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PUTTING PEOPLE FIRST

2018

Digital Healthcare

Review of technology and health apps for a better patient experience

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Ministry of
National

A systemic approach to patient support programs (PSP)

In order to design services and solutions which will make a difference to patients by guaranteeing a good quality of life (QoL), promoting health and delivering better care overall, we have to **consider physical, psychological, existential and social factors.** This requires a systemic approach in considering the entire **network of actors** around the patient.

Many technologies allow us to design services and digital tools to leverage this network of **actors** and to design solutions that take into account the system of **relationships** that extends beyond the disease. In this document, we explore the various **technologies** and **tools available** to cater for a better patient experience, integrated within the global health ecosystem.

A complex ecosystem offering opportunities

The main actors involved in the patient's ecosystem are centered around their caregivers, family healthcare professionals and community. But a broader ecosystem of stakeholders, such as **insurance companies**, **ethics committees** and **pharmaceuticals company**, should also be considered in order to address the full complexity of the healthcare field.

Patient

At the center of the ecosystem, related to all the stakeholders and highly involved in treatment and care.

Caregiver

Paid or unpaid person(s) helping the patient with illness management and his/her activities of daily living.

Family

Relatives and friends of the patient who are aware of his/her condition and may or may not be providing care.

Physicians

General practitioners and other specialists in direct contact with the patient and providing services and support.

Allied health

Other healthcare professionals not in direct contact with the patient but providing ancillary services (e.g. medical technicians).

Community

The patient advocacy groups, support groups and the society at large within the patient's ecosystem are critical to the patient's overall equilibrium.

Caregiver/ Family

Patient

Physicians

Allied health and Community
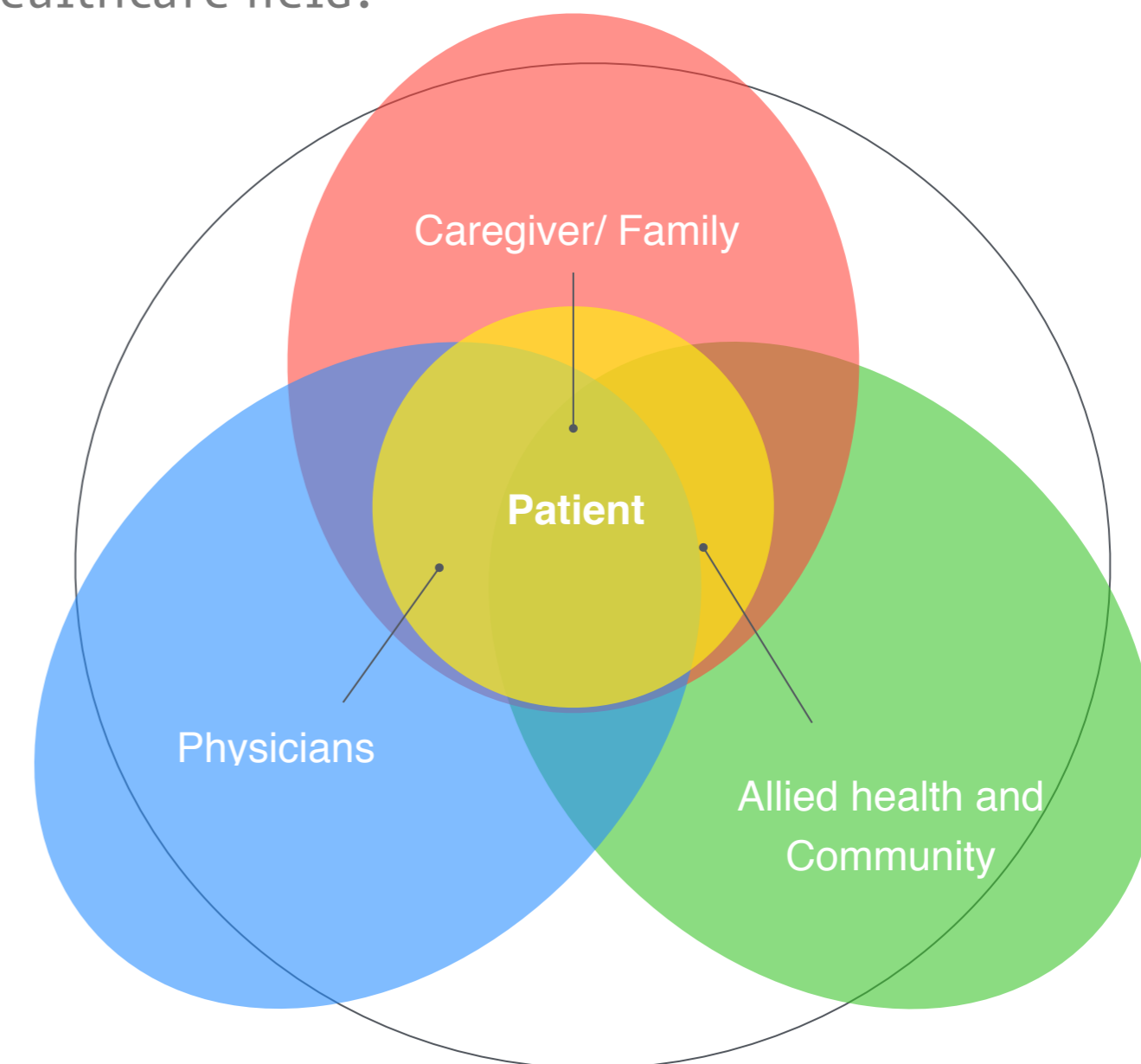
Quality of Life (QoL) measures and patient centricity

Quality of Life (QoL), def. by the World Health Organization (WHO)

Individual perception of life, values, objectives, standards and interests in the framework of culture.

Quality of life measures are used to assess the quality of service, the need for healthcare, and the effectiveness of interventions. They are also used in cost utility analyses from a patient perspective. Despite this, they need to be used with caution as they fail to be patient-centered when they impose standardized models (e.g. a questionnaire may restrict a patient's choice or may be designed in a way that doesn't take into account aspects, values or meanings relevant to the patient).

However, the 4 dimensions highlighted below can help frame services and design solutions that target one or more aspects of patients' well-being to improve their experiences overall.

Physical well-being
Physical condition including symptoms

Psychological well-being
Emotional responses, such as depression and anxiety

Existential well-being
Individual's ability to find meaning and purpose in life

Social well-being
Individual's perceptions and support from others

2
Technology in healthcare

Introduction

Technology is radically changing the world of healthcare and **acts at different levels in support of different stakeholders**. There are several digital tools on the market (e.g. wearables, virtual reality, robotics, etc.), many of which work in integration with each other, for example, wearables connected to IOT applications.

From a **patient perspective**, technology can be used to support a range of activities, ranging across daily or health-related activities and treatment management. It can facilitate communication and relationships, promote healthy behaviors and well-being activities.

From the **healthcare professional perspective**, new technologies can help in learning, both academic and Continuing Medical Education (CME), research, diagnosing, delivery of care in different settings (e.g. telemedicine allowing outpatient care) and decision making.

New technologies bring new opportunities and open the way to possible future care scenarios. In the following slides we list some of the main technologies impacting the field of care, including medical, social and psychological aspects:

· *Wearable devices and the IOT*

· *Virtual reality*

· *Diagnosis and monitoring tech*

· *Robotics*

· *Health apps*

Wearable devices and the IOT

Wearable devices are acquiring a huge importance in healthcare, for health promotion, preventive medicine and treatment management. These devices can **reduce overall costs related to preventive medicine, improve monitoring by allowing the self-monitoring of health indicators** and **ease the collection of real world data**.

Wearables, used in connection with mobile apps, are considered reliable tools for long-term monitoring and long-distance, since they can be **integrated with telehealth and telemedicine**.

They permit the observation of a large variety of indicators, both **medical signs** (e.g. vital signs, ECG trace, etc.) and **behavioral aspects** (e.g. eating habits, mood, fitness, etc.).

In the meantime, they **empower patients** and increase their feeling of control over the experience of illness.

Virtual reality (VR)

Technology is not only used for monitoring: new VR applications are being applied to therapy itself.

In 1996, research scientist Hunter Hoffman and psychology professor David R. Patterson first used immersion VR for **pain control.** Since then, potential applications of VR have been explored for a wide range of medical conditions.

In medicine, VR is now also used as an **alternative to sedative drugs** (e.g. allowing dosage reduction and a lower patient request for painkillers in the post-surgery phase). Other applications use VR in combination with physiological monitoring and feedback, in the **treatment of panic and anxiety disorders**.

Diagnosis and monitoring tech

Technological development has impacted the medical field in diagnostic and monitoring tools. Widely available cutting-edge tools **allow early diagnosis** (e.g. in an emergency setting) and **in a less invasive way**.

Many of these technologies have been developed with a human-centered perspective and are used in the field of **self-care and telemedicine.** They have a positive impact, especially in the management of chronic diseases (see "Imagine" on p. 42).

Interventions can, in some cases, be delivered quickly and in a patient's natural environment (e.g. portable ultrasound technologies), which makes patients feel more comfortable and allows diagnoses to be performed quickly.

The versatility of robots

New developments in robotics and AI systems provide possibilities to employ robots as assistants, which can safely and effectively **support HC professionals** in patient care, in workflow and decision-making, **support patients**, **elderly and differently-abled people to be more independent** (help in personal care functions, mobilization etc.) and to **reduce lack of companionship, loneliness, and social isolation** (social robots).

They are also deployed to **improve operational efficiency** by delivering and preparing supplies, materials and medications (service robots).
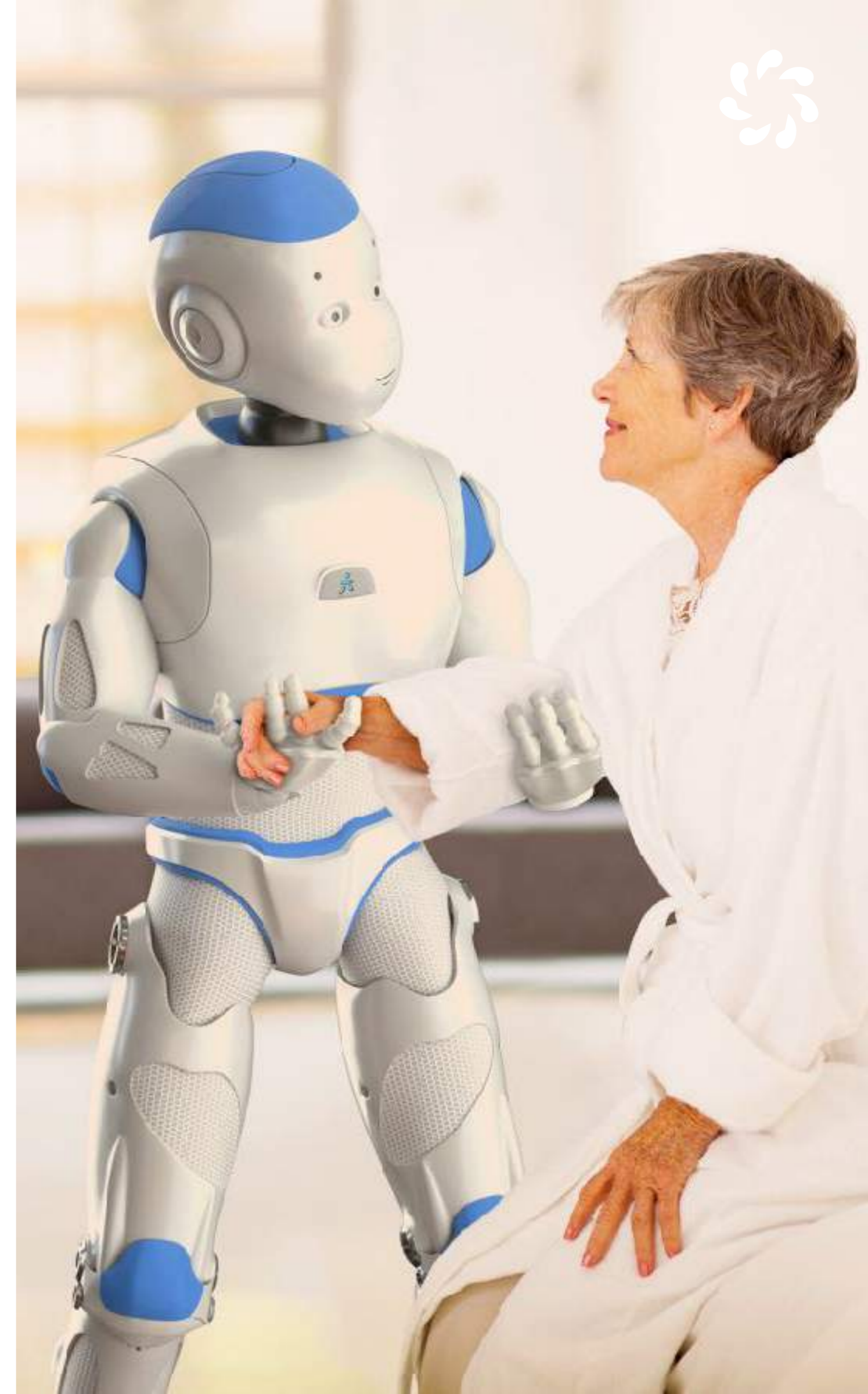
Health app objectives

Companion apps can play different roles in the healthcare ecosystem. While mainly supporting patients, they can also help facilitate relationships between stakeholders.

Health apps can have many different objectives, scopes and functions. If designed properly, they can:

- **Improve overall patient experiences** (well-being, quality of life, treatment management, etc.)
- **Help with data collection and usage** through analytic systems
- **Enable relationships** among different actors
- **Ease communication and connection** both online and offline between the different actors
- **Favor the creation of new communities** or support existing ones
- **Empower individuals** to maintain positive health behaviors and promote behavioral change

3

Review of selected apps

Design with meaning

While technology offers many opportunities for companies and healthcare providers to connect with patients on a new level, it can be very tempting to jumpstart a project. However, the conception and design of an app is a long, complex and costly process with uncertain results.

How can we ensure the best adoption and meaningful results for a new solution?

- **Features** have to be carefully selected and conceived to address patients' observed or underlying needs.

- **Visual design** needs to be inclusive, thinking of target users and their specific needs (age, handicap, etc.).

- **Usability** needs to be considered and tested with real users before rolling-out the solution.

Toolbox and methodology to explore users' needs:
In order to unveil patient or target users' needs, various approaches can contribute to building meaningful solutions.

- *Patient and stakeholder ethnographic interviews*
- *Diary study*
- *Shadowing*
- *Usability testing*

Categorization of selected apps

a. IOT
Smart objects (such as wearables) connected to personal apps and healthcare IT systems.

b. Health platforms
Digital applications allowing connection of different actors in the ecosystem.

c. Community platforms
Platforms leveraging on a community of peers (vs other platforms oriented on professionals)

d. Autonomous apps
Apps used by the patient alone, not enhancing transactions among different actors

e. Apps for professionals
Applications addressed to physicians or healthcare professionals.

App characteristics

	Low response software	High response software
	Software has low learning capacity (e.g. app presenting a report from data received without giving an interpretation)	Software has high learning capacity (e.g. interpreting incoming data and giving targeted suggestions)
Autonomous use	SkinVision	MD calc
Apps used by the person on her own, not enhancing transactions among different actors	Imagine	Mango health
	Skinsight	
	MyRA	
	My directives	
	You Dermoscopy	
	Visual DX	
	Rheuma helper	
	Klikkit	
Multiple actors involved	DermatologistOnCall	Insulia
Digital applications allowing connection of different actors in the ecosystem.	MyHealth	Health partner
	Track my multiple myeloma	TalkLife
	Arthritis power	iCancer health
	Medumo	Quardio
	Skindiag	Proteus
	Propeller health	Sirencare
	Cancer aid	
	Pacifica	

Overview of selected solutions

Example of keywords

Disease specific

Tracking

We've selected some of the most used and most rated apps available on the market with the aim of inspiring and giving an overview of different kinds of digital solutions applied in the healthcare field.

Each slide will present:

- **Brief description:** highlights the main objectives

- **Strengths:** explains why the selected app is relevant

- **Features:** focuses on the properties of the app

- **Keywords:** most significant concepts behind the app

- **Main involved actors:** shows patients (P), caregivers (C) and doctors (D) as different actors who are targeted or involved in the solution. Beyond those actors, many apps leverage a broader community of peers (some examples are in the chapter *community platforms*).

Example of main actors

Caregiver

C

P   D

Patient   Doctor

IOT
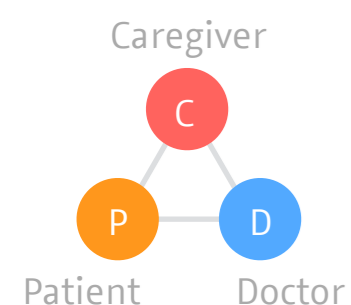
Healthcare
study

Propeller health (1/2)

Disease specific

Tracking

Sharing

Developer: Propeller Health

propellerhealth.com

The sensors track medication usage and then send time and location data to a smartphone. In this way it allows patients, caregivers and doctors to manage asthma and COPD and understand what may be causing symptoms.

Strengths

Help hospitals to lower patient readmission rates. Data are gathered and automatically transmitted so it doesn't necessarily require direct patient involvement.

