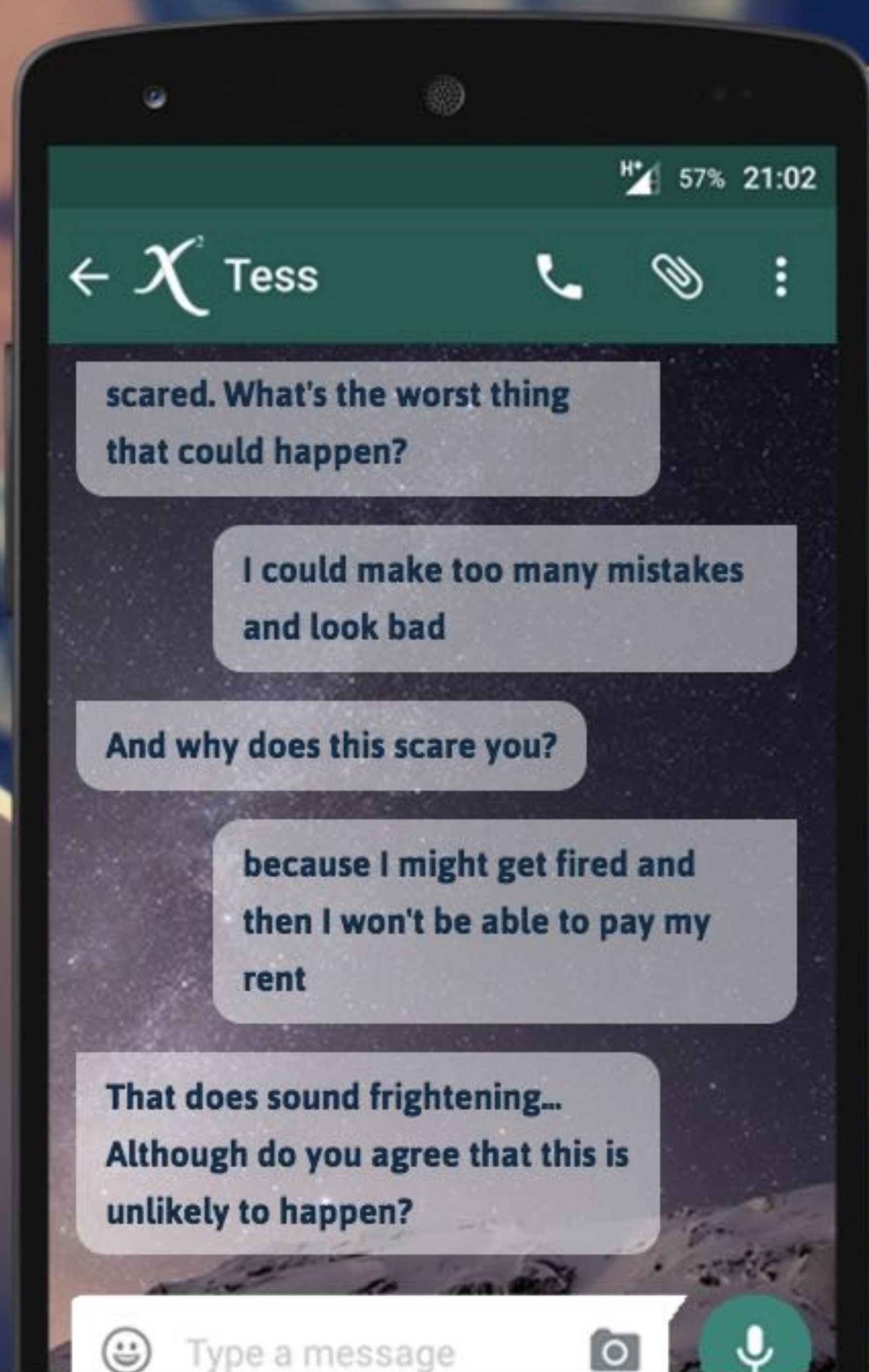
Available for iOS and Android.