Caregiver

C

P   D

Patient   Doctor

Features highlights

· Record attack reaction, when, where and why

· Schedule of medicine taking

· Up to 79% fewer asthma attacks

· Up to 50% more doses taken on schedule

· Up to 50% more symptom-free days
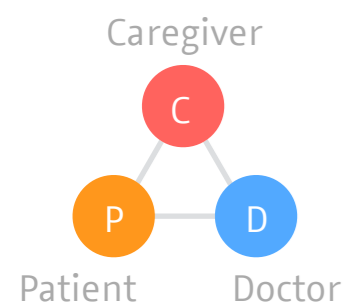
Propeller health (2/2)
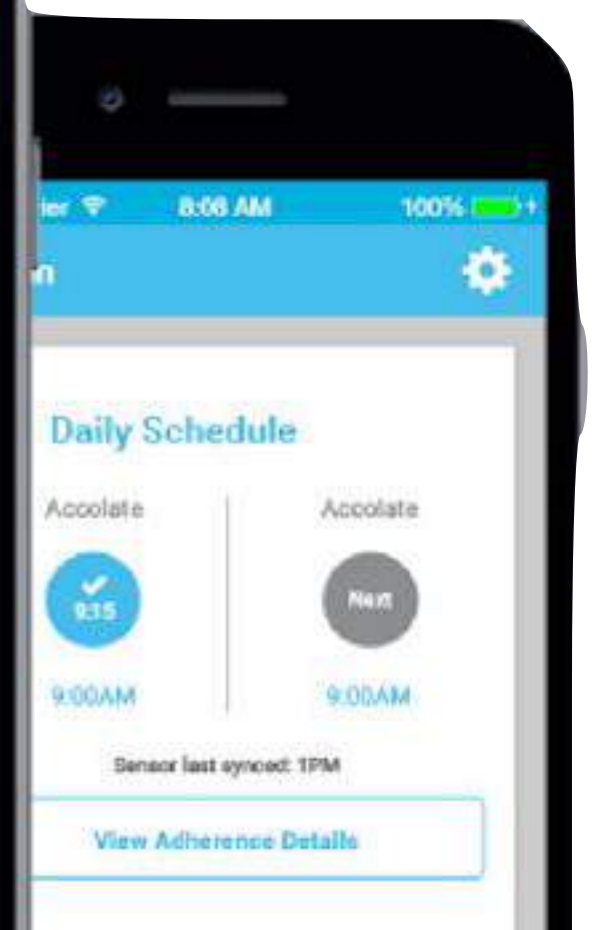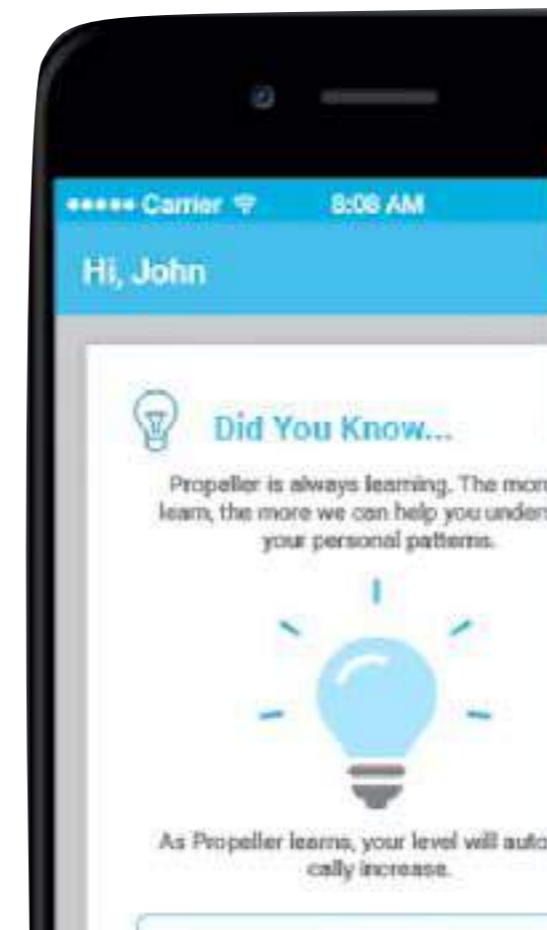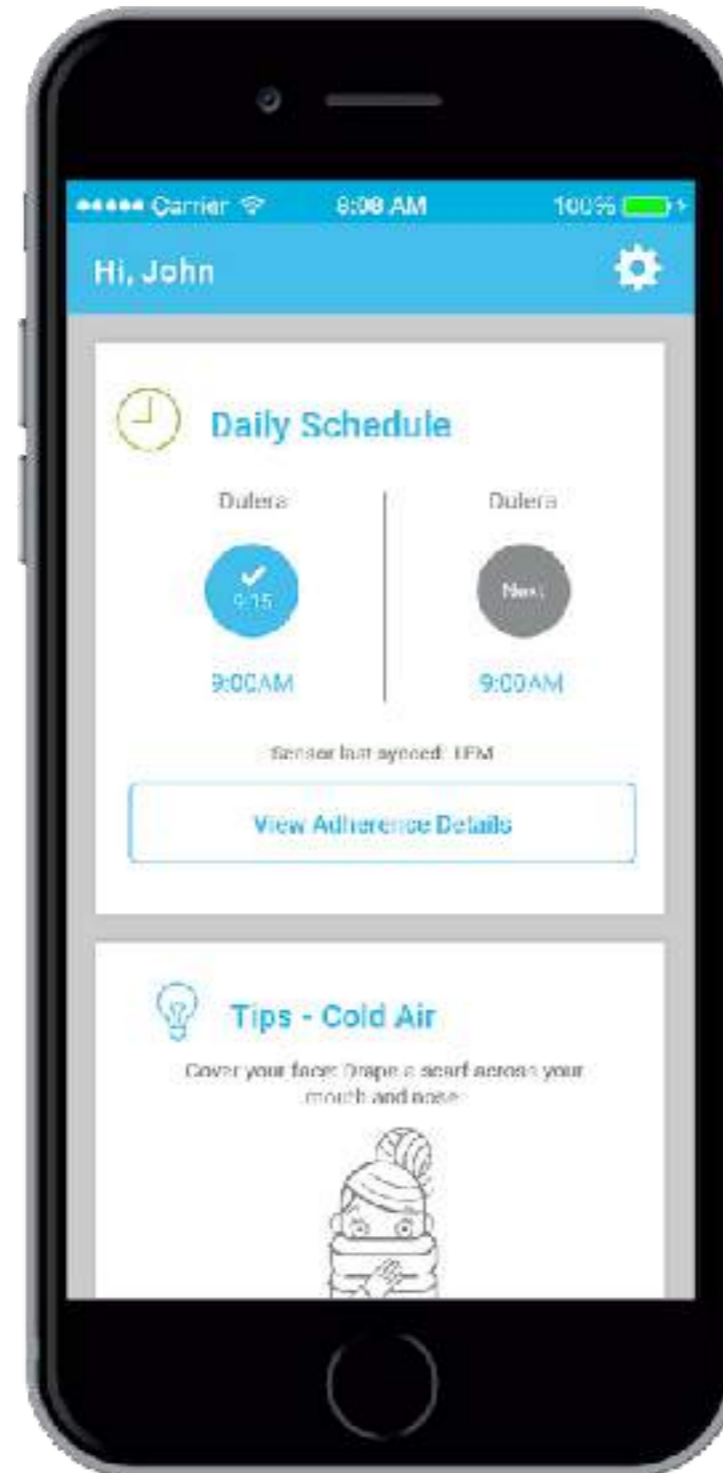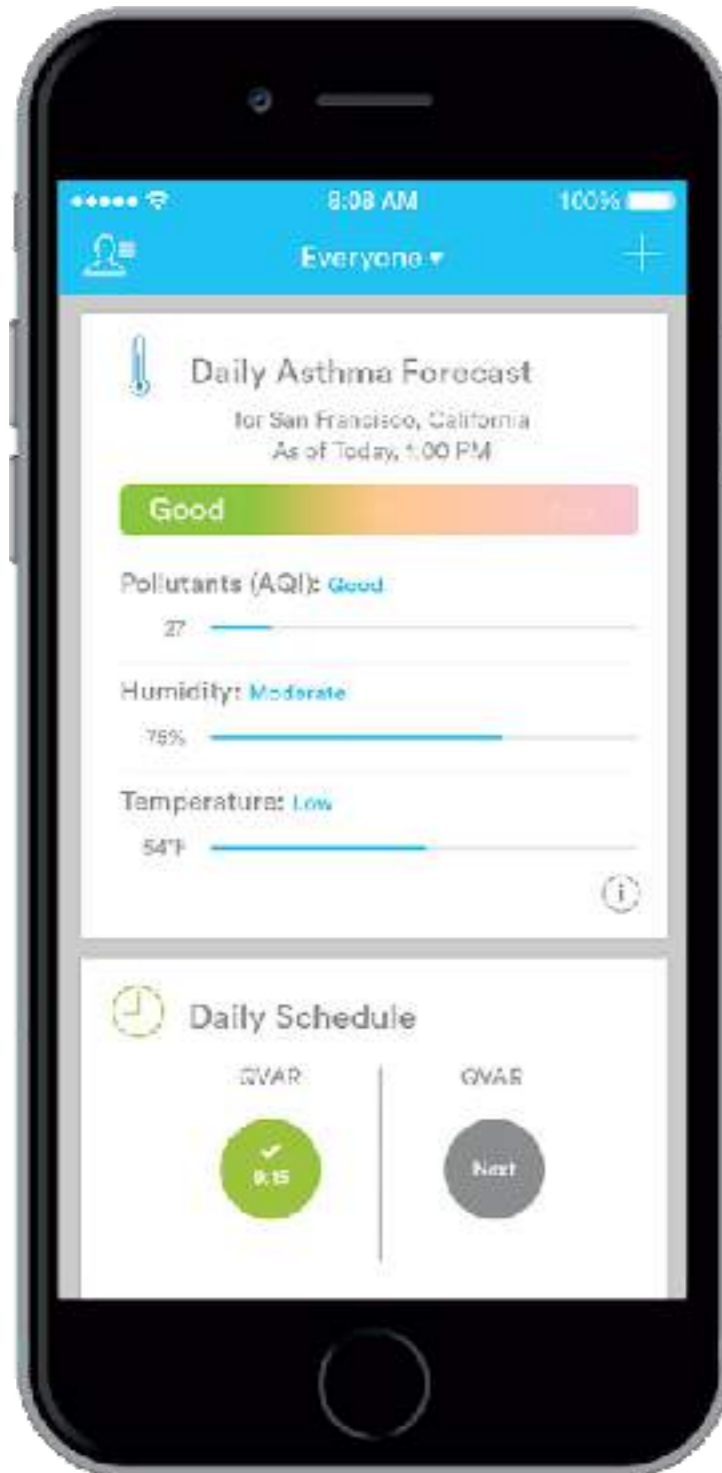
Siren care (1/2)

Disease specific

Real time tracking

Sharing

Developer: Siren Care

siren.care

Siren smart diabetic socks monitor foot temperature and proactively help with potential diabetic foot ulcers. Connected with the Siren app sending notifications when there is a possible injury.

Strengths

The product itself is comfortable and reduces the risk of injuries thanks to the product characteristics. It gives punctual alerts.

Features highlights

· 24/7 painless monitoring

· Alerts if there is a significant temperature increase

· Share data with your doctor and schedule appointments

Caregiver

C

P   D

Patient   Doctor

Siren care (2/2)

1. Non-binding top

Prevents restriction in the calf that can limit circulation

2. Siren sensors

Micro-sensors seamlessly embedded to measure temperature

3. Moisture-wicking fabric

Keeps your feet comfortable and dry to minimize risk of foot infections and blisters

4. Seamless toe and heel

Prevents rubbing of sensitive skin

5. Thick, padded footbed

Cushions sole reducing impact and protecting feet

Qardio (1/2)

Wearable

Real time tracking

Social Community

Sharing (HCP)

Developer: Qardio
getqardio.com

Helps people to stay healthy and manage disease conditions. Allow self tracking, monitoring and share data with peers or physicians.

Strengths

Connects more actors: family and friends to stay motivated and physicians to share results. QardioMD (free platform for doctors) allows remote monitoring and analyzes and prioritizes patients based on individually set criteria.

Features highlights

· Quardiobase (weight machine)

· Quardioarm (smart blood measure monitor)

· Quardiocore (heart rate & temperature)

· Quardio MD (free platform for Dr.)

Caregiver
C
P
D
Patient   Doctor

Experientia

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Qardio (2/2)

Quardiocore

Medical-grade wireless ECG monitor

QardioBase

Smart scale measures weight, calculates BMI, tracks changes in body composition

Quardioarm

Smart blood pressure monitor patients actually use

Klikkit (1/2)

Behaviors

Habits

Real time tracking

Developer: Leo innovation lab

justklikkit.com

Allow people to track activities and habits they want to improve. Help people to maintain activities/tasks scheduled.

Strengths

Innovative way to have people track, remember and change habits.

Caregiver

C

P   D

Patient   Doctor

Features highlights

· A sticky button connected to the app that may be attached to any object

· Creation of schedules and notifications for anything to remember

· Visualize data in graphs to have an overview of the progress

Klikkit (2/2)

Make good habits stick
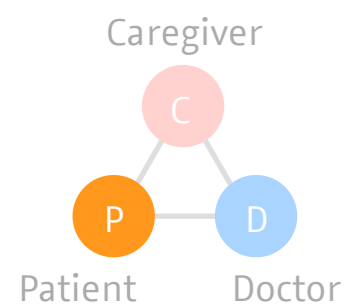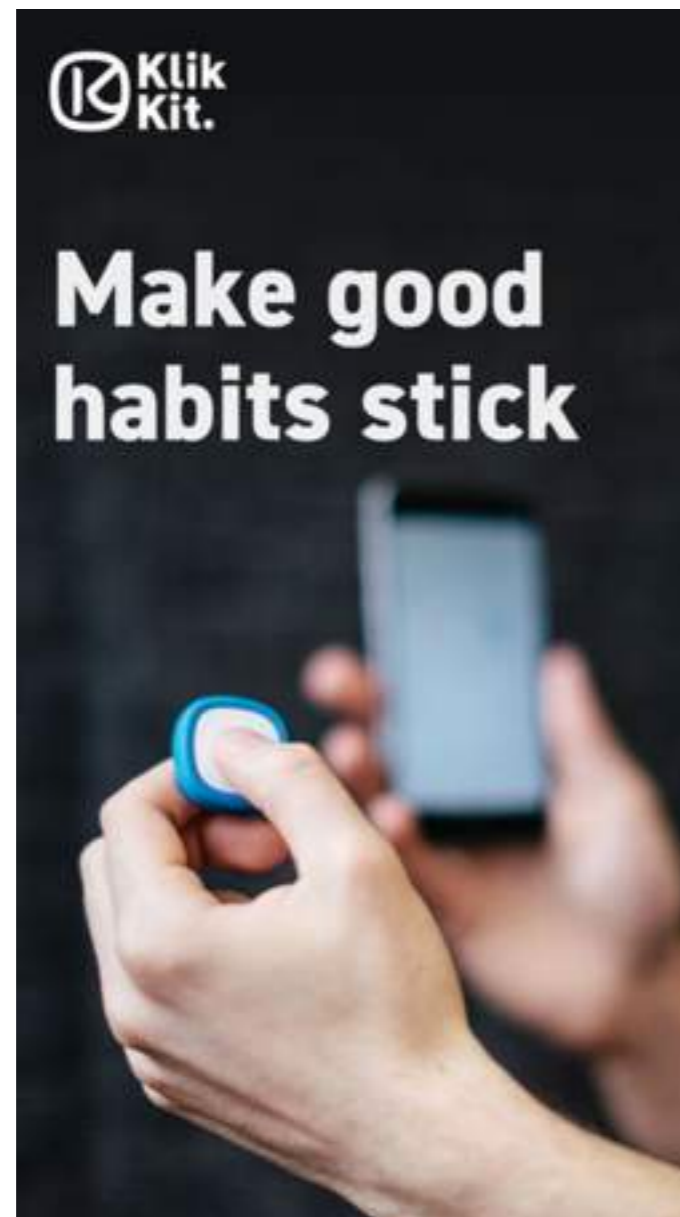
Pair your buttons

Pair the buttons and click them when you complete a task

Place the red ring on your klikker

Yes, I put a ring on it

Create your plan

Make plans for everything that you want to track. Add notifications to never miss the important stuff

Review achievements

Get the overview of your clicks through the dashboard and monitor your progress
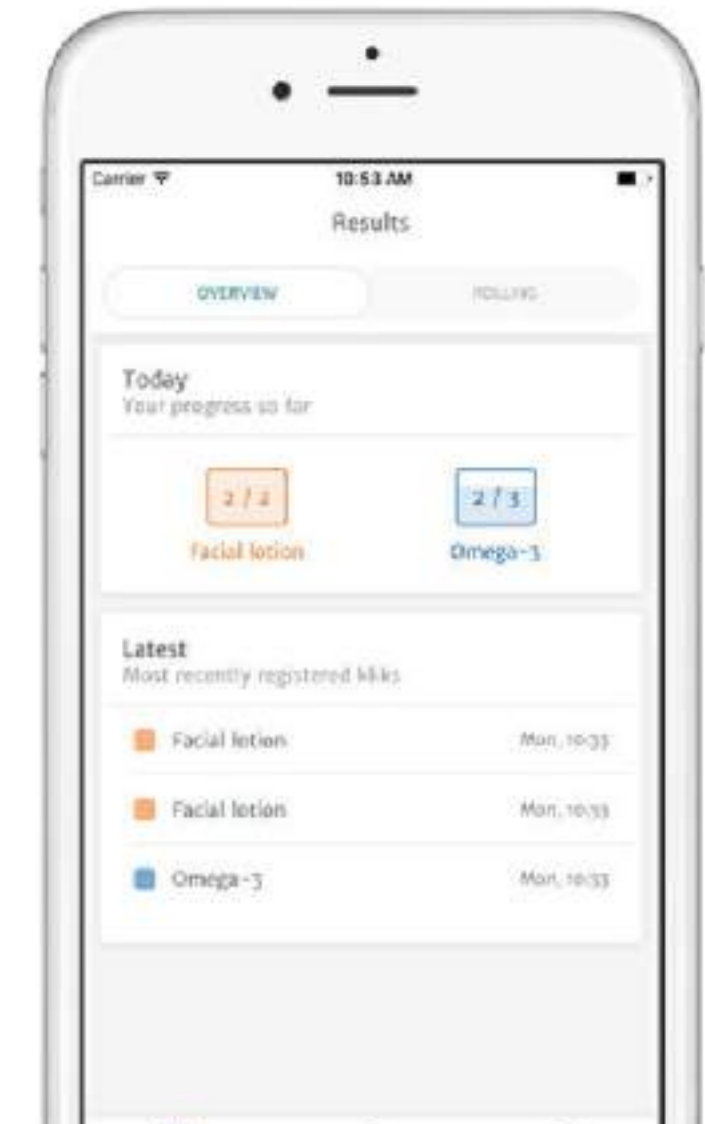
Proteus (1/2)

Real time tracking

Reminders

Sharing (HCP)

Side-effect management

Developer: Proteus Digital Health

proteus.com
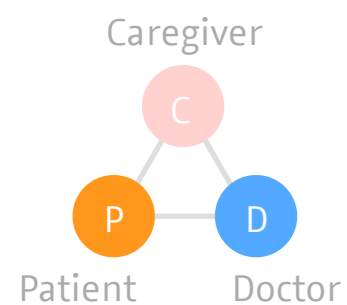
Proteus system consists of an ingestible sensor, a small wearable sensor patch and a mobile app. Allows track pill intake and measures treatment effectiveness, so that physicians can optimize therapies leading to reduce healthcare costs.

Strengths

Discover insights on patients and treatment effectiveness. Lead to more informed and patient-centered healthcare decisions.

Features highlights

· Medicine reminder
· Secure Bluetooth instead of radio connection
· Take medicine reminder
· Daily activity tracking

Caregiver

C

P
Patient

D
Doctor
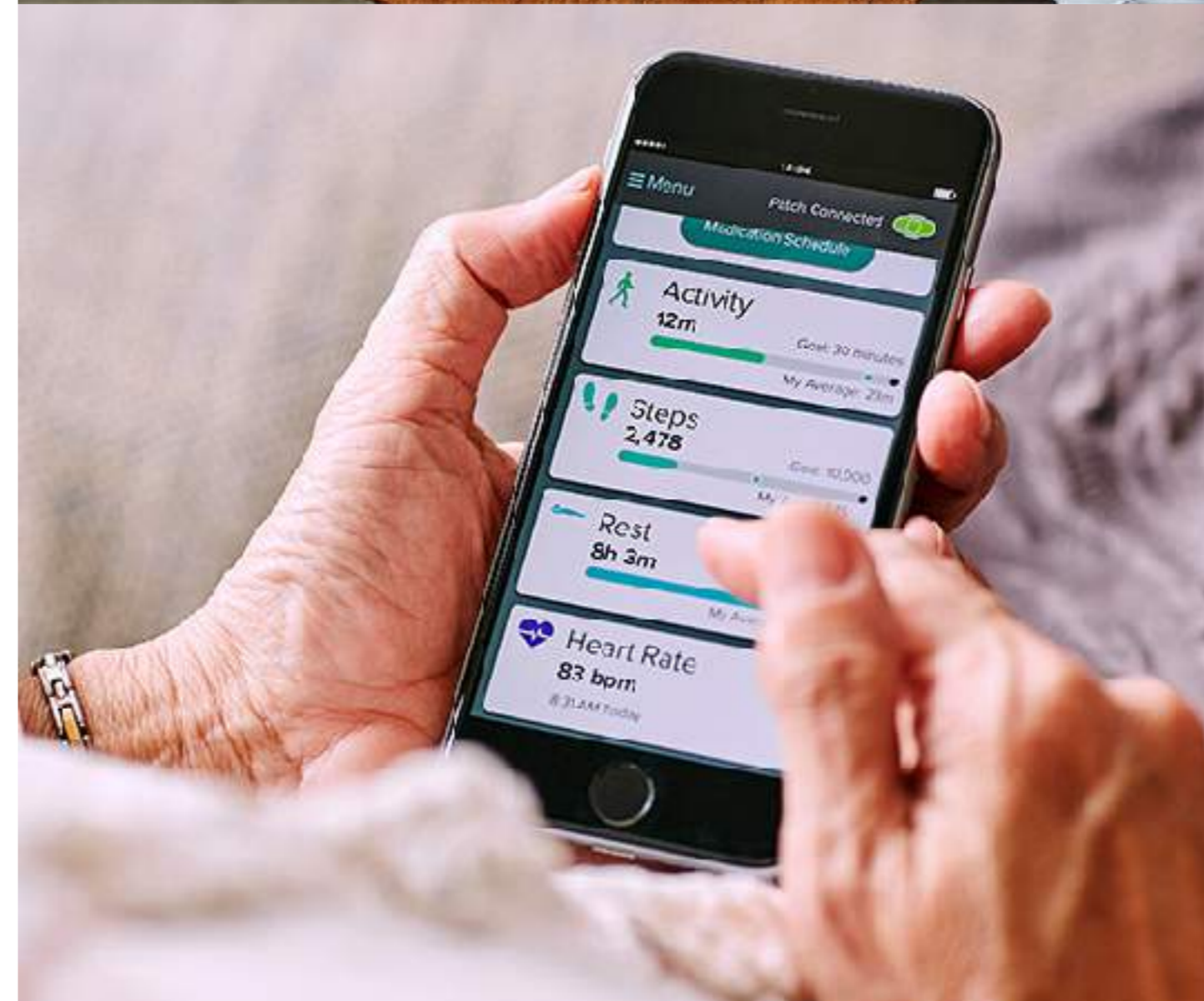
Proteus (2/2)

How does it work?

Take the digital pill
with other medicines
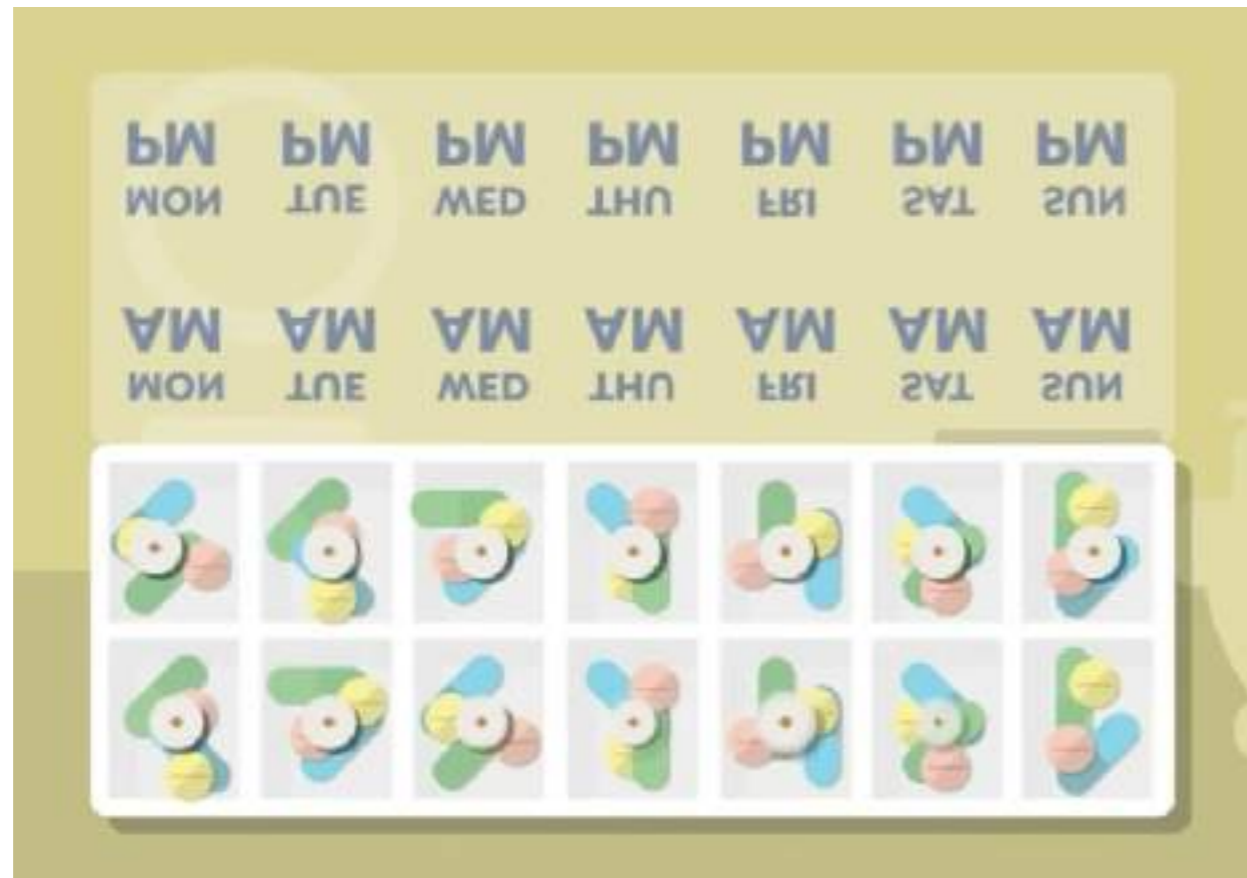
Patch will synchronize data
to your phone/iPad