# Digital Therapeutics

(or medicine?)





## For Community Mental Health Centers

**Cognitive emotional behavioral therapy**

**Psychological coaching**

**Natural evaluation of ehealth course**

**Questionnaire automation**

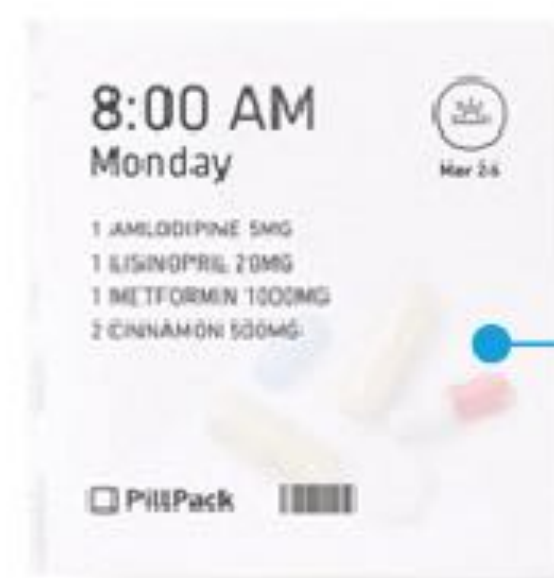
**Improving therapy adherence**



We ship other kinds of medications like creams, insulins, diabetic supplies, and inhalers.



Refills prescribed by physicians are managed by us.



Individual Packs are labelled with the date, time, and medications.

Support is available to customers 24/7 by mobile messaging, voice, and email.



Pre-sorted meds come in a recyclable dispenser.