Two minerals on the pill will
activate after patient swallows it
and send signals to the patch
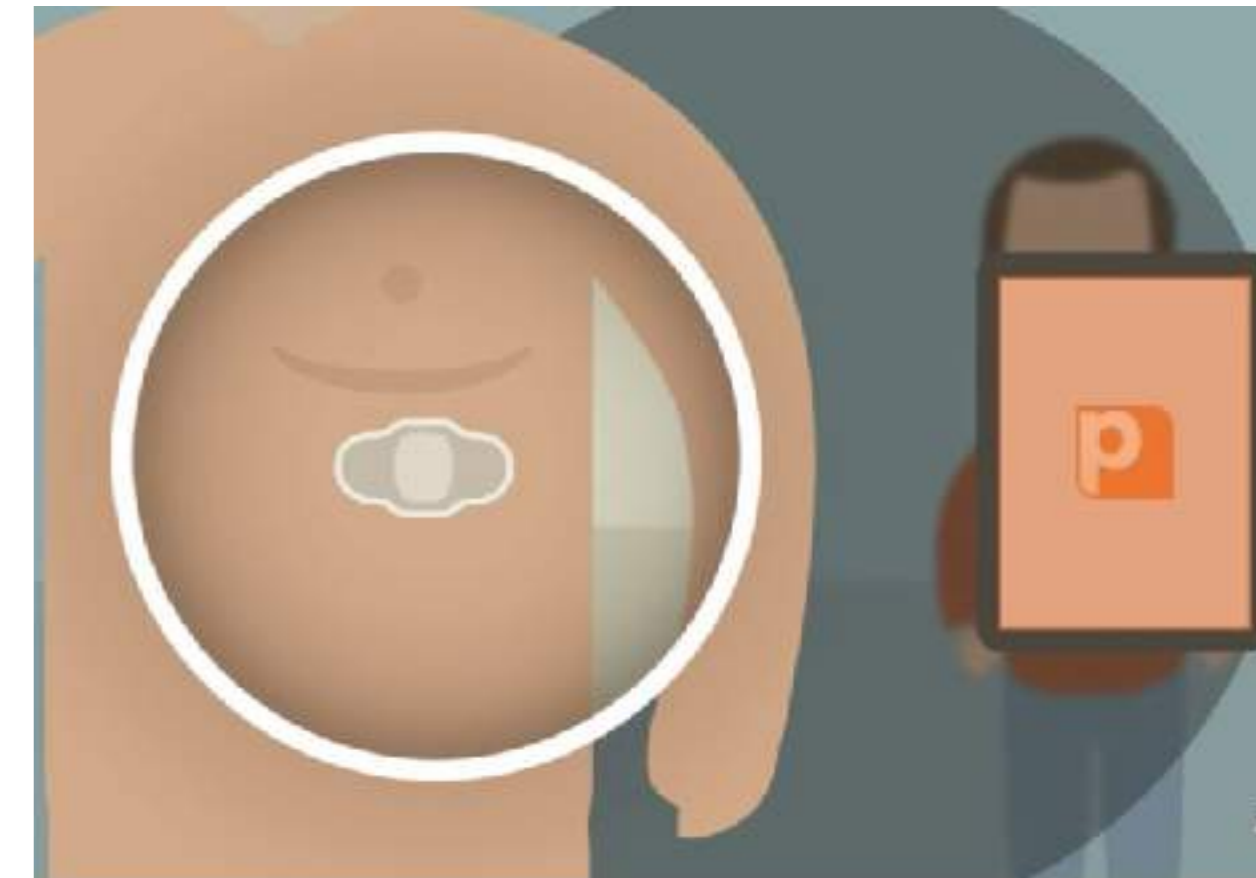
3. Review of selected apps

Health platforms

Track my multiple myeloma (1/2)

Real time tracking

Sharing (HCP)

Side-effect management

Developer: Iperdesign partnered with Celgene Pharmaceuticals

iperdesign.com/work/celgene

An app designed to help patients keep all the important information about their multiple myeloma in one place.

Strengths

Intuitive design for an easy to use app. Possibility to store info and data all in one place and to create reports to share with physicians.

Caregiver

C

P   D

Patient   Doctor

Features highlights

· Understanding the symptoms/ problems
· Recognizing and understanding the pain
· Understanding blood tests

· Resources, reports and wellness
· Sharable reports
· Treatment and medication Reminders
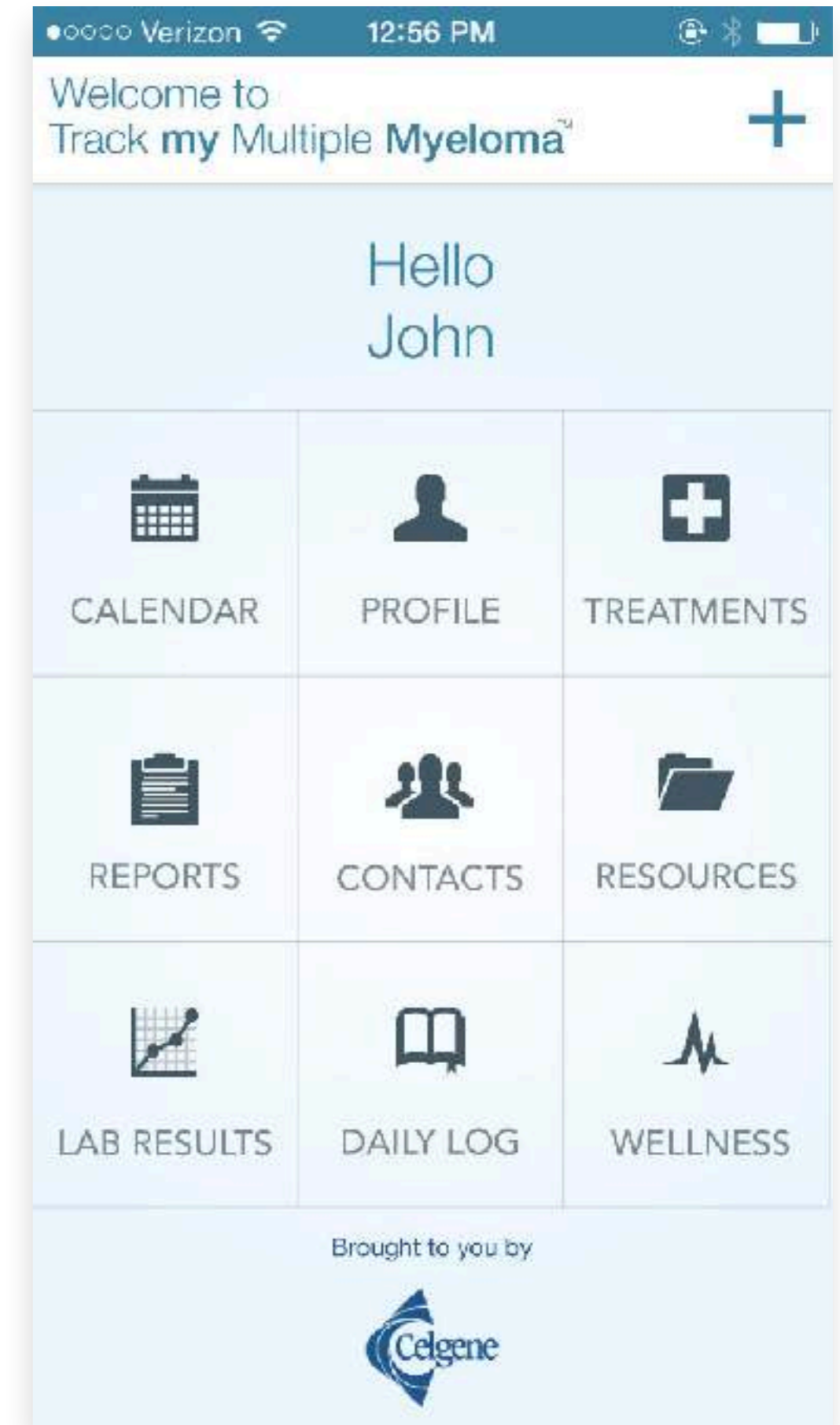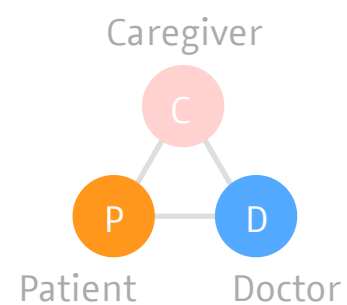
Track my multiple myeloma (2/2)
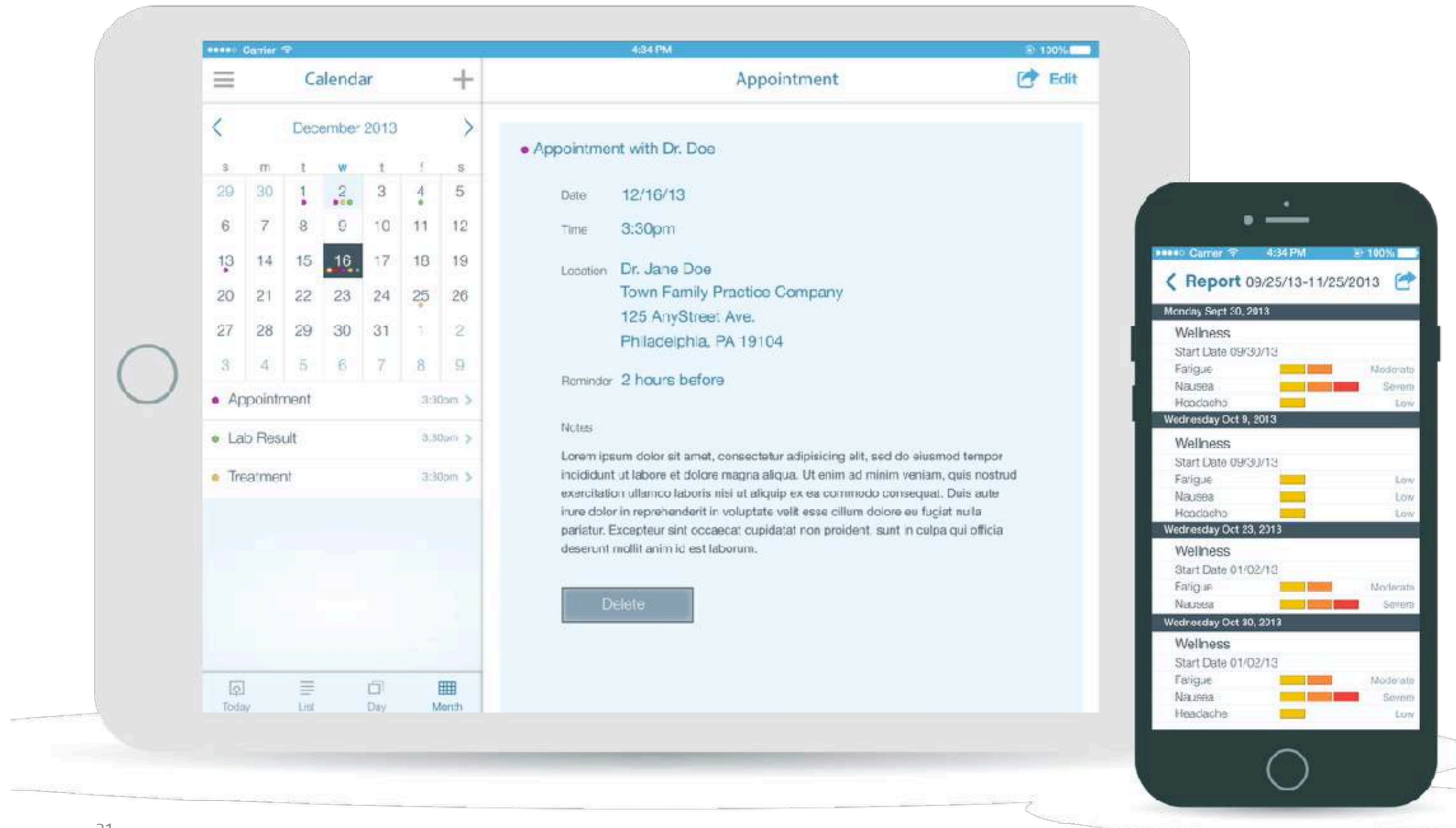
DermatologistOnCall

Disease specific

Tele-dermatology

E-prescriptions

Developer: Iagnosis

iagnosis.com

Support dermatologists to render their best possible diagnosis and treatment through a digital platform for both physicians and patients.

Strengths

Allow patients to be seen more quickly and in the comfort of their home and to receive treatment for skin problems through e-prescriptions.

Caregiver

C

P   D

Patient   Doctor
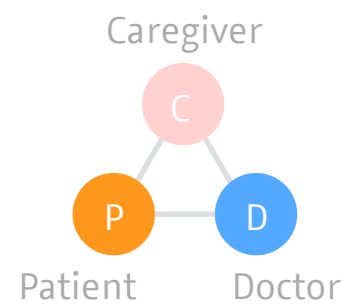
Features highlights

· Telemedicine (physician-patient video call)
· Medical record securely sent to patient's primary care physician
· Certified e-prescribing

· Customized workflows for state medical board regulations and e-prescription requirements
· Online procedural follow-up platform support
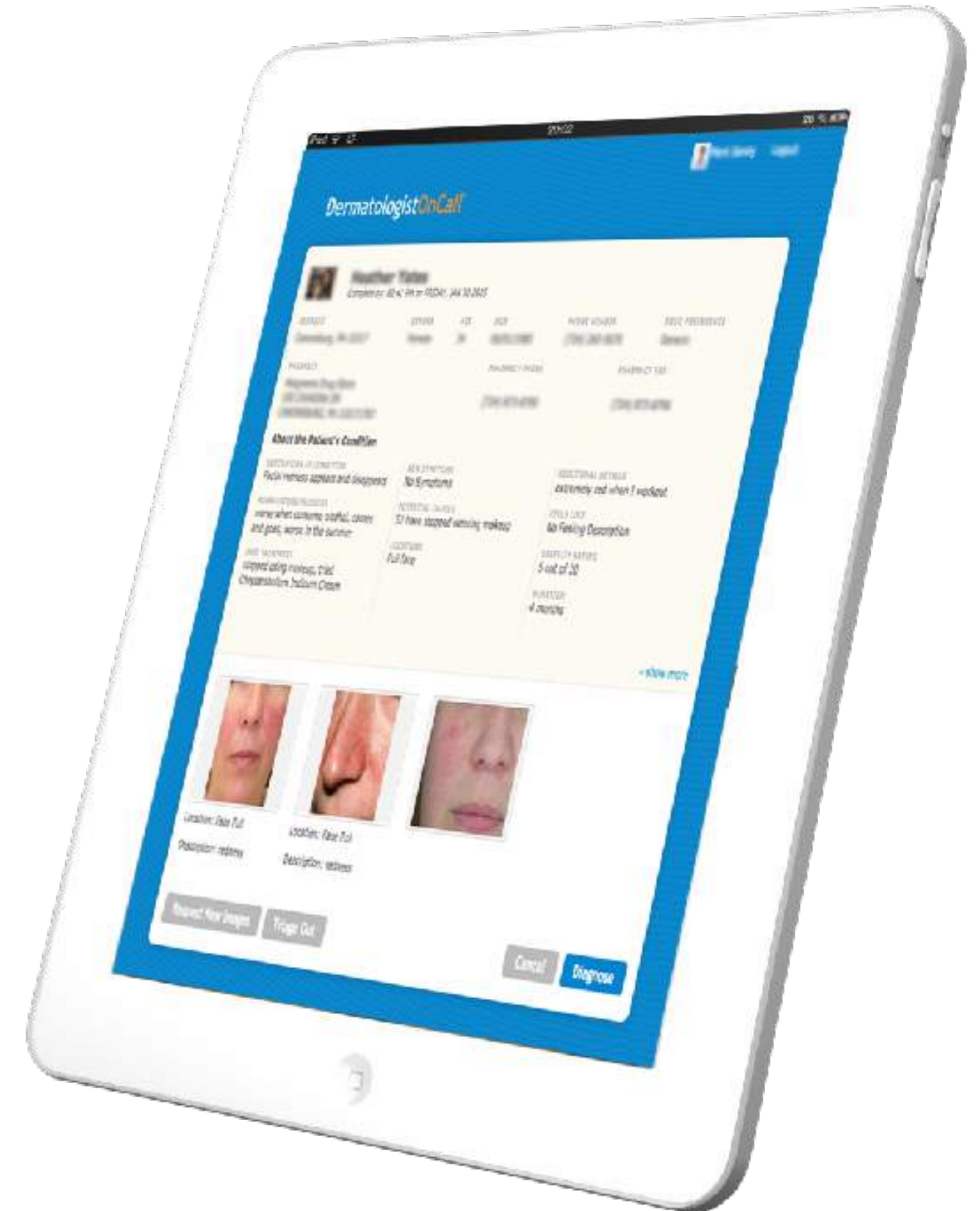
Arthritis Power (1/2)

Disease specific

Sharing

Knowledge

Developer: Creakyjoints
arthritispower.creakyjoints.org

Empower people with arthritis to fight against arthritis and related conditions (bone, autoimmune and inflammatory skin diseases) and to participate in research development.

Strengths

Opportunity to help advance research.

Caregiver

C

P   D

Patient   Doctor

Features highlights

· Track symptoms and treatments
· Monitor changes in the clinical conditions
· Share data to help advance research

· Share results with parents, caregivers and healthcare professionals
· Access to educational resources

Arthritis Power (2/2)

Insulia

Disease specific

Tracking

E-prescription

Developer: Voluntis

insulia.com

A prescription medical device that recommends basal insulin doses for adults with Type 2 diabetes based on the treatment plan created by the healthcare provider. Help diabetes patients manage their insulin intake.

Strengths

Improves tracking and reporting and the overall collaboration with healthcare professionals.

Features highlights

- Dosage calculation
- Data collection and tracking, trend charts
- Personalized recommendations
- Treatment plan

- Continuous support and collaboration with patient's healthcare team

Caregiver

C

P   D

Patient   Doctor
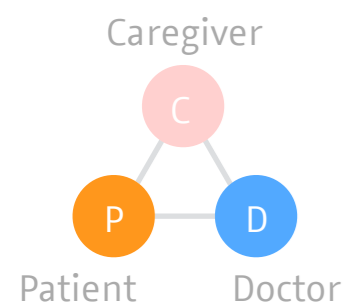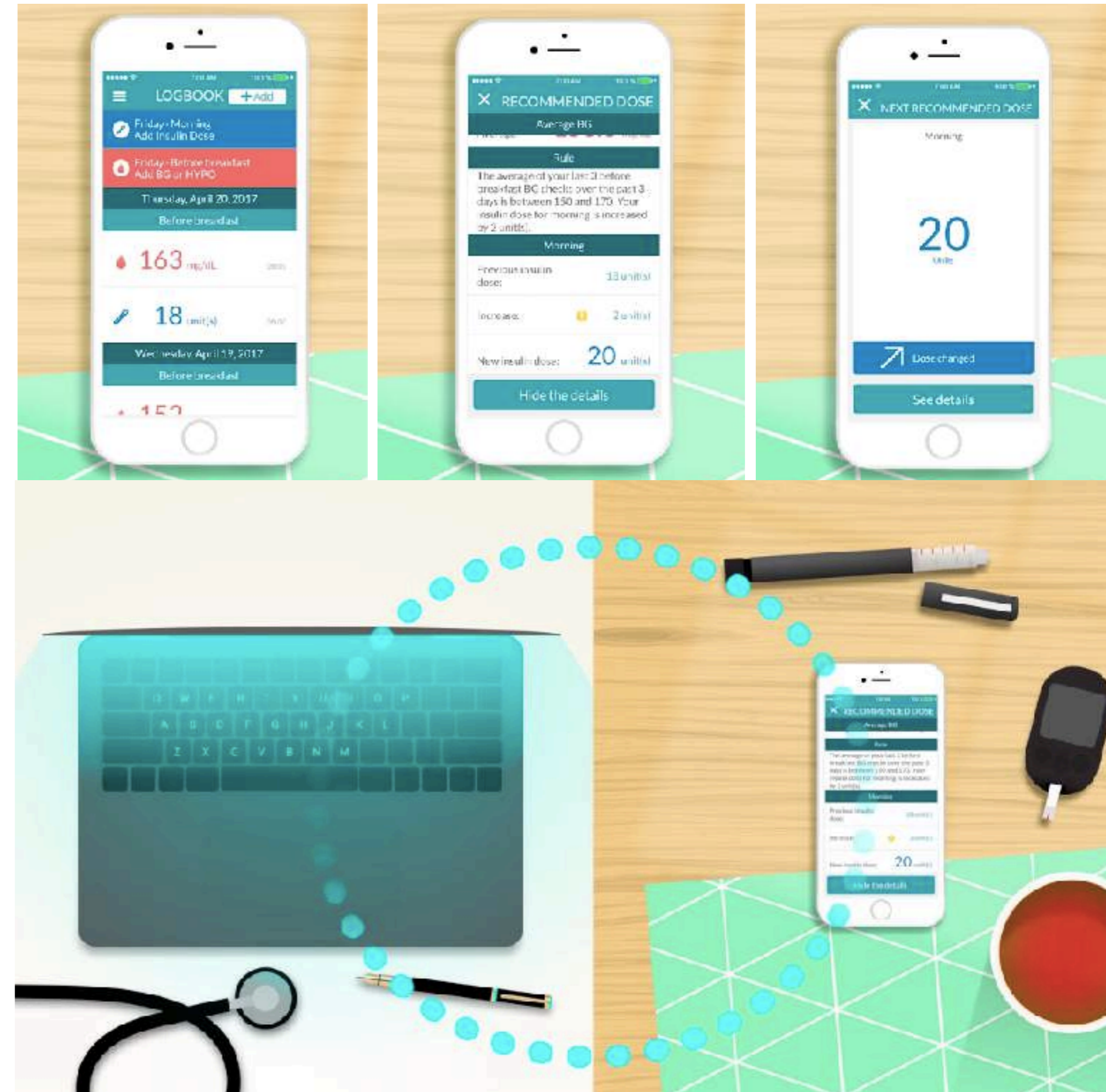
Stanford Health Care MyHealth (1/2)

HC management

Tracking

Coaching

Telemedicine

Developer: Stanford Health Care

myhealth.stanfordhealthcare.org

Aimed at Stanford Health Care patients to manage MyHealth account, prescriptions, appointments and even conduct video visits all from the computer or phone.