HOME

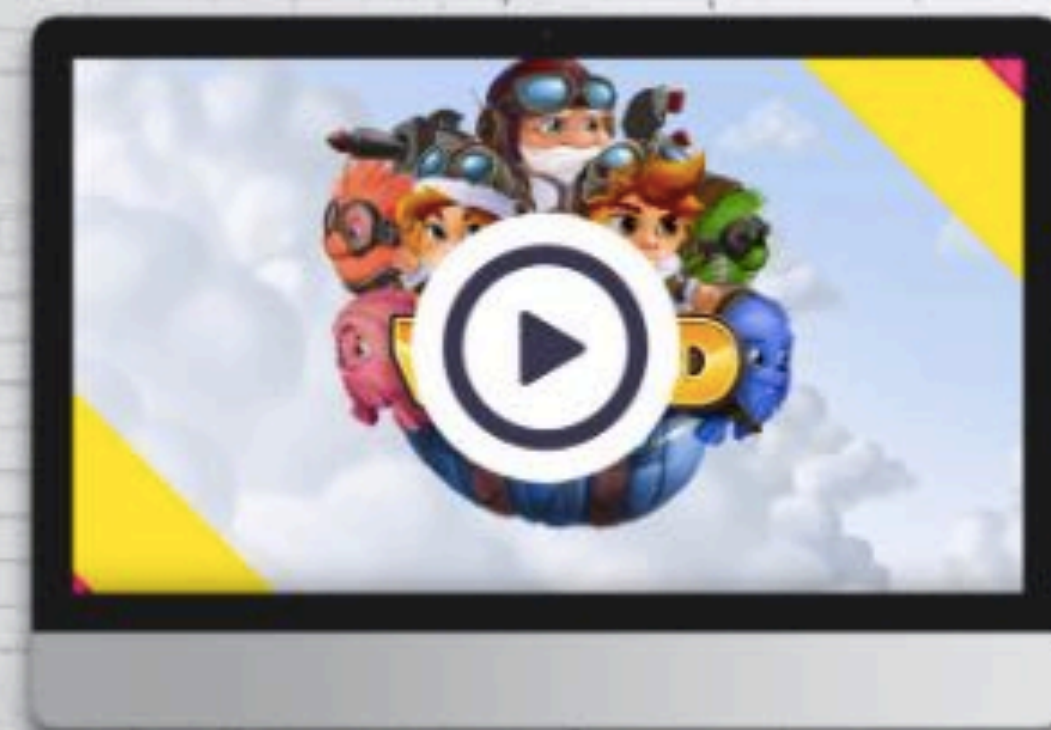
NEWS

CROWDFUNDING CAMPAIGN

STARTER KIT

WIND TALES MOVIES