Strengths

Good example of telemedicine: it helps Stanford Health Care's patients and doctors to better manage healthcare service.

Features highlights

- Manage MyHealth account
- Schedule appointments
- Get test results
- Secure messaging
- Access and pay bills

- Video visit with doctor
- Manage prescriptions and medication
- Share vitals with doctor via HealthKit integration

Caregiver

C

P   D

Patient   Doctor

Stanford Health Care MyHealth (2/2)

Health partner (1/2)

Disease specific

Coaching
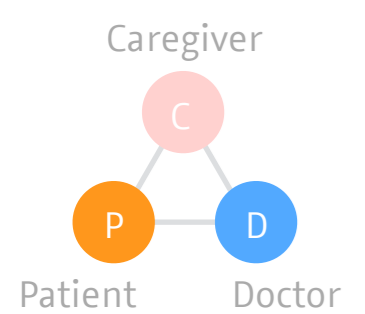
Developer: Johnson & Johnson and Wellness Solutions, Inc

healthpartneradvantage.com

Three connected digital tools: a website providing education and resources before treatment begins; a mobile app to help guide a patient through surgical preparation (knee, hip, weight loss surgery) and recovery; a care portal designed for providers and health systems to enable real-time interaction throughout a patient's treatment journey.

Strengths

Usable all over the world. Considers the entire patient's journey.

Main features

- Other patients' stories (video)
- Coach: pre-surgery lessons with voice-over
- Quick survey for patient before starting

- Physical Practice/Mental building
- Motivate the patient
- Set goals for after surgery

Caregiver

C

P   D

Patient   Doctor
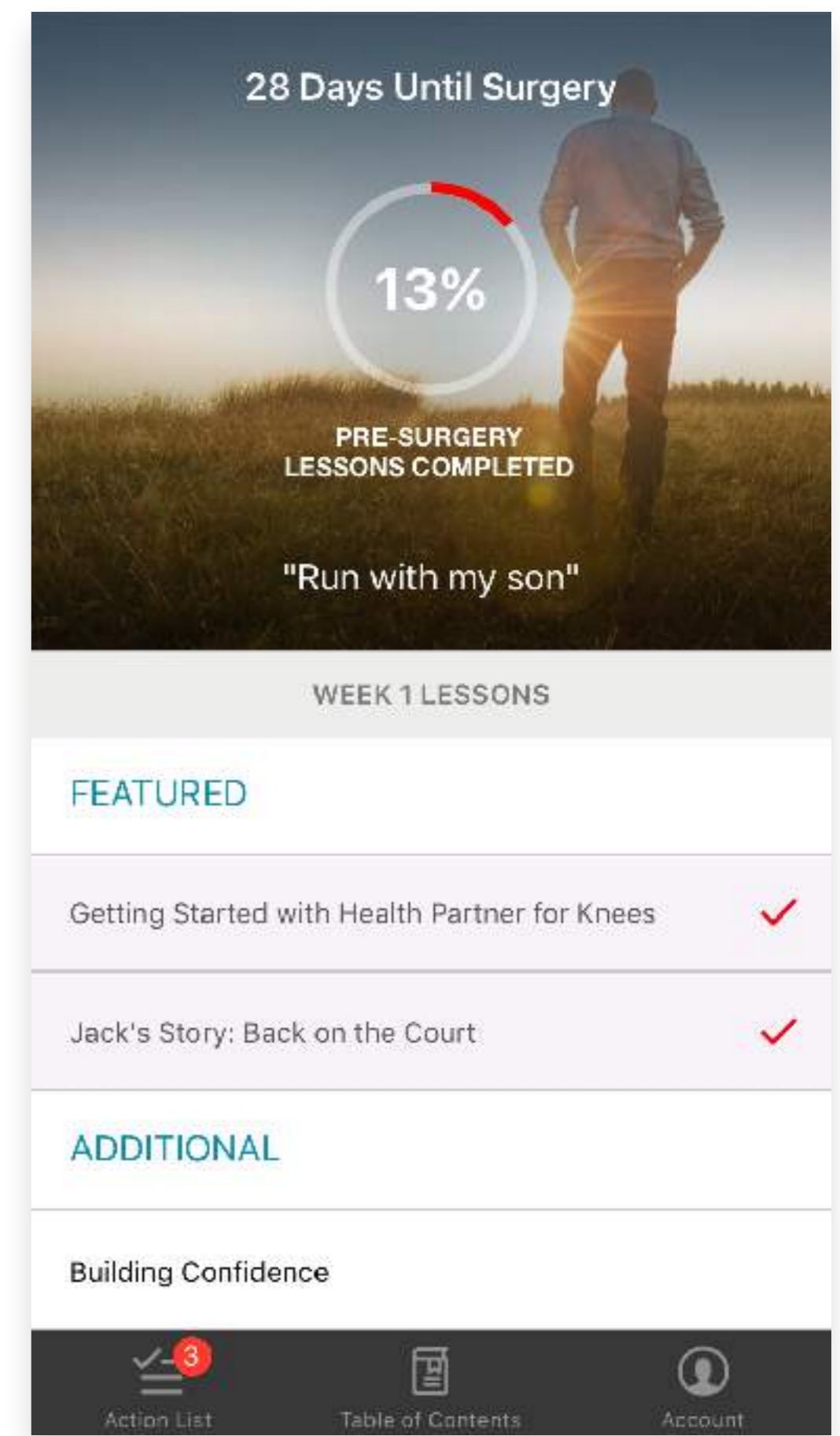
Health partner (2/2)
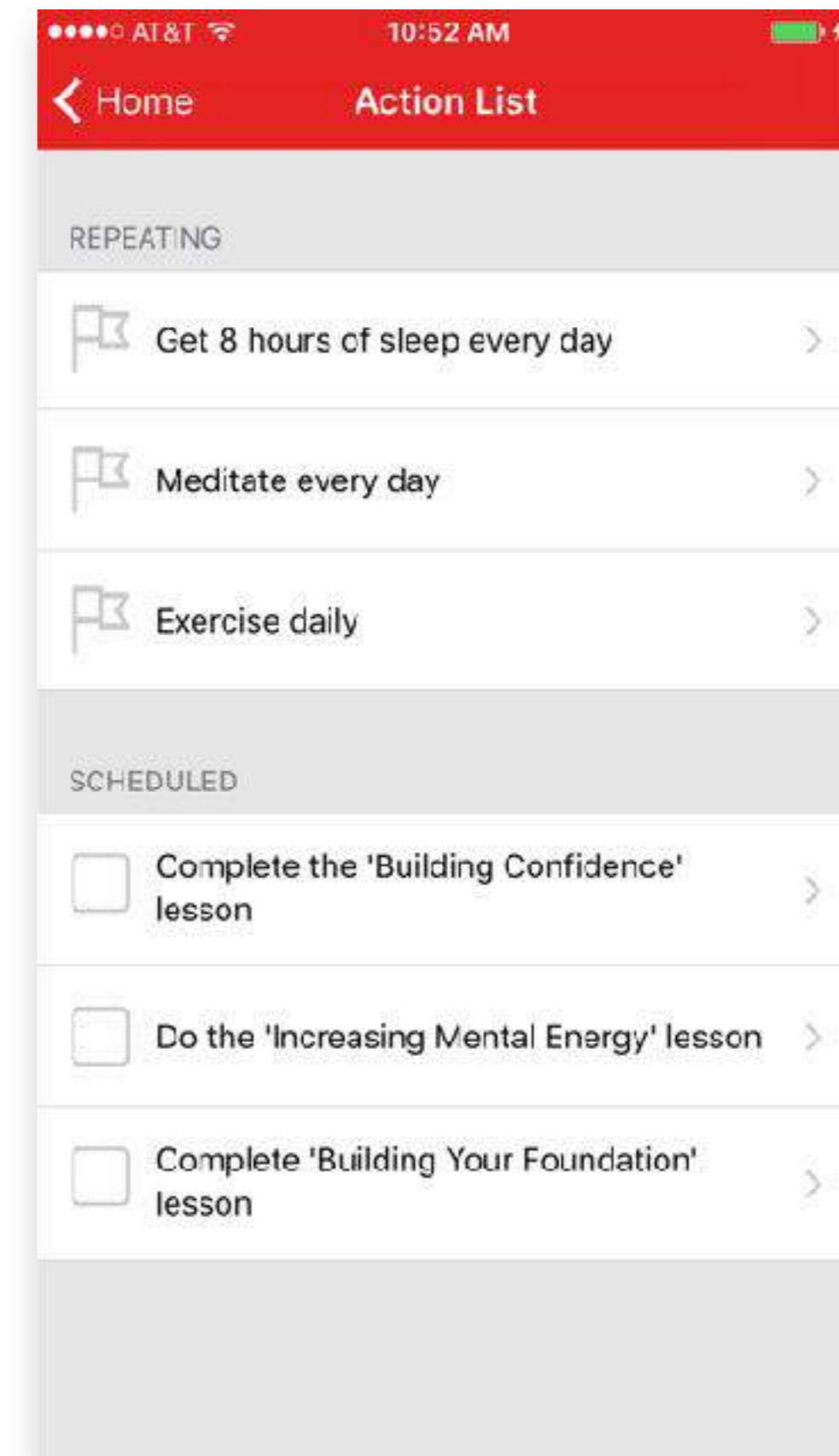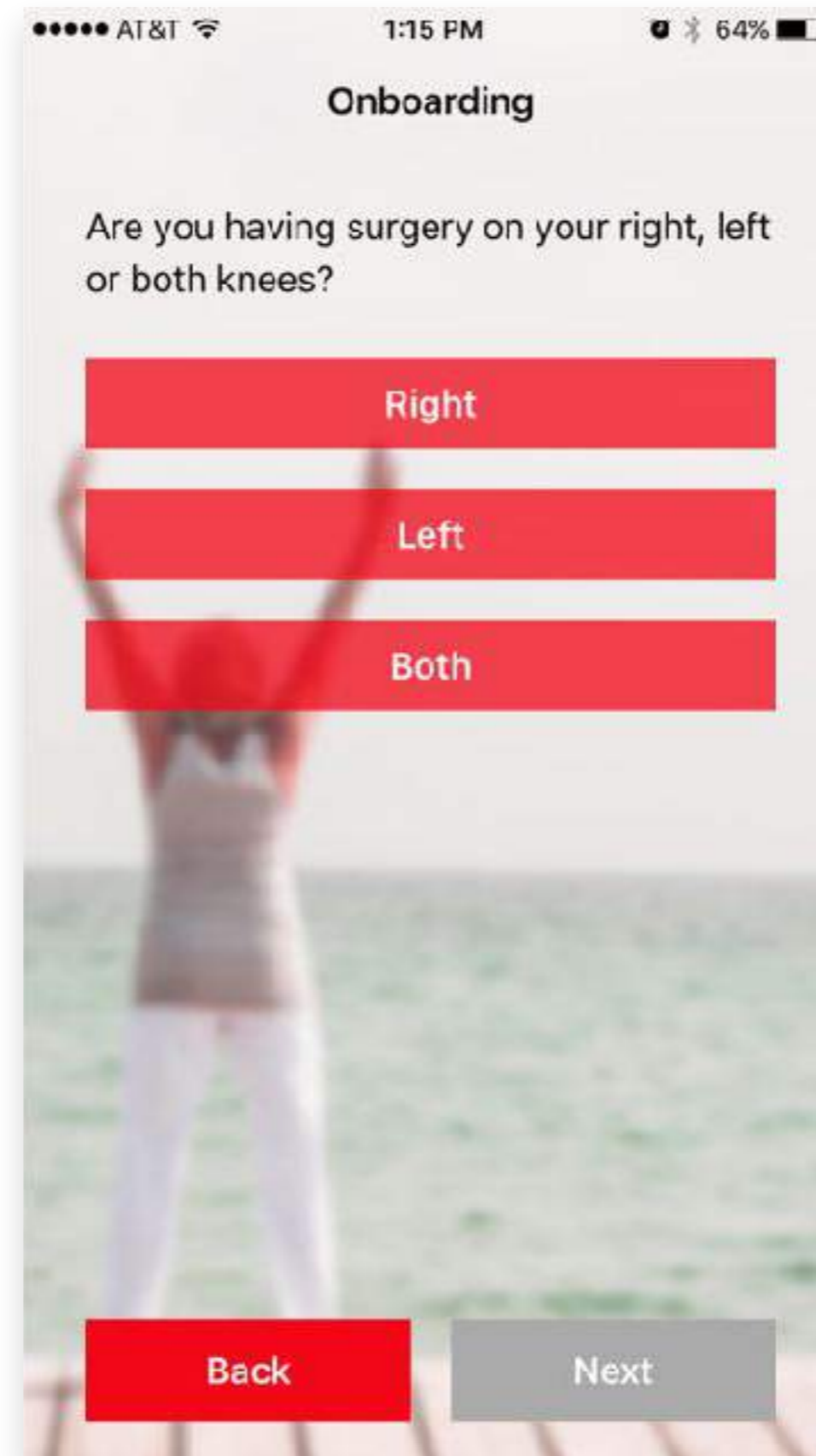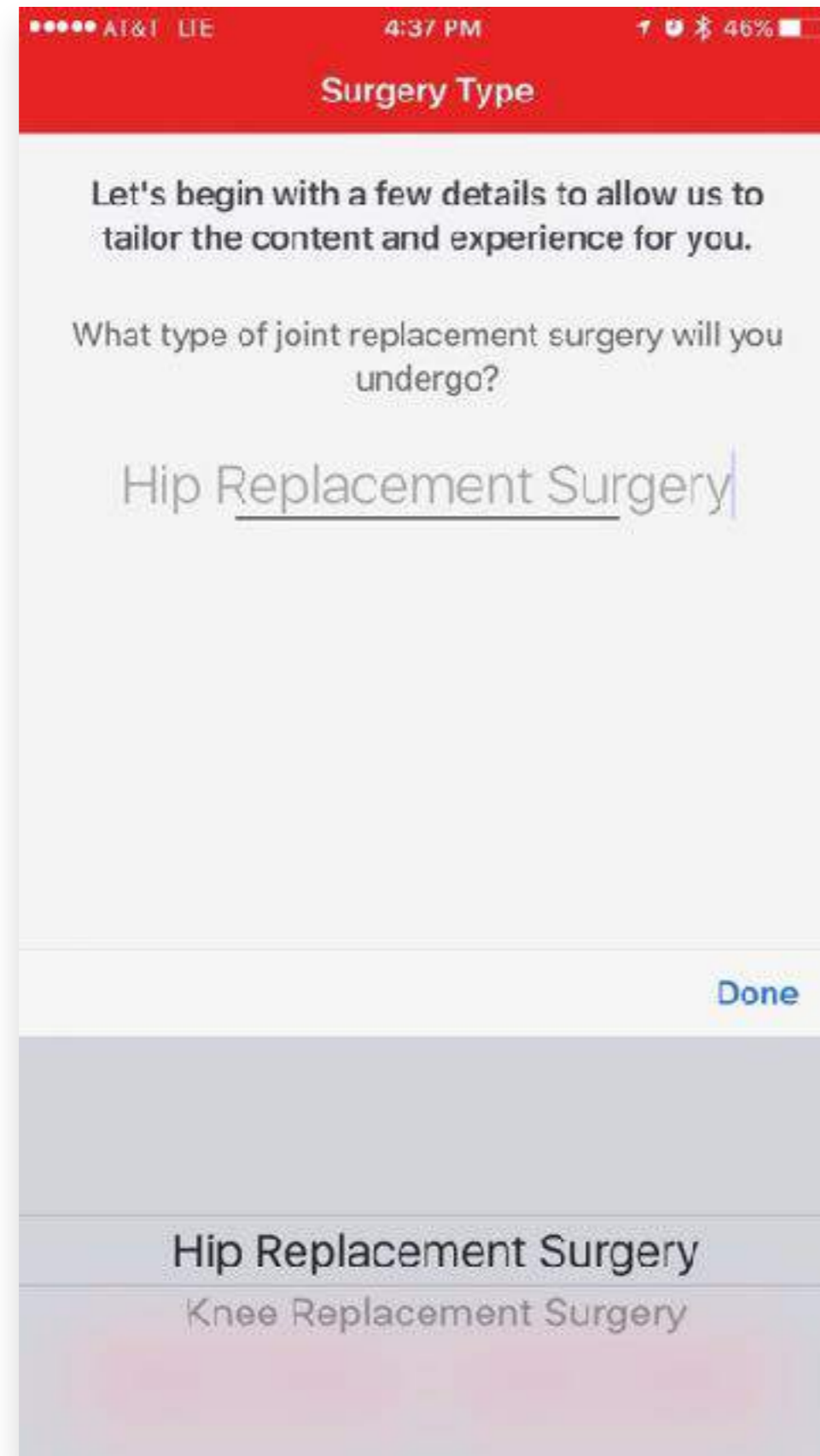
Medumo (1/2)

SMS / Email

Instructions

Feedback

Developer: Medumo Inc.

medumo.com

Medumo delivers instructional support, to help patients successfully onboard and recover from their care. It asks timely questions to patients and notifies staff if a patient is at risk.

Strengths

Patients don't need to download an app but can choose SMS or email and receive the right content at the right time automatically. They can also elect to have friends or caregivers receive the program for extra support.

Features highlights

· Referral messages
· Pre-visit preparation messages
· Navigation messages
· Follow-up messages

Caregiver

C

P   D

Patient   Doctor

Medumo (2/2)

LINK
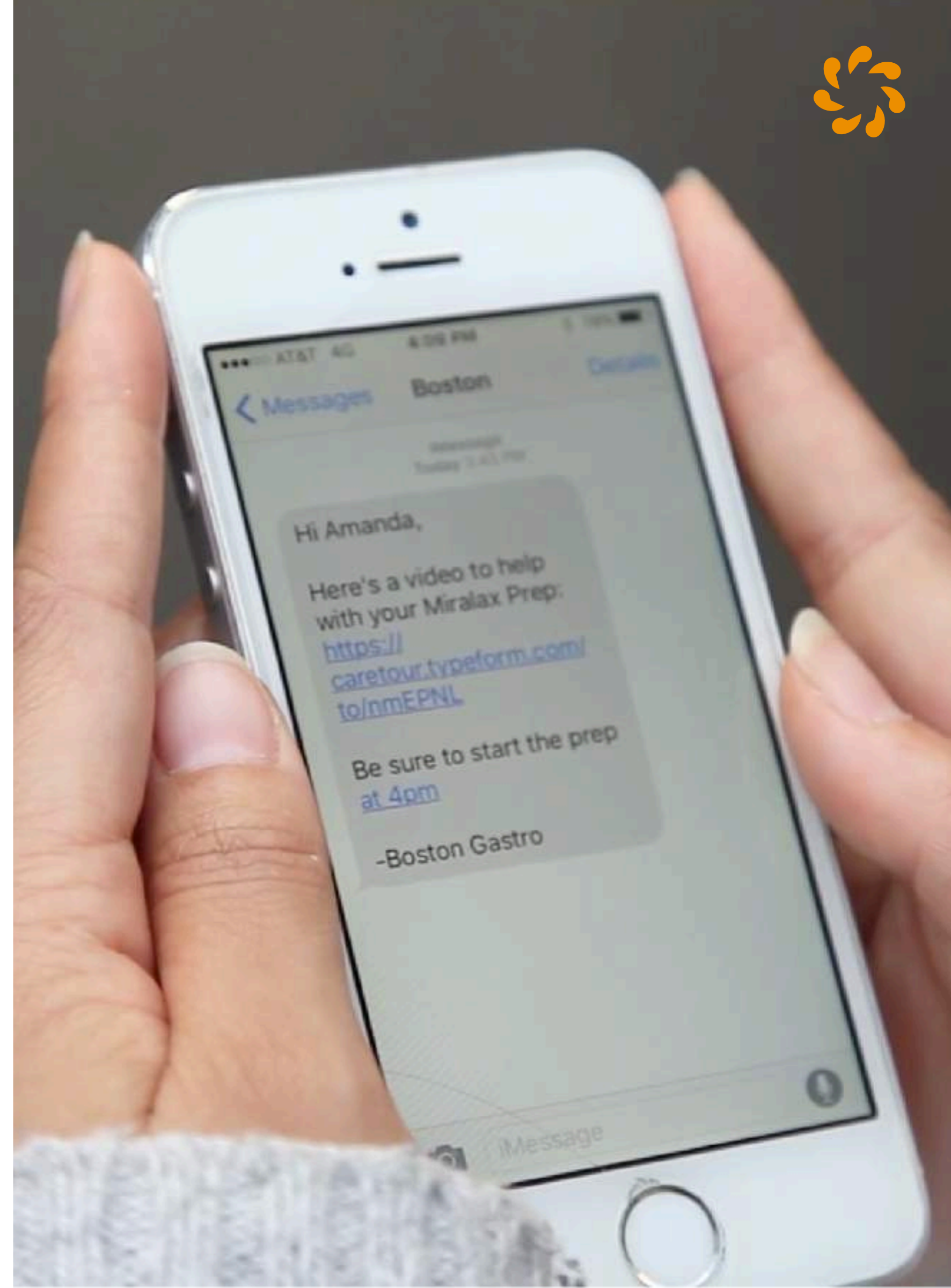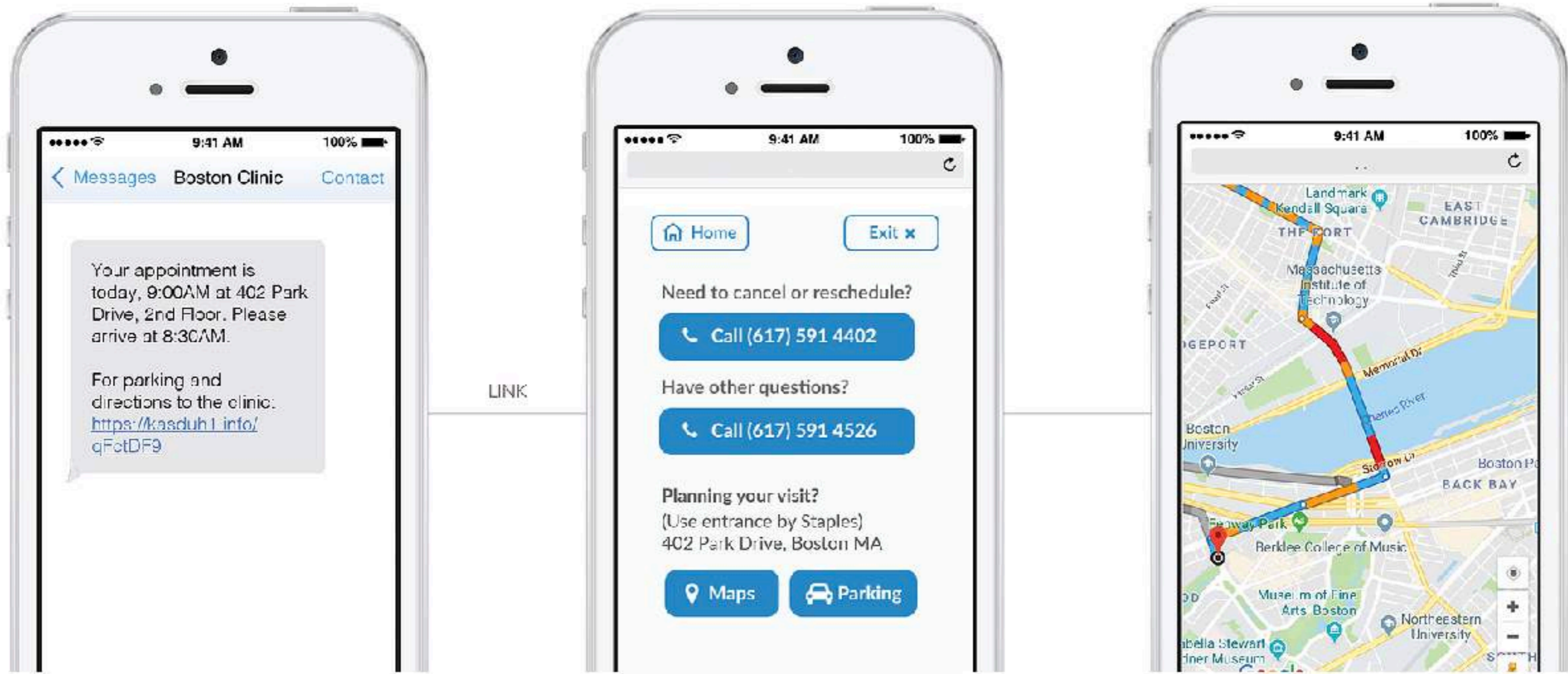
Community platforms

Pacifica (1/3)

Mental health

Tracking

Peer support

Developer: Pacifica Labs Inc.

thinkpacifica.com

Help people to cope with stress and anxiety, and help clinicians to review their patients' mental health data, assign assessments, schedule appointments and practice online secure teletherapy.

Strengths

Support professionals and empower people through practical exercises (audio lessons, mindfulness, relaxation techniques, etc).

Features highlights

· Mood/health tracking
· Guided self-help paths
· Set daily challenges to help reach
   long-term goals
· Peer support community

Caregiver

C

P   D

Patient   Doctor
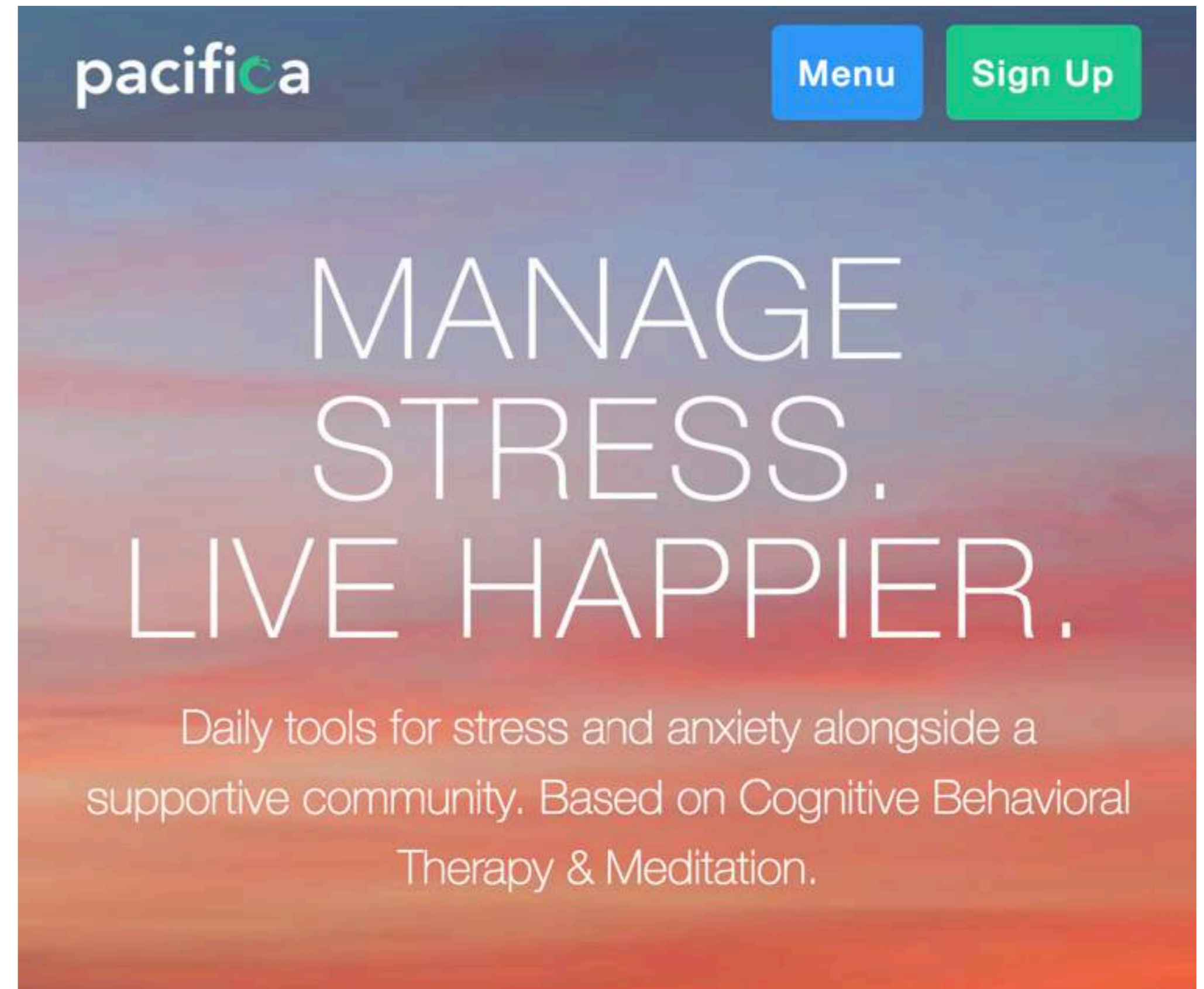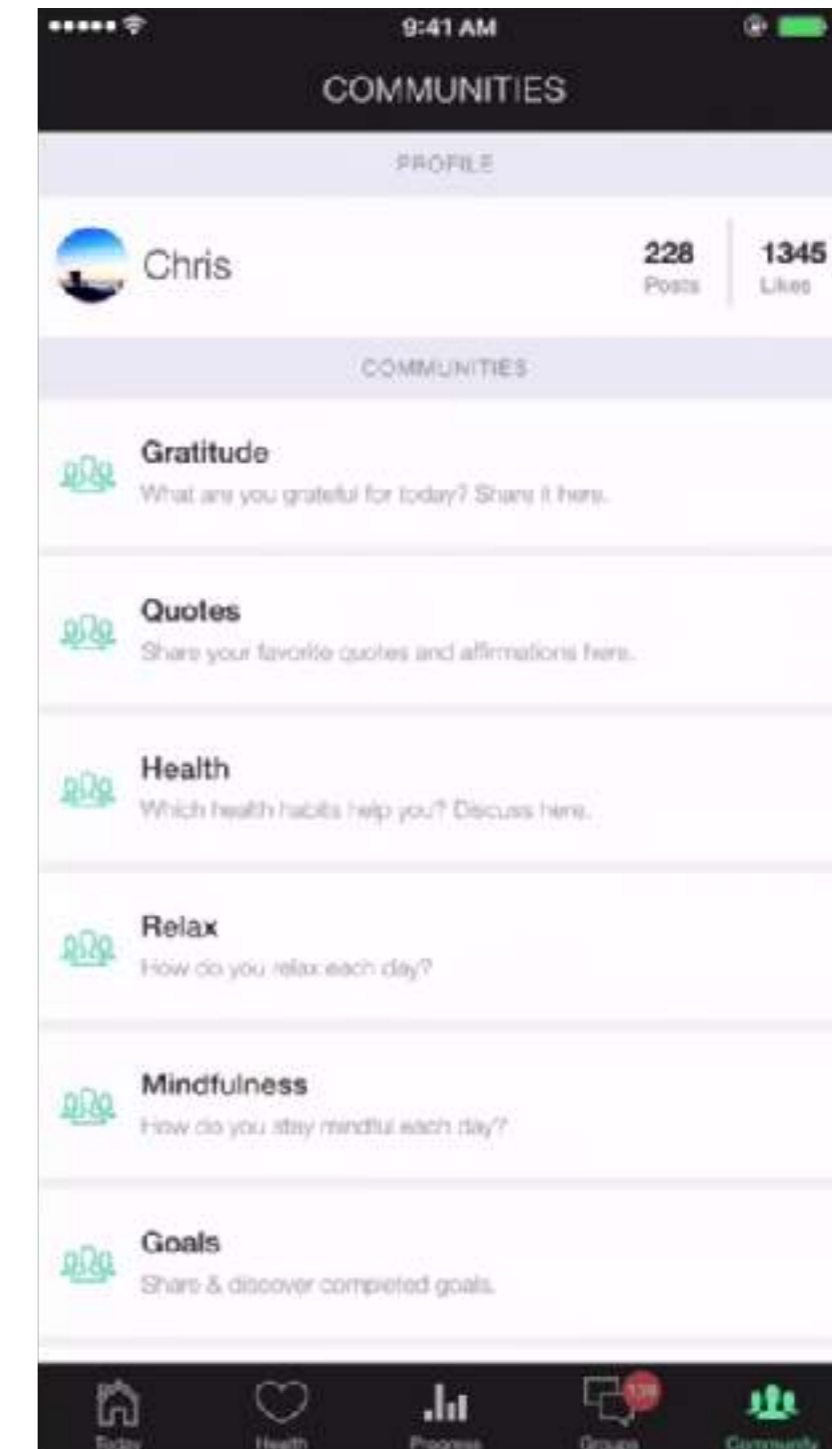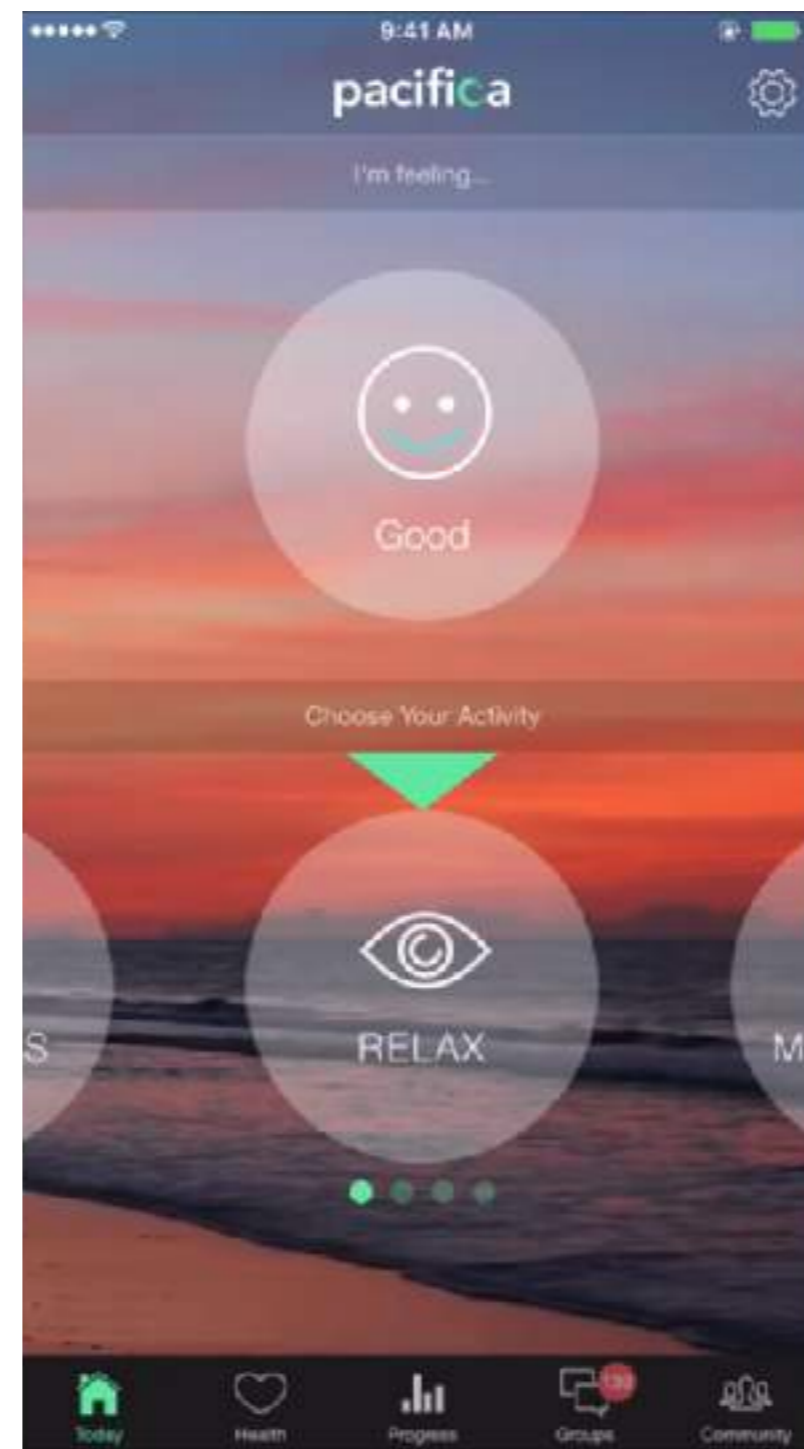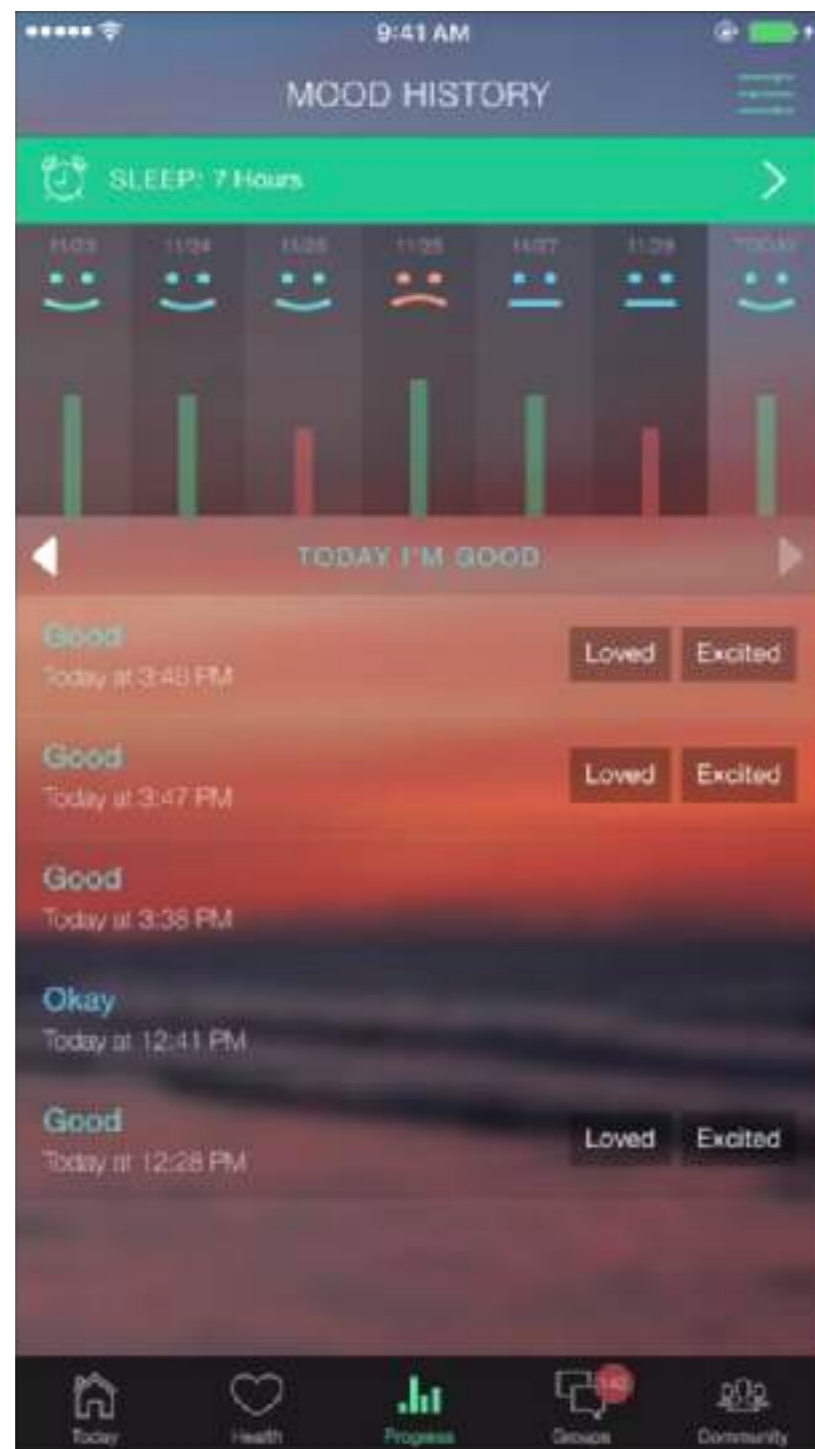
Pacifica (2/3)