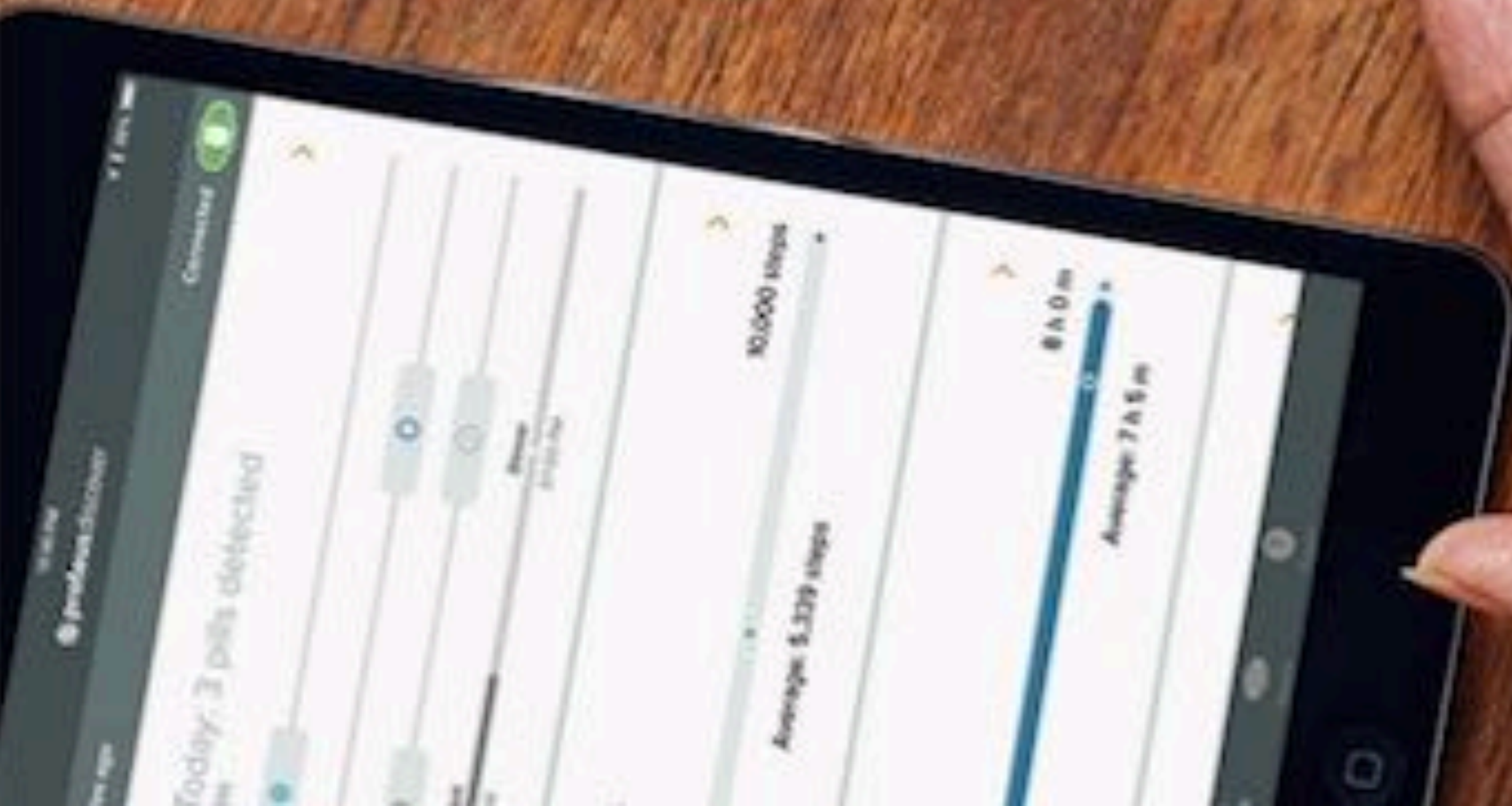
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SUPPORT OUR  
CROWDFUNDING