Pacifica (3/3)
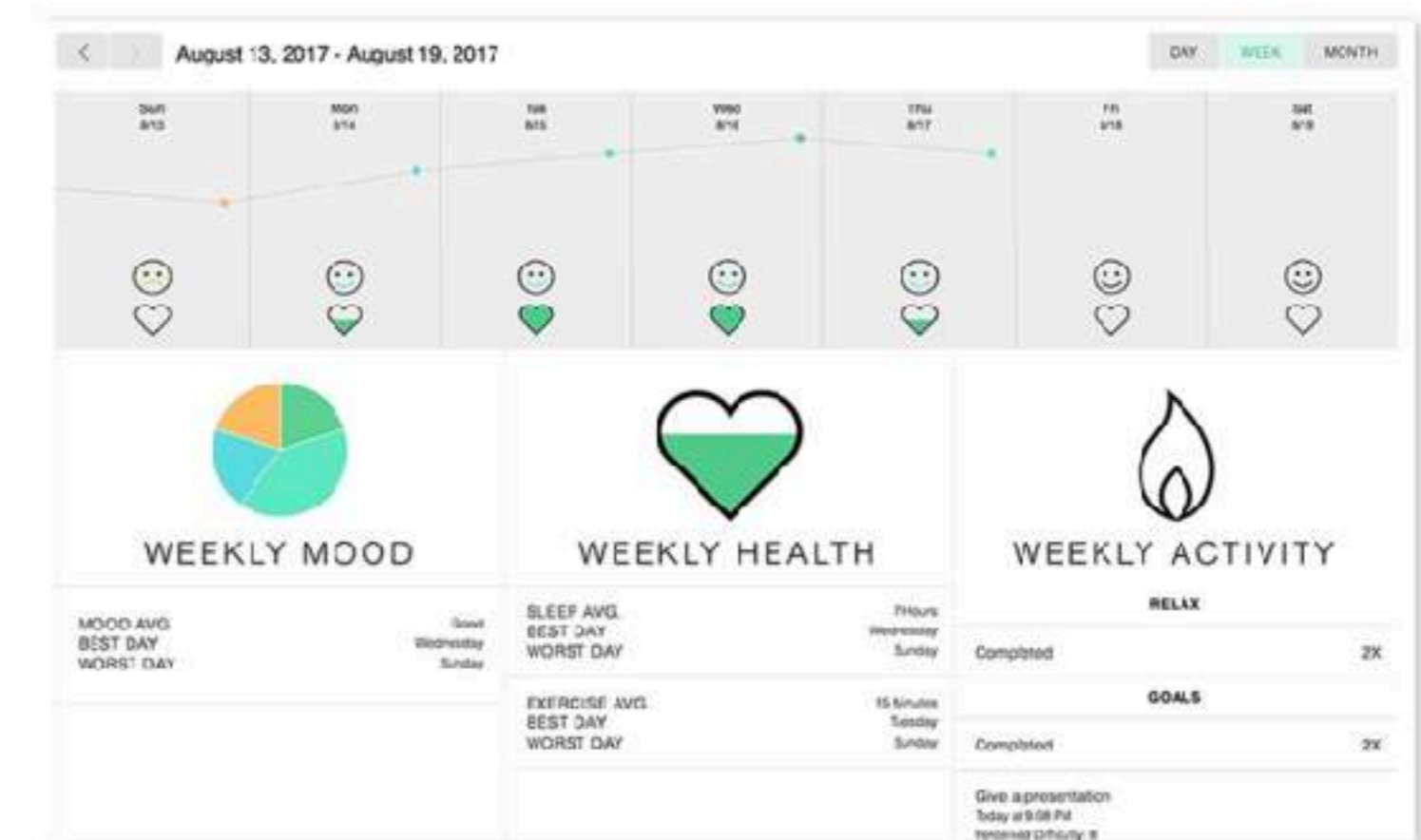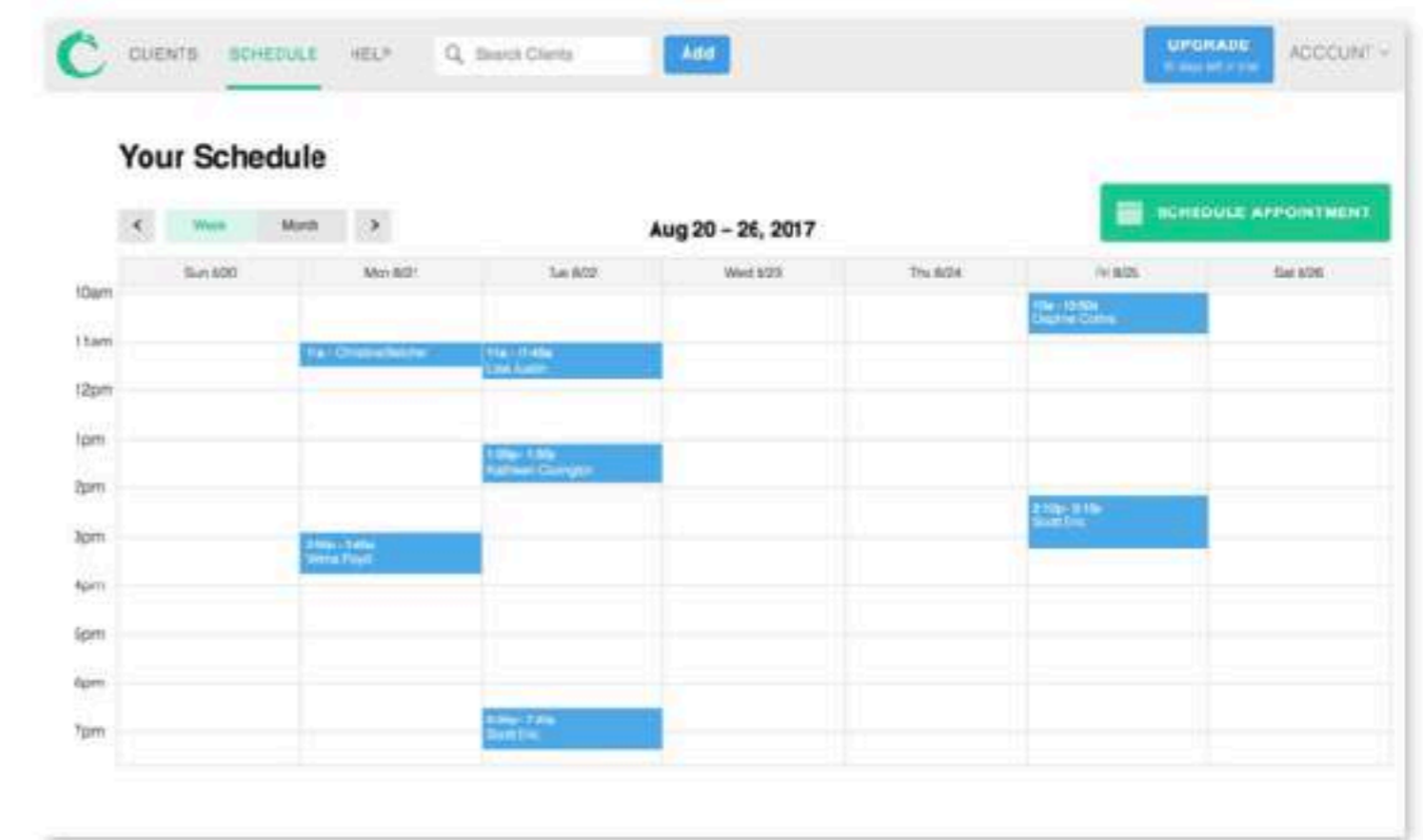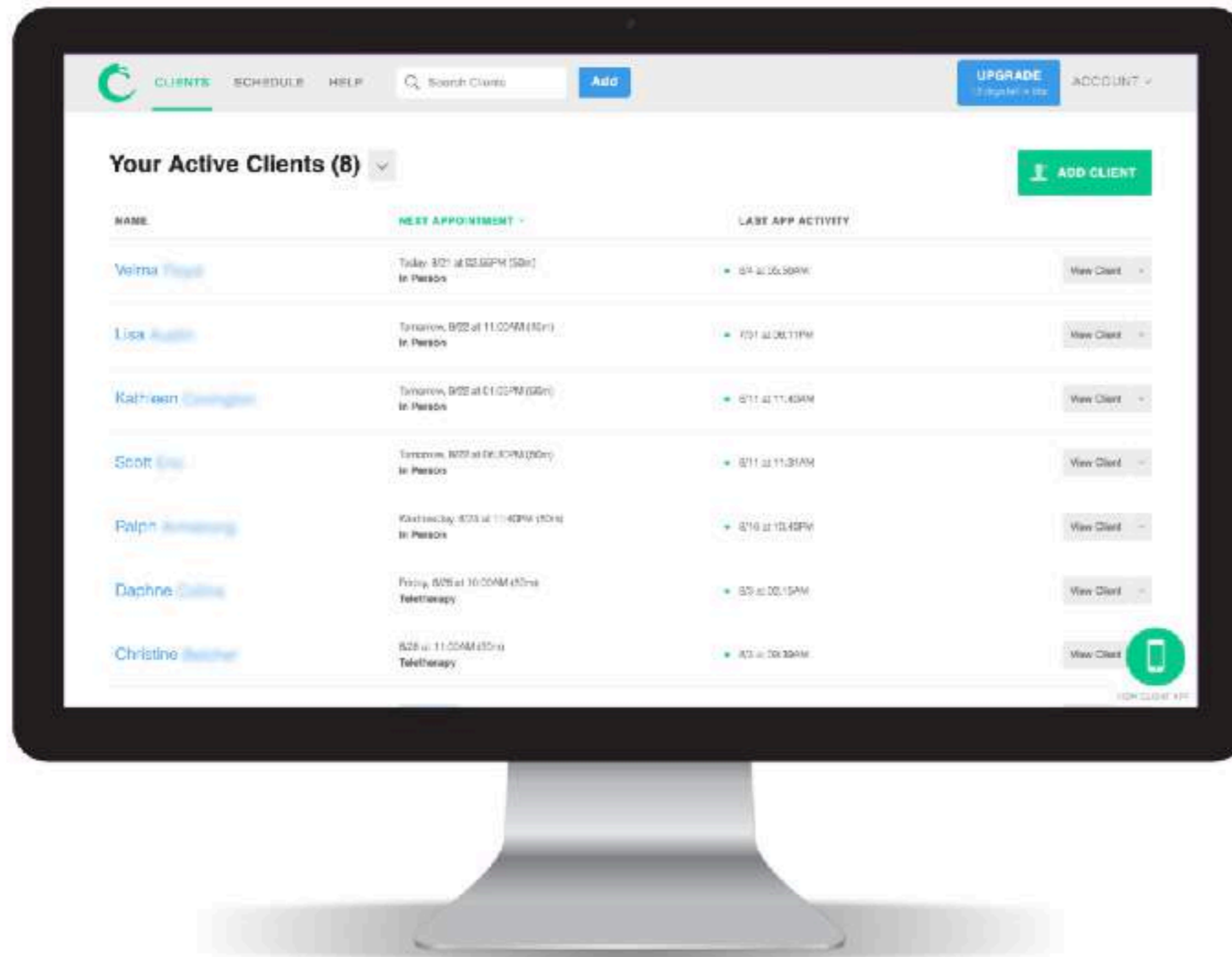
TalkLife (1/2)

Mental health

Peer support

Social community

AI system

Developer: TalkLife Ltd.

talklife.co

A safe place for people to talk with peers about any struggle (mental health, depression, self harm, eating disorders, a bad breakup, etc.).

Strengths

AI recognition for suicide prevention.

Features highlights

- · Peer to peer support app
- · Volunteer moderators (review and flag content)

- · Automated machine learning system signposting to crisis support services when a user begins writing content that suggests risk of suicide

Caregiver

C

P   D

Patient   Doctor
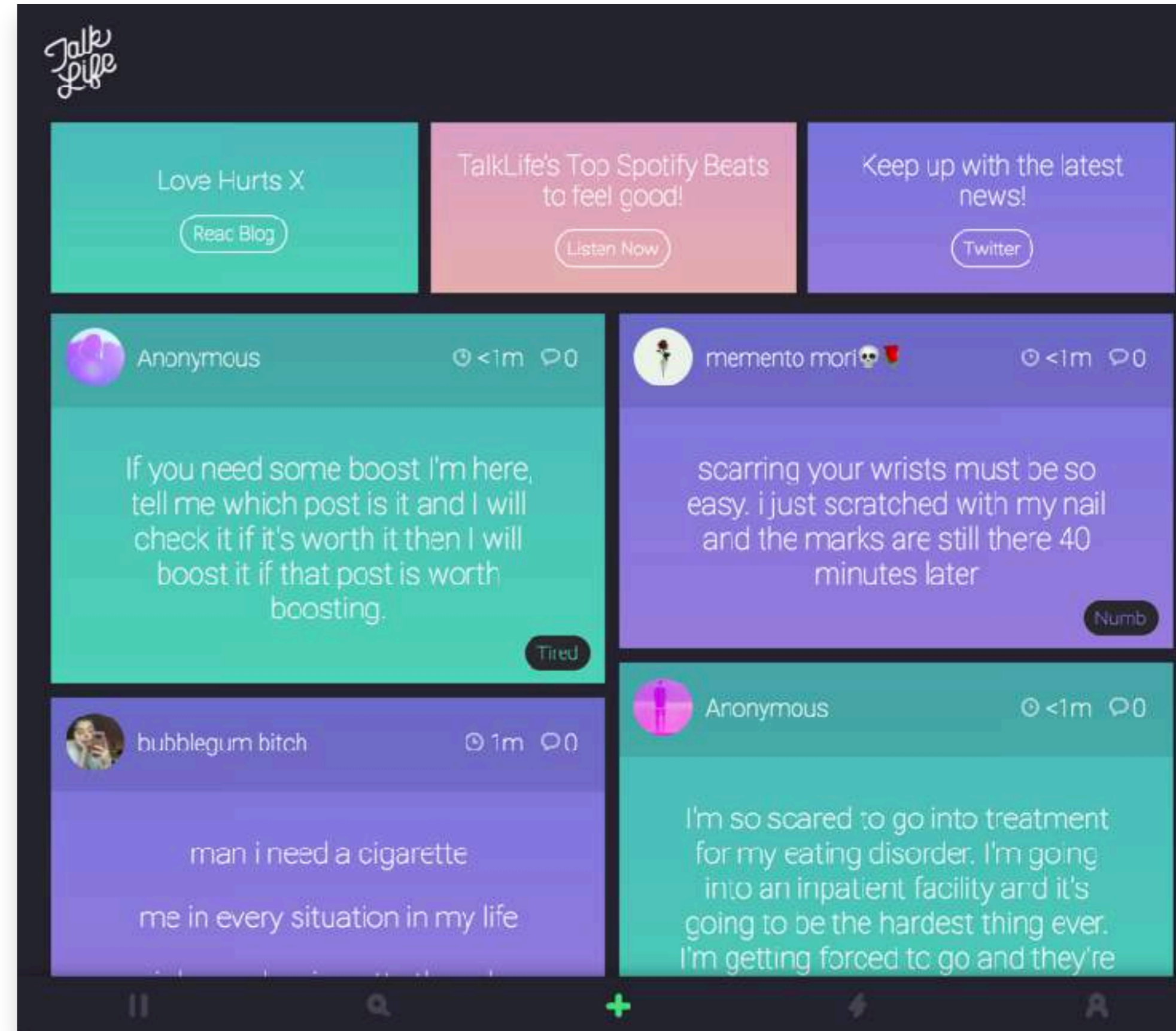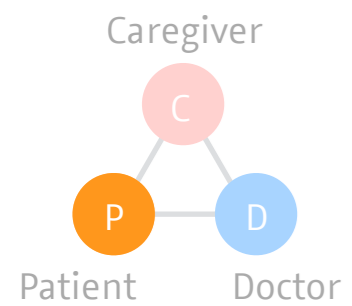
TalkLife (2/2)
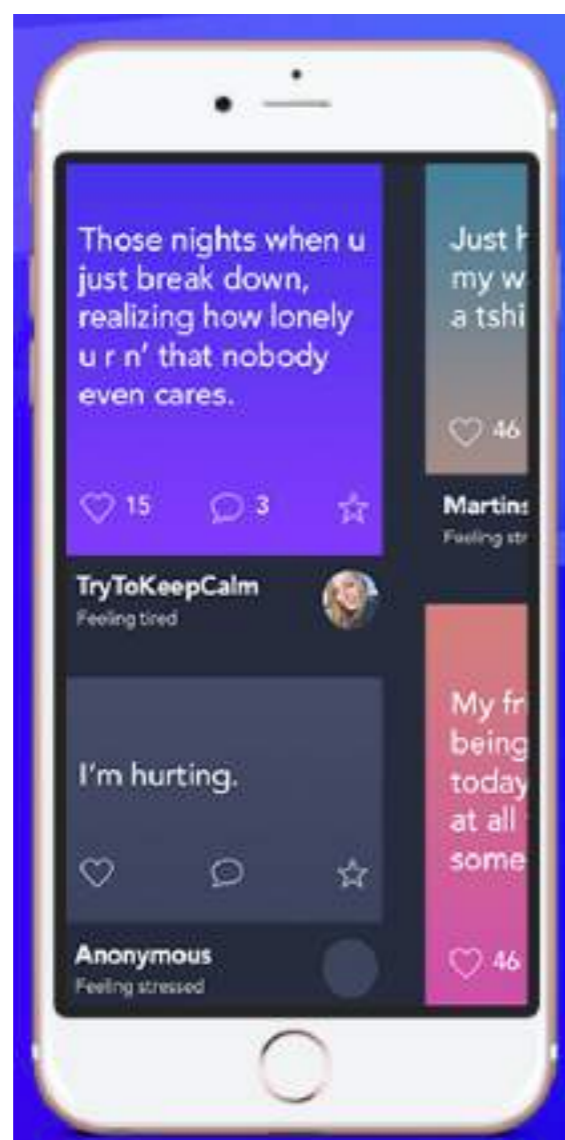
Share the good and
the not so good
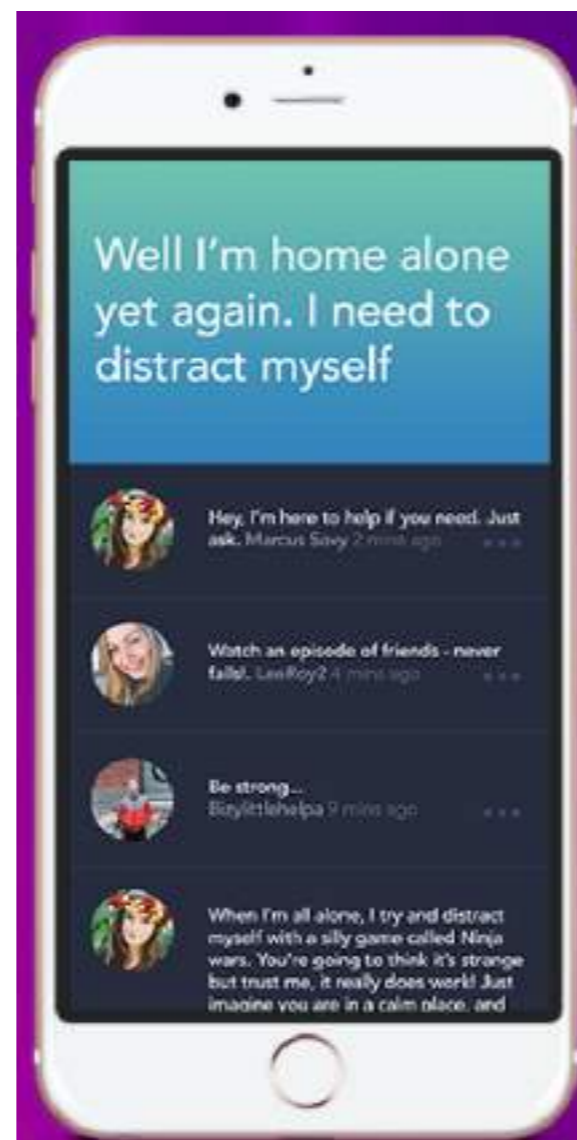
Get help from those
who understand
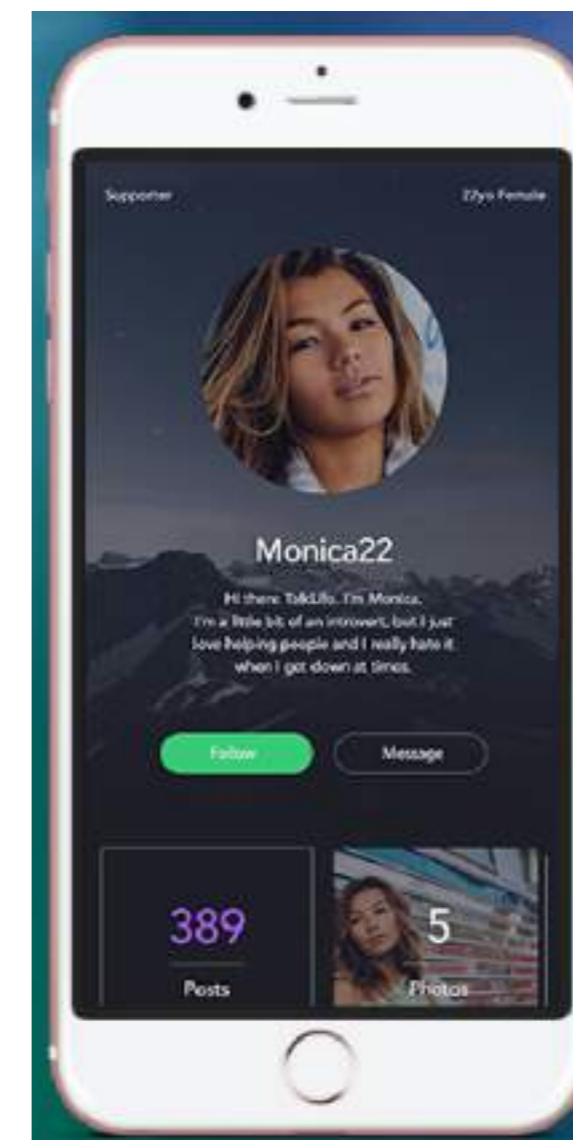
Talk to those who
know how you feel
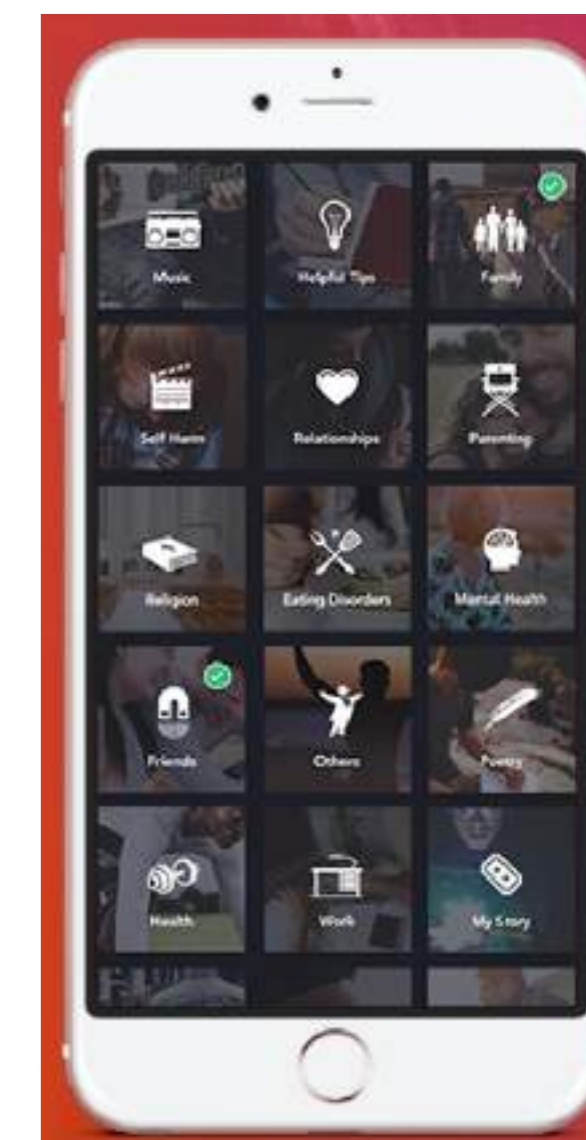
Post what really
matters to you

Collaboration

Real time tracking

Sharing

Side-effect
management

iCancer health (1/2)

Developer: Mediocity

icancerhealth.com

A mobile platform allowing patients to more easily
manage their cancer care. Connect with professionals
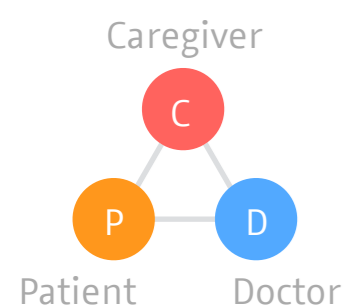and peers and share reports.

Strengths

Enable both the relations with healthcare providers
and with family, friends and peers.