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### FDA News Release

# FDA approves pill with sensor that digitally tracks if patients have ingested their medication

*New tool for patients taking Abilify*

[f](#) SHARE [t](#) TWEET [in](#) LINKEDIN [p](#) PIN IT [e](#) EMAIL [p](#) PRINT

**For Immediate  
Release**

November 13, 2017

### Summary

FDA approves Abilify MyCite, a pill with a sensor that digitally tracks if patients have ingested their medication

#### Inquiries

##### Media

✉ [Sandy Walsh](#)  
☎ 301-796-4669

##### Consumers

☎ 888-INFO-FDA

#### Related Information

- [Approved Drug Products](#)





mySugr

EN DE

HOME

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BLOG

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DATA UPLOAD/LOGIN



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ABOUT mySUGR

## mySugr joins the Roche Family

JUNE 30, 2017 BY

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POPULAR POSTS

Pro tip: master the pre-



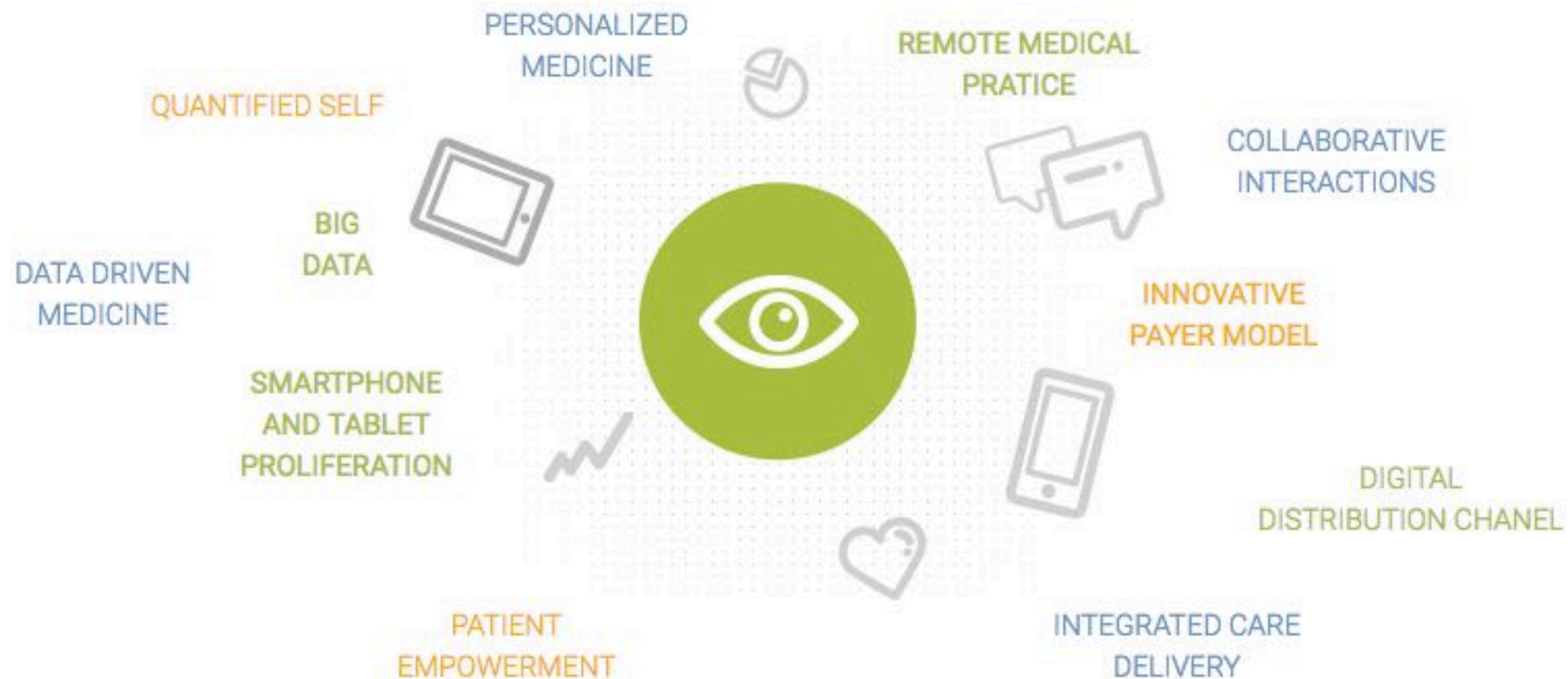
# What are Digital Therapeutics?

Digital therapeutics represent a new generation of healthcare that uses innovative, clinically-validated disease management and direct treatment applications to enhance, and in some cases replace, current medical practices and treatments.

DTx products demonstrate safety and efficacy in randomized clinical trials, receive regulatory clearance when used as a medical device, integrate into clinical practice, may be prescribed by healthcare providers, and tailor to patients' clinical needs, goals, and lifestyles.

[LEARN MORE](#)







# Digital Therapeutic Companies Involved





# COMPANION SOFTWARE

At Voluntis, we develop state-of-the-art companion software to accompany and enhance a specific medication or medical device.

We design our companion software in a user-friendly manner to augment the real-life value of therapeutics by:



**bringing medical  
intelligence inside**



**enabling  
connectivity**



**delivering  
collaboration**

For example, we securely connect patients with caregivers to activate remote operations, such as monitoring, treatment adjustment or coaching.





Diabetes Mobile  
Prescription Therapy

# The first Mobile Prescription Therapy

BlueStar is the only product FDA cleared for real-time patient coaching and clinical decision support.

**First-in-Class  
Therapy**



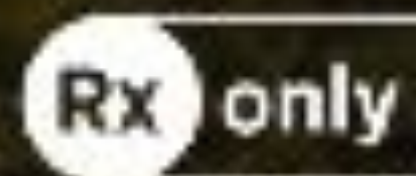
**Clinical  
Outcomes\***

↓ 2 POINT  
A1C

**Reducing Costly  
Hospital Visits**

↓ 58%

**Prescribed**



**Reimbursed**

NDC  
#89129-0100-01  
NCPDP Approved

\*In earlier versions of BlueStar

Patented Clinical & Behavioral Engine



# Getting started with Propeller is easy

Enroll in 5 minutes or less







Sign Up



Shipping



Attach Sensors



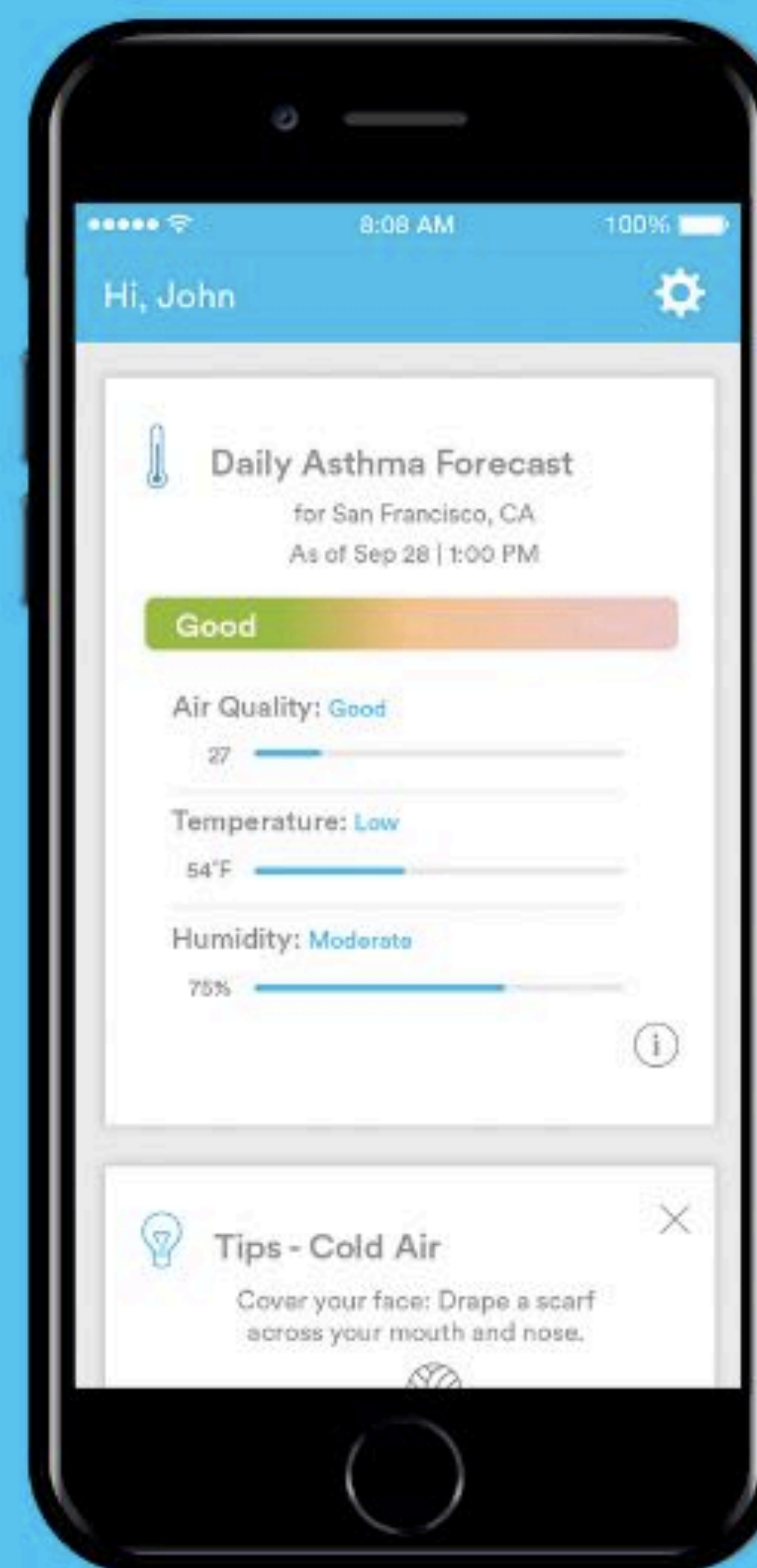
Gain Insight



Achieve

# Propeller learns You gain real insights

Propeller helps you understand what may be causing your symptoms so you can live a healthy and active life