Features highlights

· Manage chemo and oncolytics
· Share progress report with
  doctor
· Guidance with timely disease/
  drug information

· Invite multiple caregivers
· Share and connect with care
  team and loved ones
· Connect with cancer patient
  community for support
· Manage your vitals

Caregiver

C

P   D

Patient   Doctor

Experientia   48

iCancer health (2/2)

Disease, drug guidance
for you and caregivers
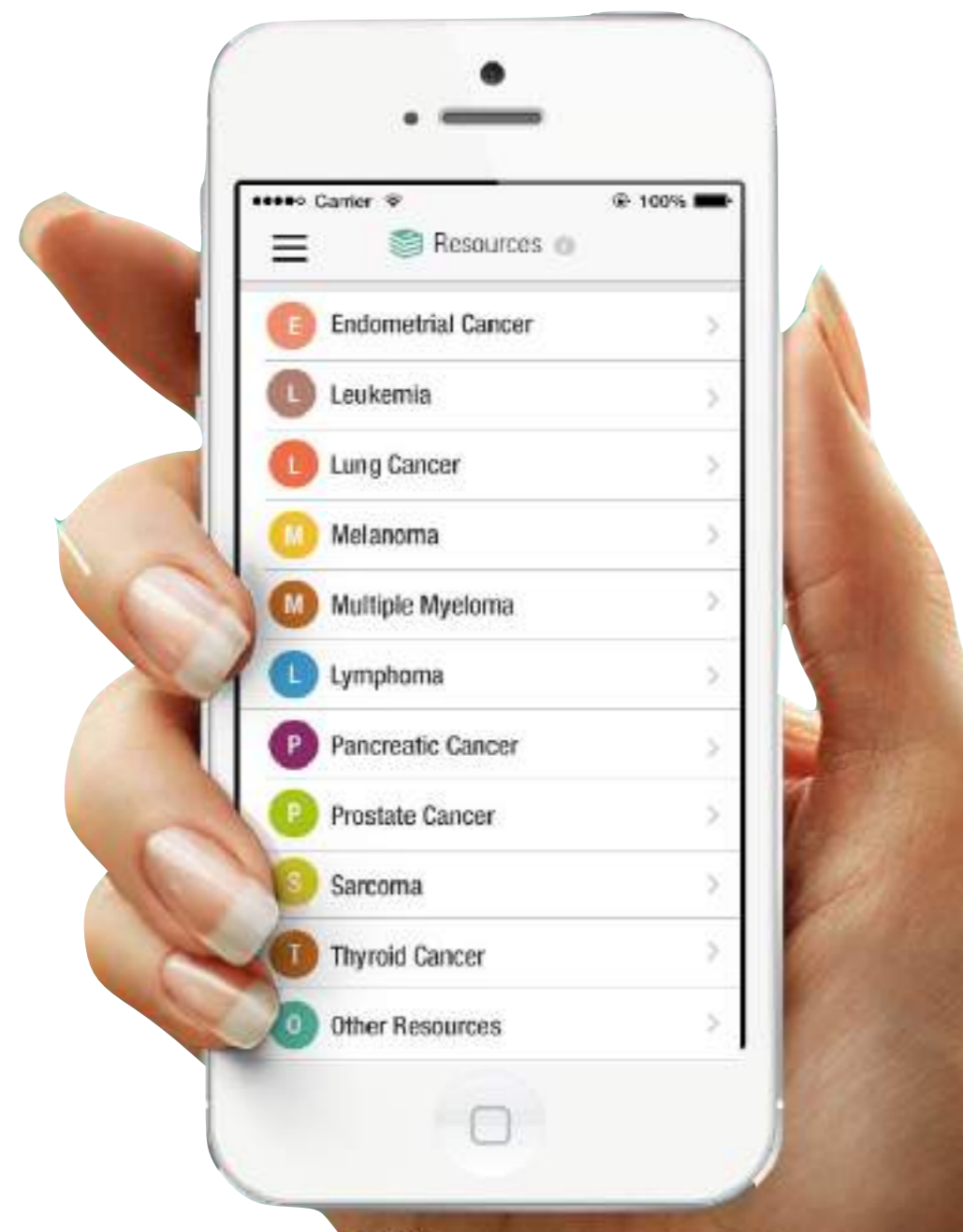
Share, connect with your clinical team and family

Cancer aid (1/2)

Collaboration

Real time tracking

Side-effect
management
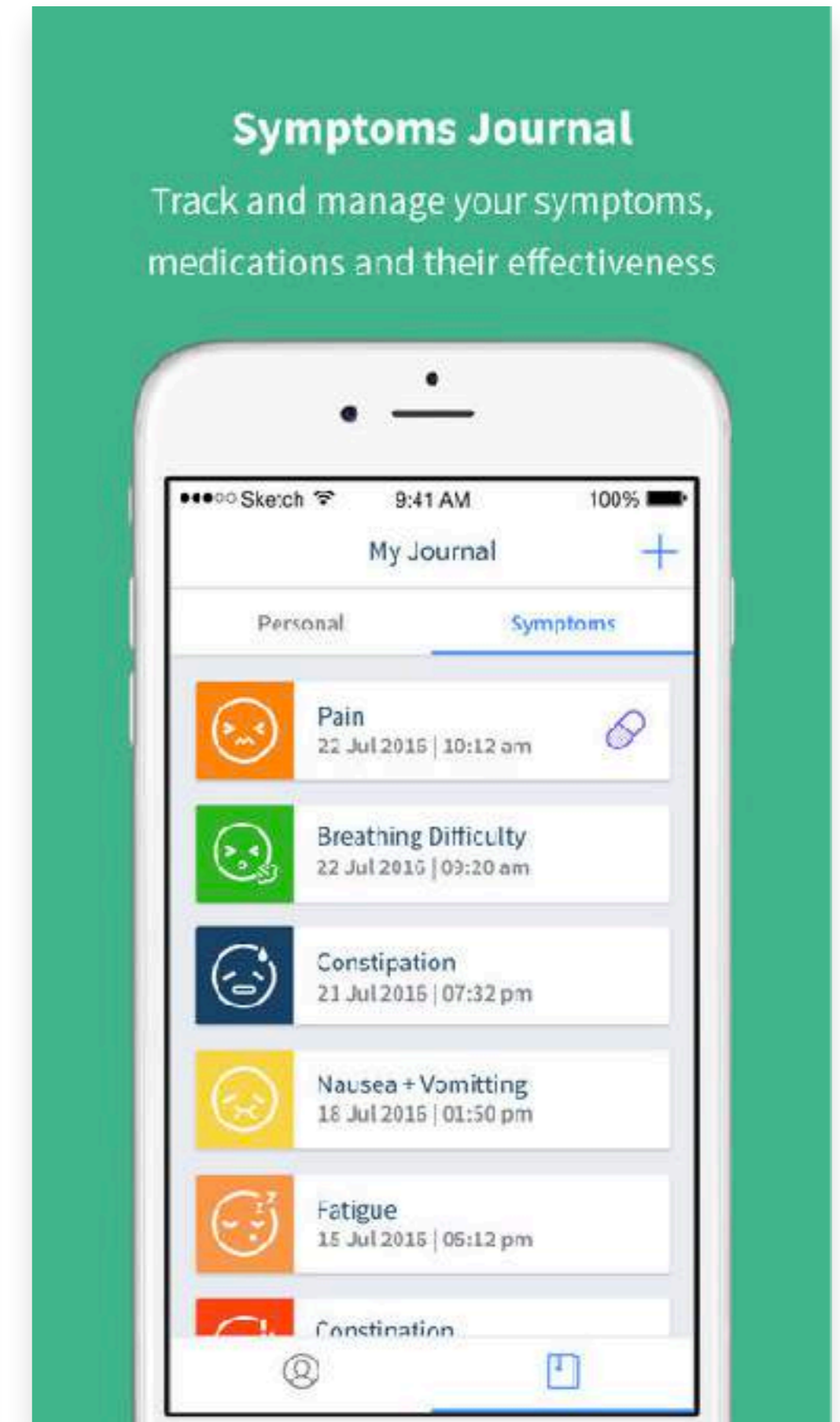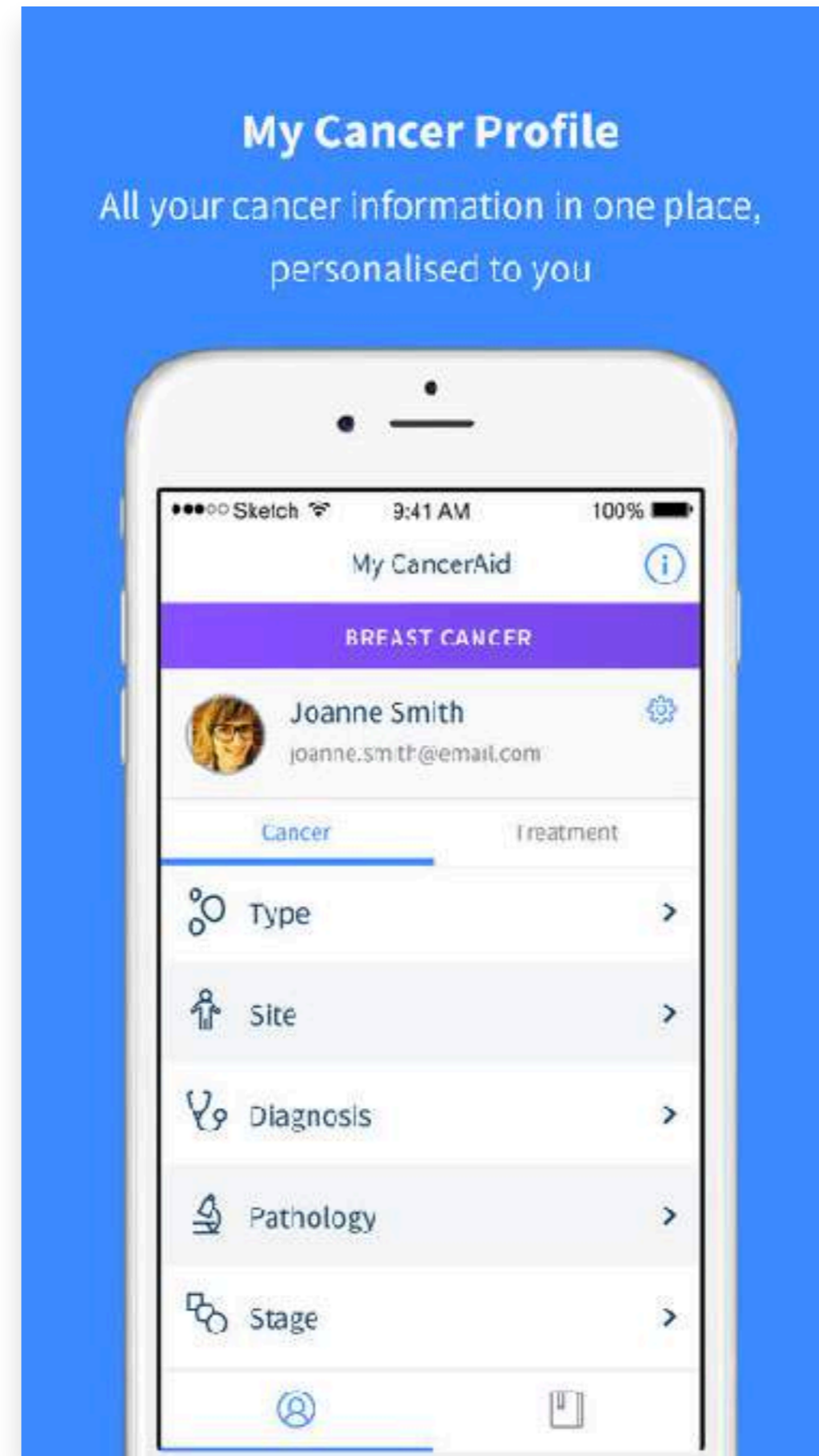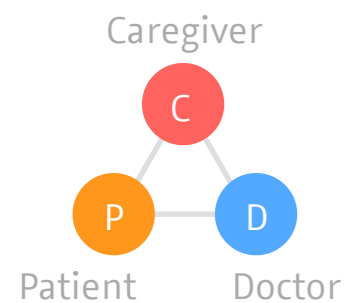
Developer: Cancer Aid Pty Ltd
canceraid.com

The app, designed to be used in conjunction with
your medical specialist, provides patients and
caregivers with an easy to use organizational tool,
a reliable source of medical information and
access to a thriving and supportive community.

Strengths

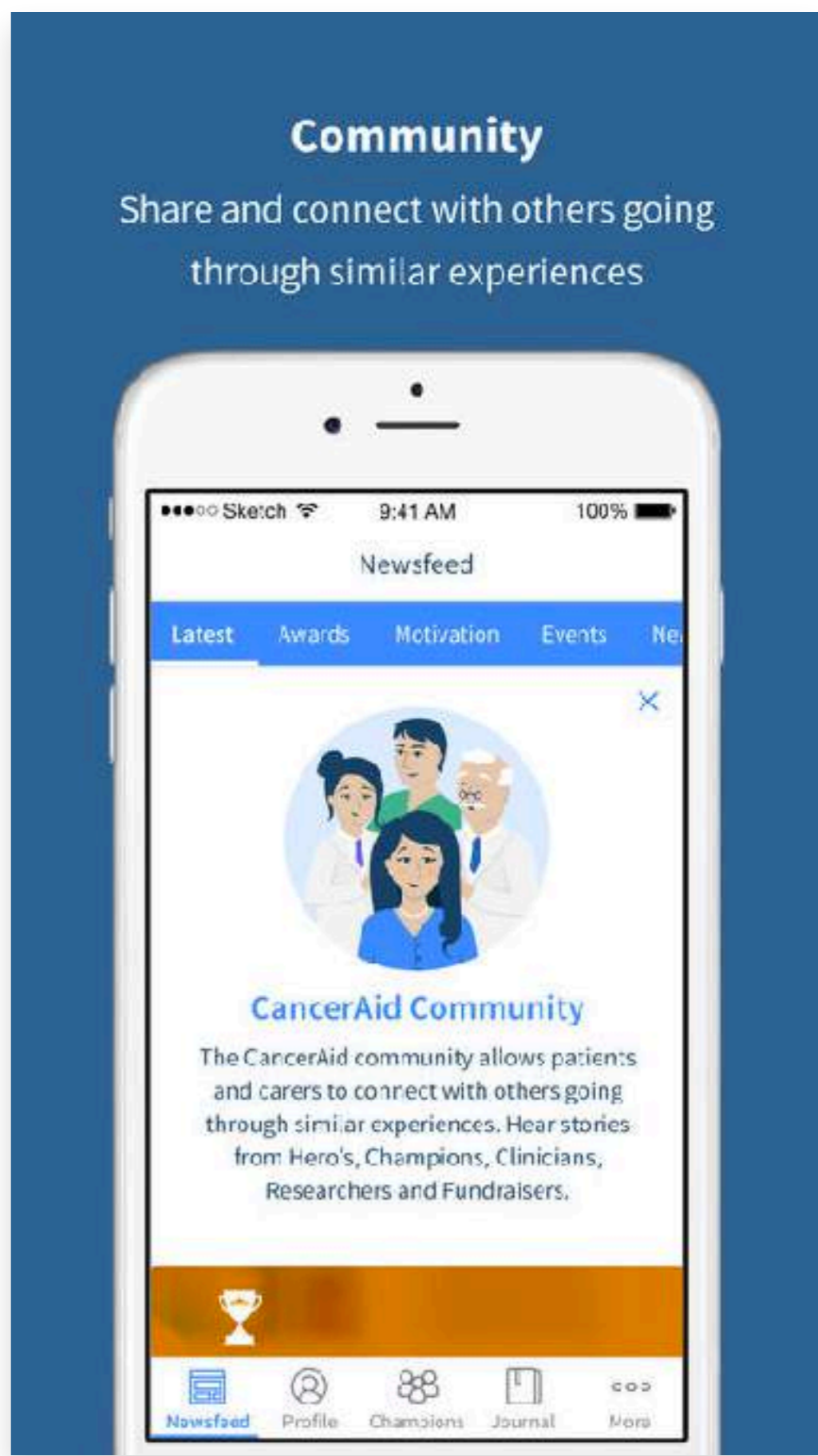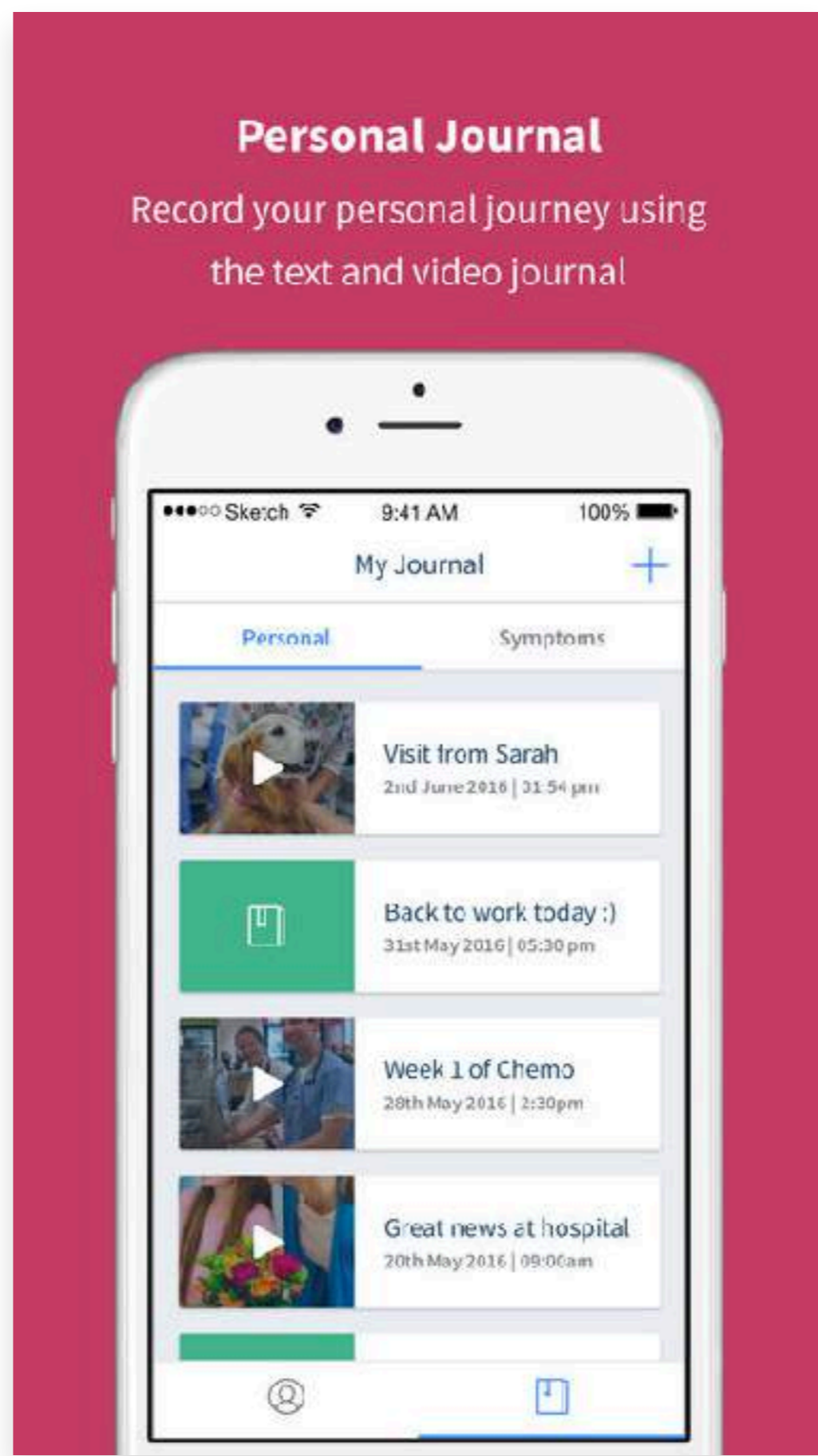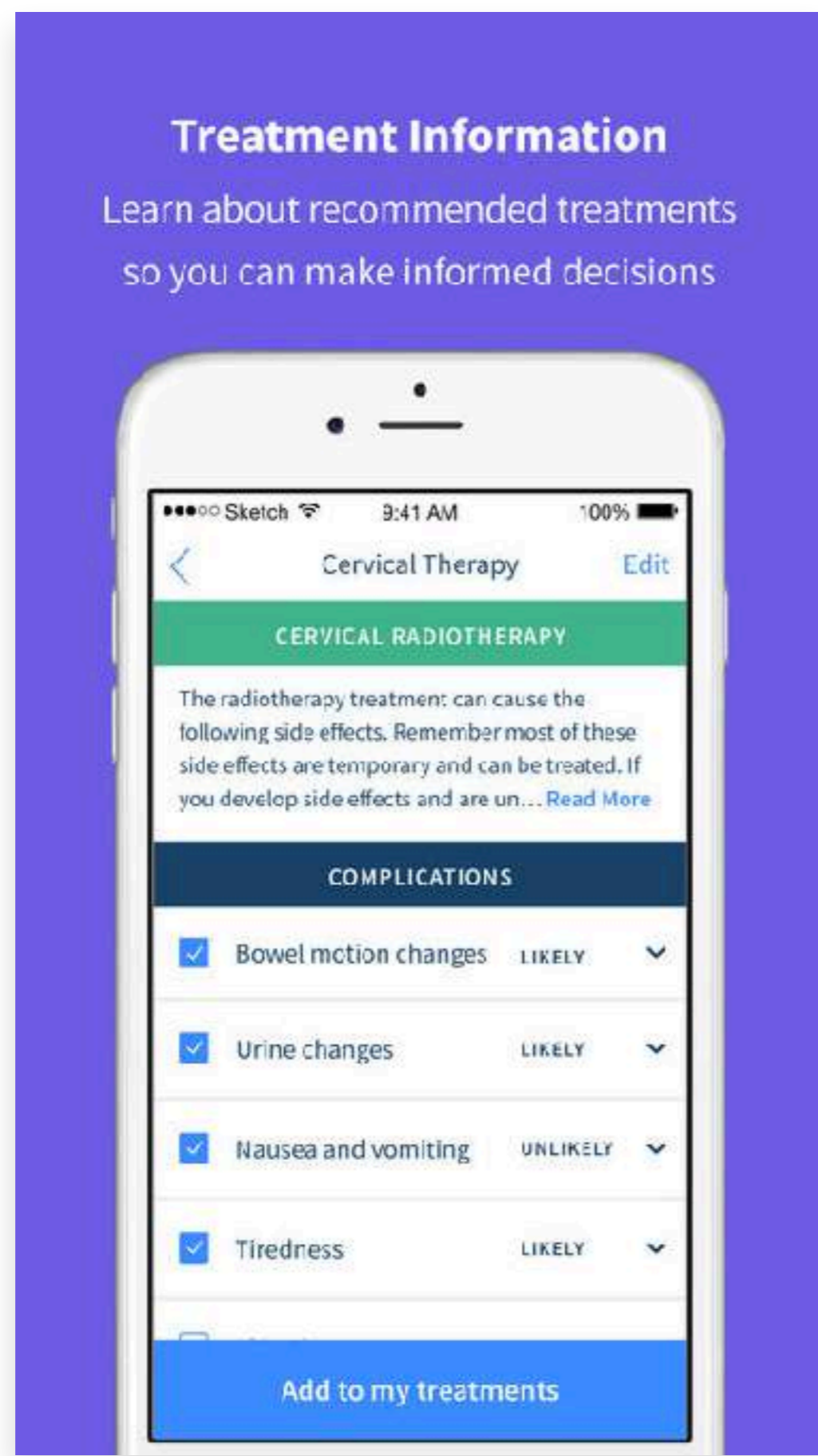Empowers the cancer community on a global
scale.