Digital **Health?**



Digital **Biomarkers**

Digital **Diagnostics**

Digital **Therapeutics**



# Nexthealth

**Digital Health** Strategy | Insight | Investment

**Thanks for your  
attention!**

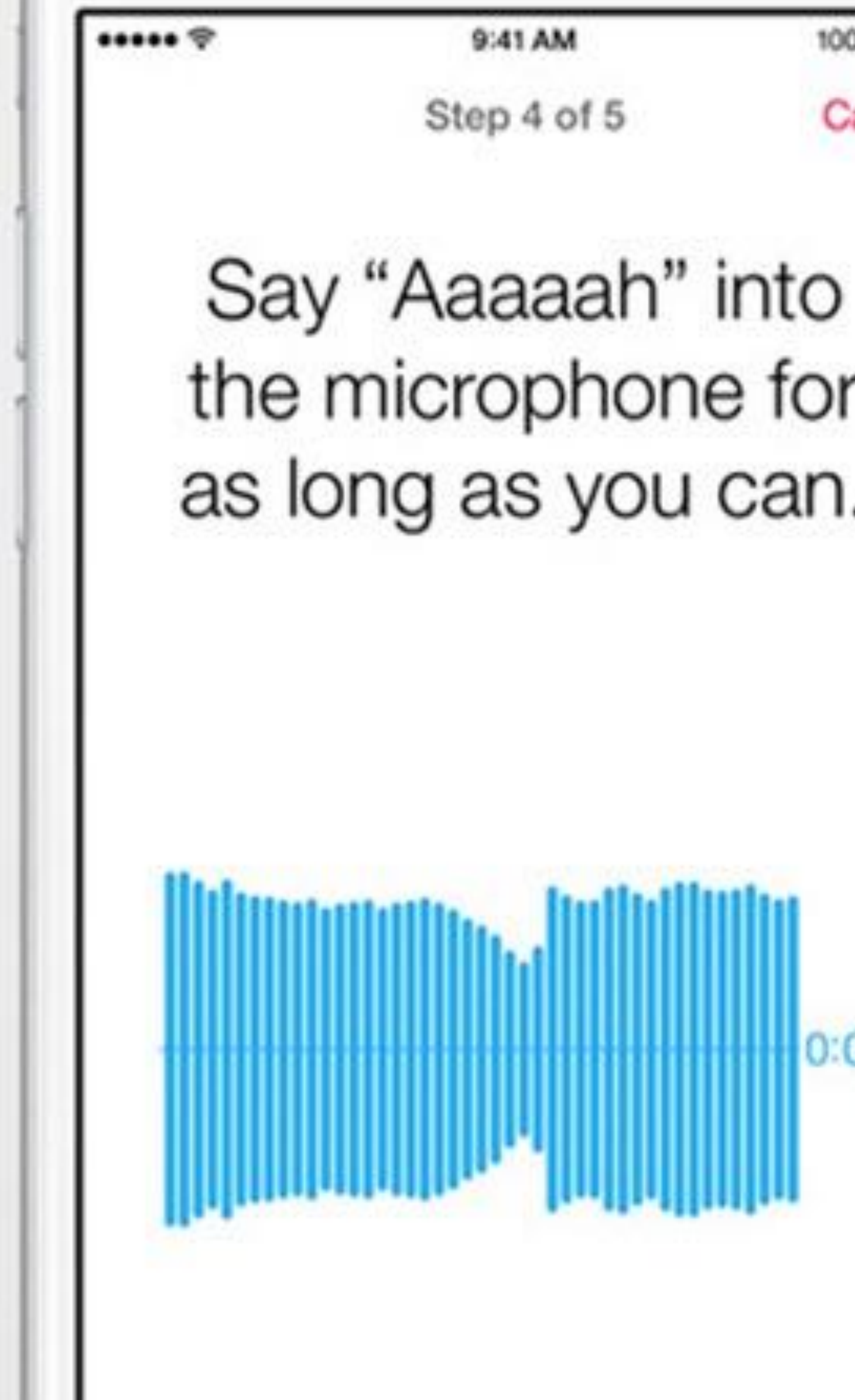
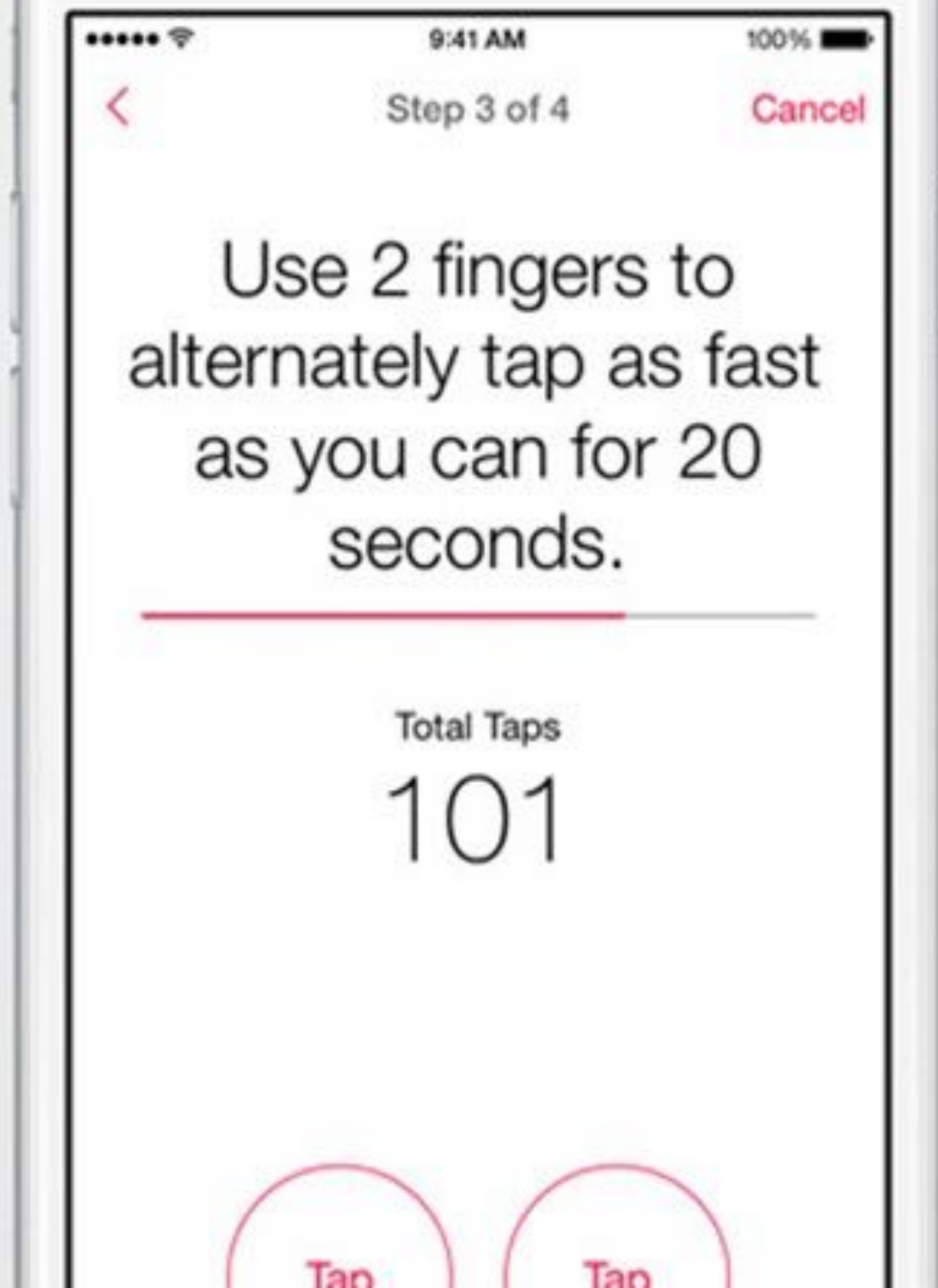
**Maarten den Braber** | CEO | @mdbraber | maarten@nexthealth.co  
Dutch Life Sciences & Health Conference - November 22, 2017



**Bonus**

**Digital Clinical Research**







# WHAT IS NORA®

NORA® stands for Network Oriented Research Assistant, and is the 21 CFR Part 11 compliant technology platform that allows Science 37 to bring research directly to patients in their own homes. NORA® integrates telemedicine technology into the clinical research process, and supports Science 37's end-to-end management of clinical trials. From the first steps of trial design, to connecting with patients at home, NORA® is there to help. Contact us to learn more.