Features highlights

· My cancer profile
· Treatment informations
· Symptoms/Med/
  treatment journal

· Personal journal (text or
  video)
· Community

Caregiver

C

P   D

Patient   Doctor

My Cancer Profile

All your cancer information in one place,
personalised to you

●●●○○ Sketch 🛜   9:41 AM   100% ▰

My CancerAid   (i)

BREAST CANCER

Joanne Smith   ⚙
joanne.smith@email.com

Cancer   Treatment

Type   >

Site   >

Diagnosis   >

Pathology   >

Stage   >

Symptoms Journal

Track and manage your symptoms,
medications and their effectiveness

●●●○○ Sketch 🛜   9:41 AM   100% ▰

My Journal   +

Personal   Symptoms

Pain
22 Jul 2016 | 10:12 am   🔗

Breathing Difficulty
22 Jul 2016 | 09:20 am

Constipation
21 Jul 2016 | 07:32 pm

Nausea + Vomitting
18 Jul 2016 | 01:50 pm

Fatigue
15 Jul 2016 | 05:12 pm

Constipation

Cancer aid (2/2)

Treatment Information

Learn about recommended treatments so you can make informed decisions

Personal Journal

Record your personal journey using the text and video journal

Community

Share and connect with others going through similar experiences

Autonomous apps

SkinVision

Disease specific

Tracking

Reminders

Receive assessment

Developer: SkinVision

skinvision.com

Perform self-checks for skin cancer.

Strengths

This clinically tested technology can help in prevention. Gives results in 30 seconds, sending the user a guideline on what to do after a high risk has been indicated by the app.

Features highlights

· Take photos of skin to receive assessment

· Monitoring assessment

· Reminding to check twice a year

Caregiver

C

P   D

Patient   Doctor
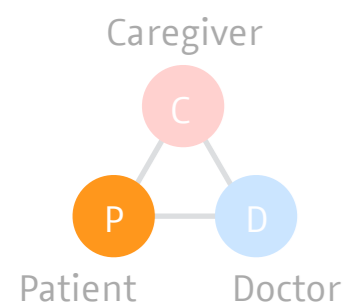
Skinsight (1/2)

Health information

Knowledge

Dermatology

Developer: VisualDX

skinsight.com

Provide quality health information to consumer via web. High-quality images associated with expert-written knowledge on a variety of health topics, to help people better identify and understand a health concern.

Strengths

The identification is provided by search filter and images, not through key words.

Features highlights
- High quality images associated with expert-written knowledge on a variety of health topics
- Selected health articles

Caregiver

C

P   D

Patient   Doctor

Skinsight (1/2)

Imagine (1/2)

Real time tracking

Document

Reminders

Developer: Leo innovation lab

getimagine.io

Help people with psoriasis to track their conditions, get a clearer view of their skin and changes and the effectiveness of the treatment.

Strengths

It helps to orient decision-making of the patients maintaining the relationship with the physician.

Caregiver

C

P   D

Patient   Doctor

Features highlights

· Document the changes by making consistent photos

· Track the discomfort level (associate it with the photos)

· See the process by comparing photos

· Set up a schedule to take photos, and get automatic reminders to keep tracking up to date
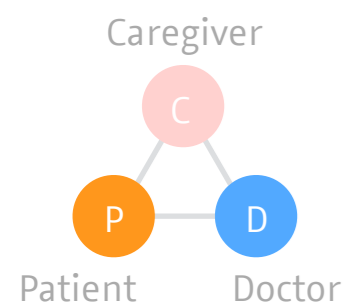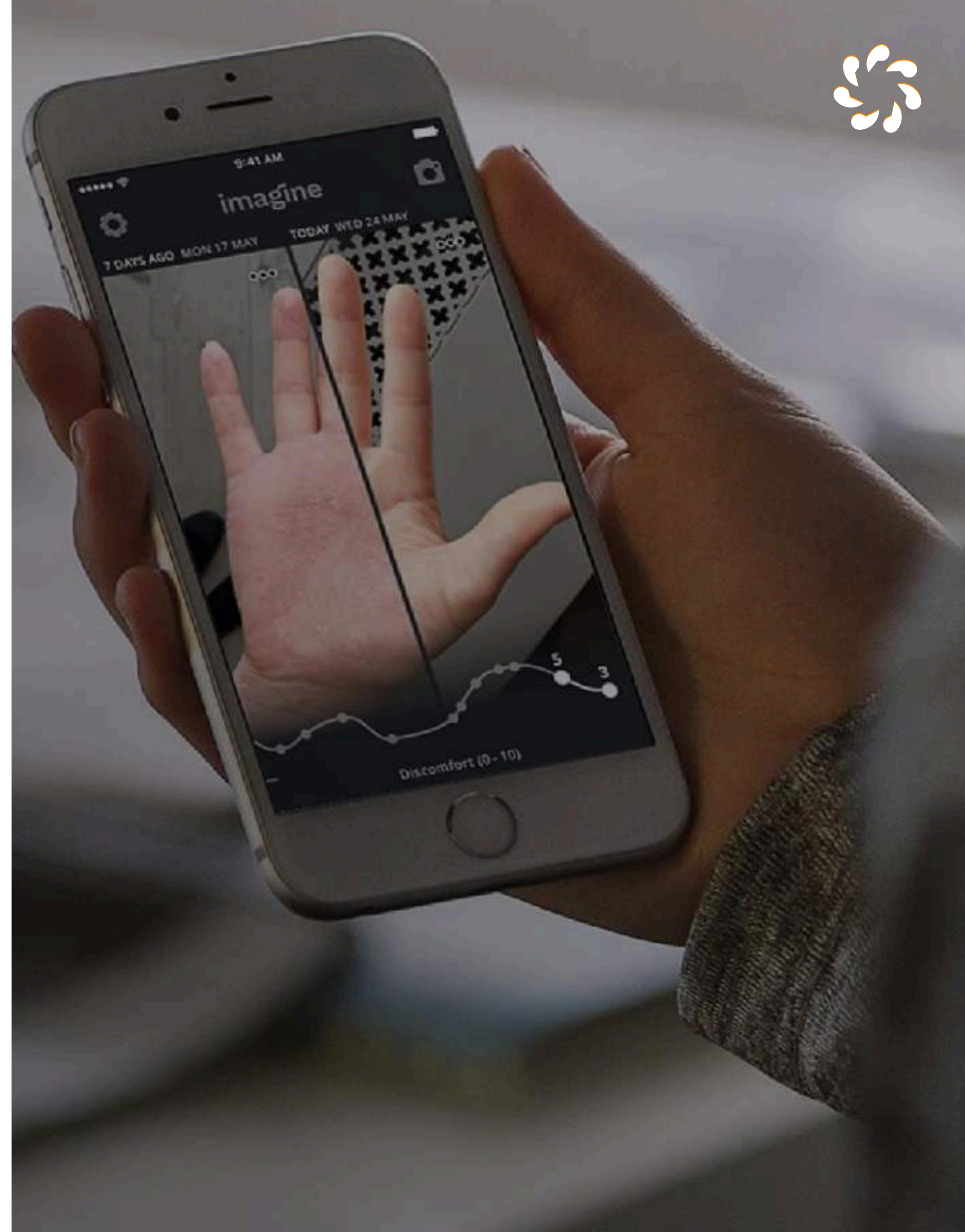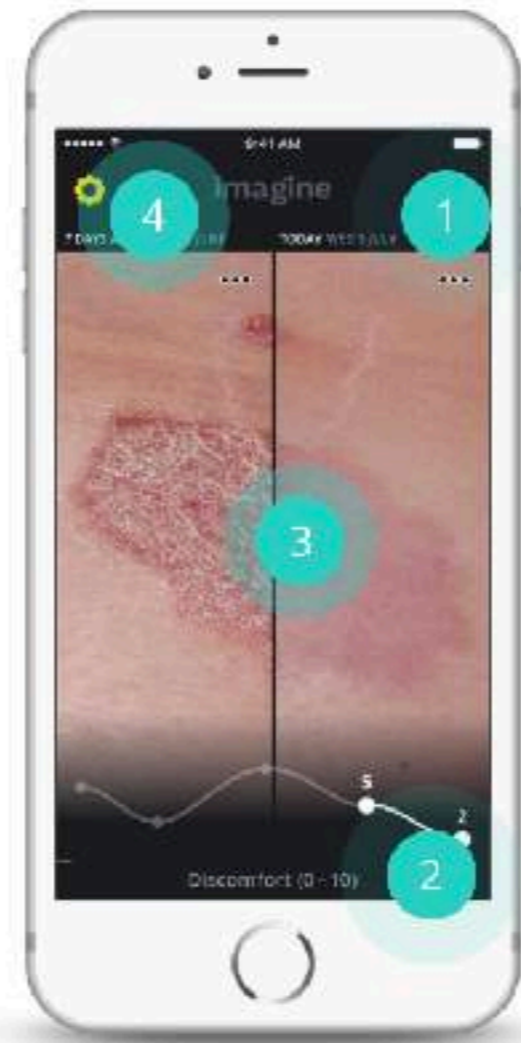
Imagine (2/2)

1. Document your skin

The outline view makes it simple to take consistent photos, so you can accurately document the changes in your skin.

2. Track how you feel

With the discomfort graph, you can see your overall discomfort levels along with your photos for a clearer understanding of your psoriasis.

3. See your progress

Tracking your progress is simple – compare photos with the touch of a finger to see gradual changes in your skin instantly and clearly.

4. Stay on schedule

Set up a personalised schedule to take photos, and get automatic reminders to keep your tracking up to date.

MyRA (1/2)

Disease specific

Document

Share

Real time tracking

Developer: Crescendo Bioscience

trackmyra.com

Lets people with rheumatoid arthritis (RA) track their RA, create visual snapshots of their data, and communicate about RA.

Strengths

Considers important data that usually are not taken into account, such as the mood. It is possible to personalize it with photos, notes and voice memos.
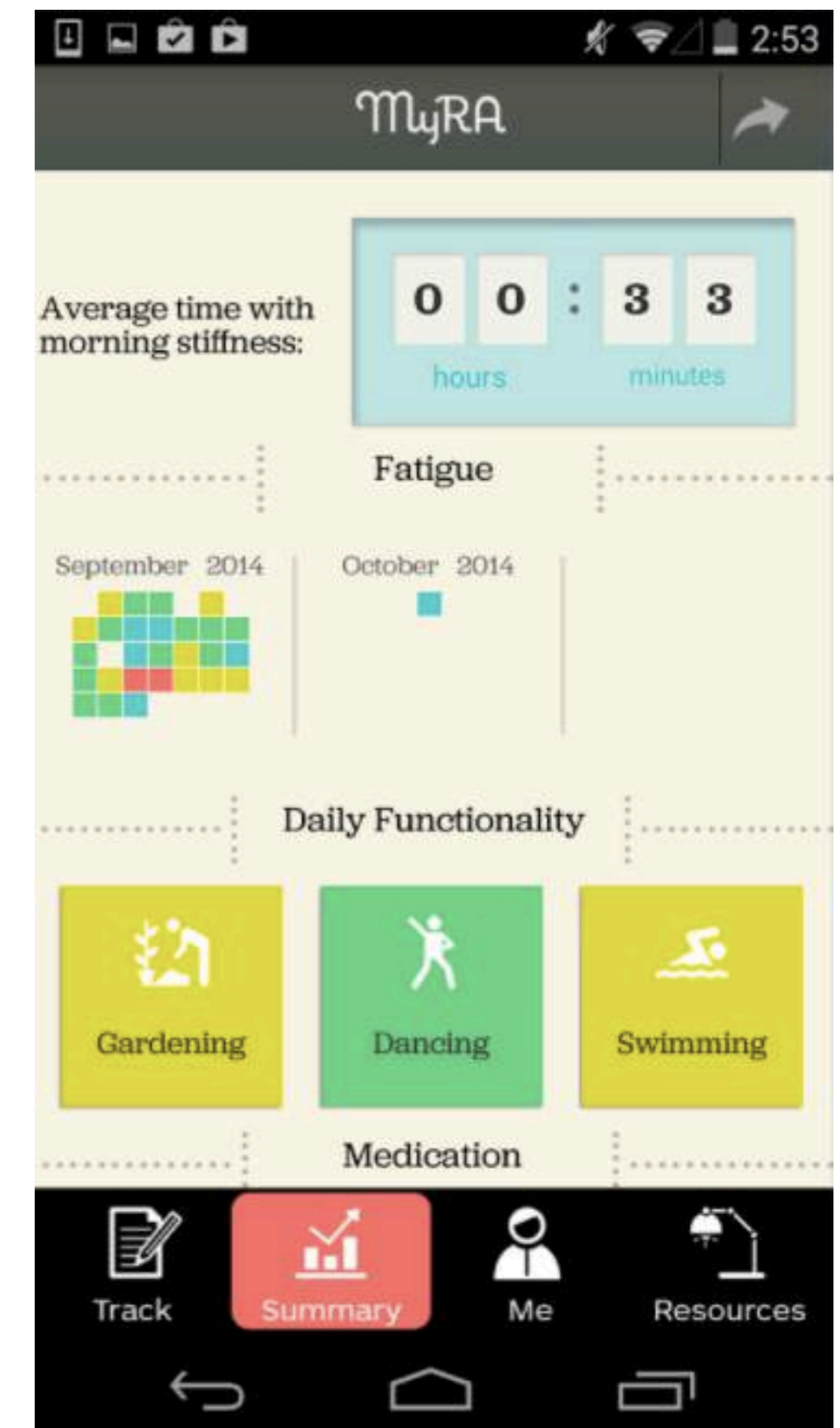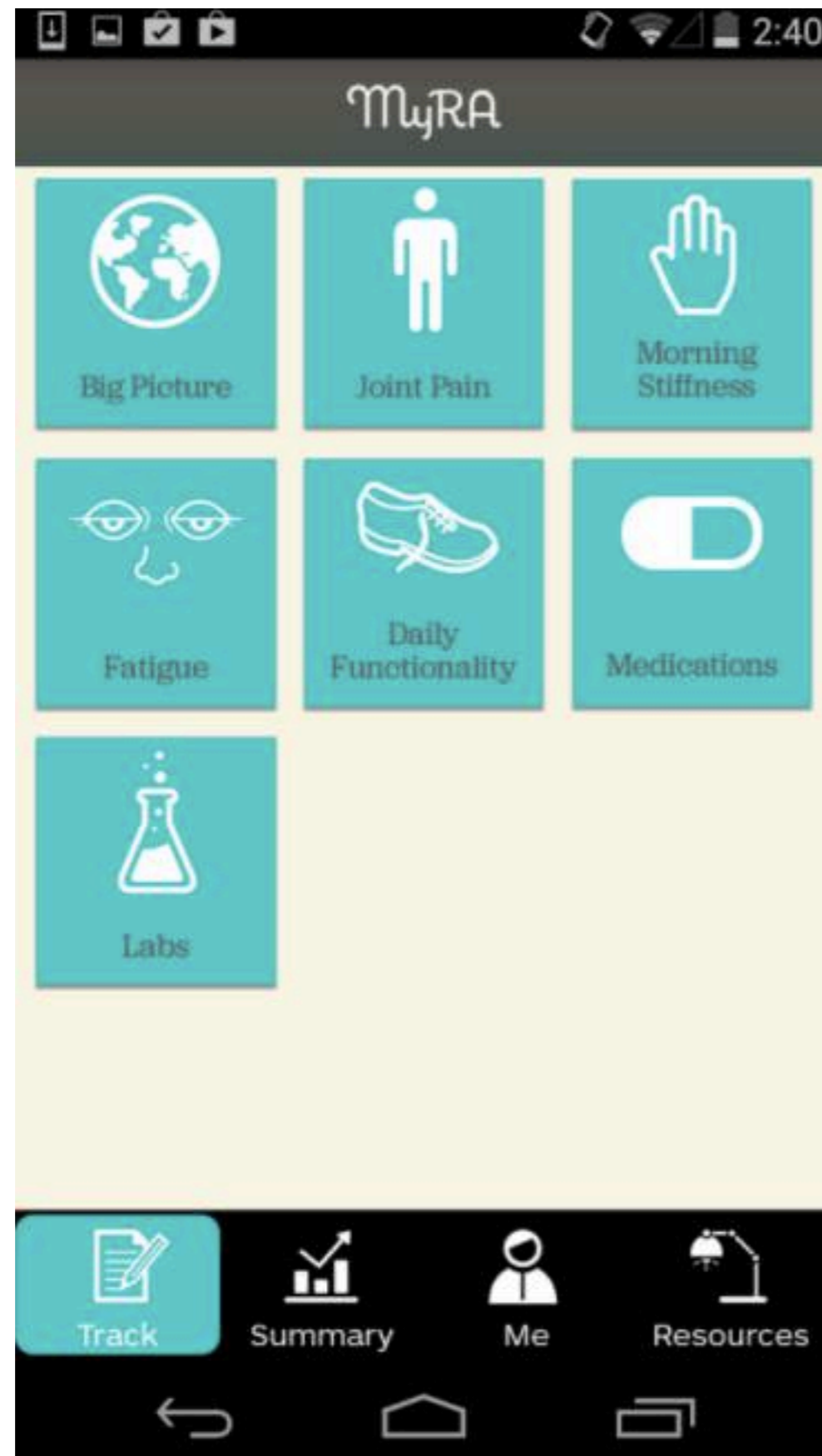
Features highlights

· Track joint pain, fatigue, morning stiffness and daily functionality

· Track medications and labs

· Add a text, voice or photo memo

· Overview of all the tracked data

· Email and print the report for sharing

Caregiver

C

P   D

Patient   Doctor
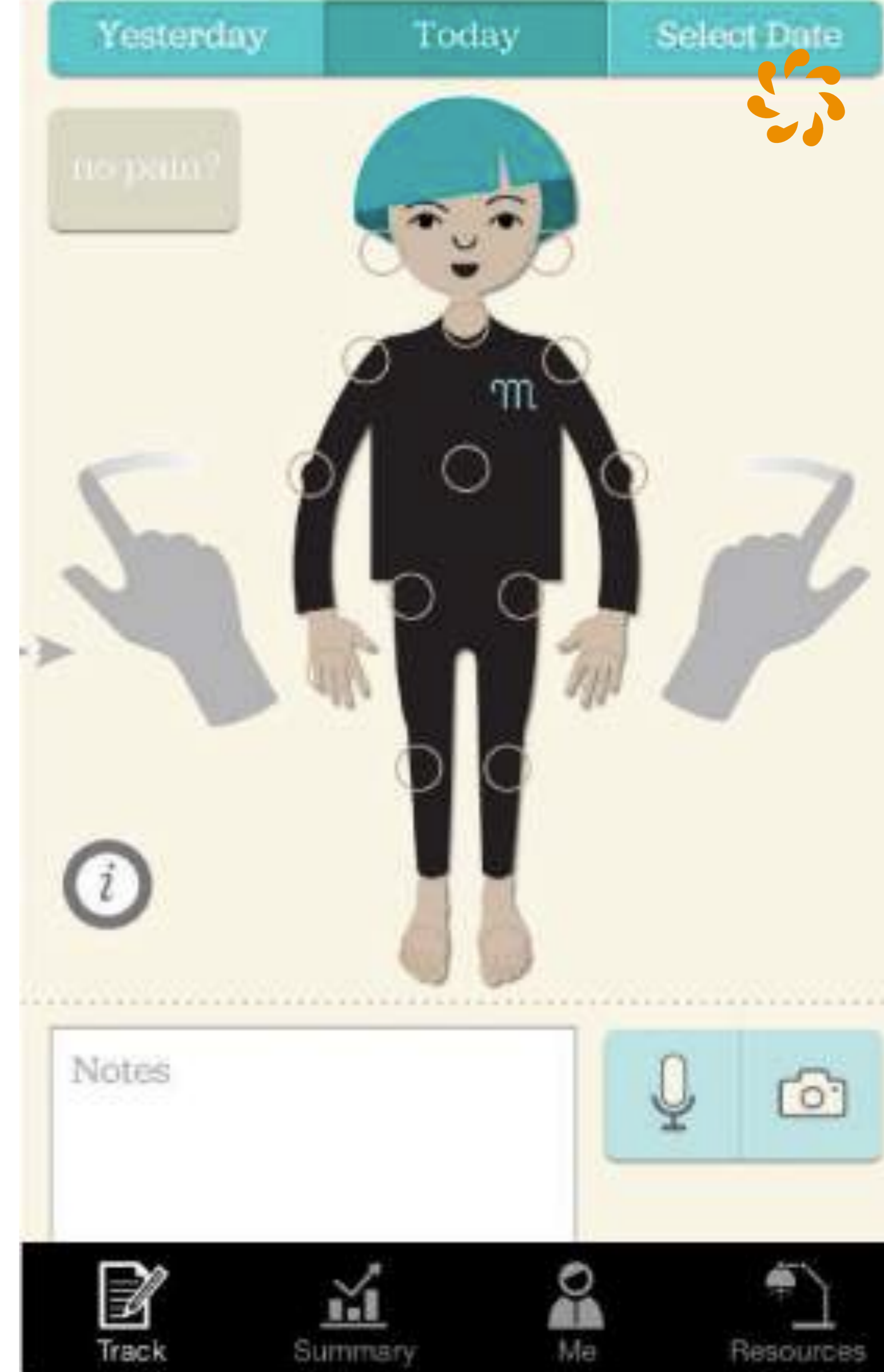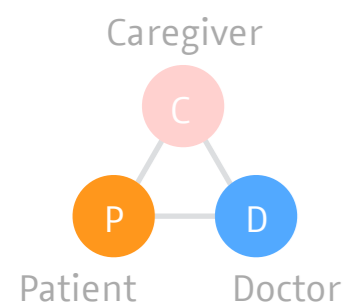
MyRA (2/2)

Mango health (1/2)

Real time tracking

Habits

Reminders

Reward system

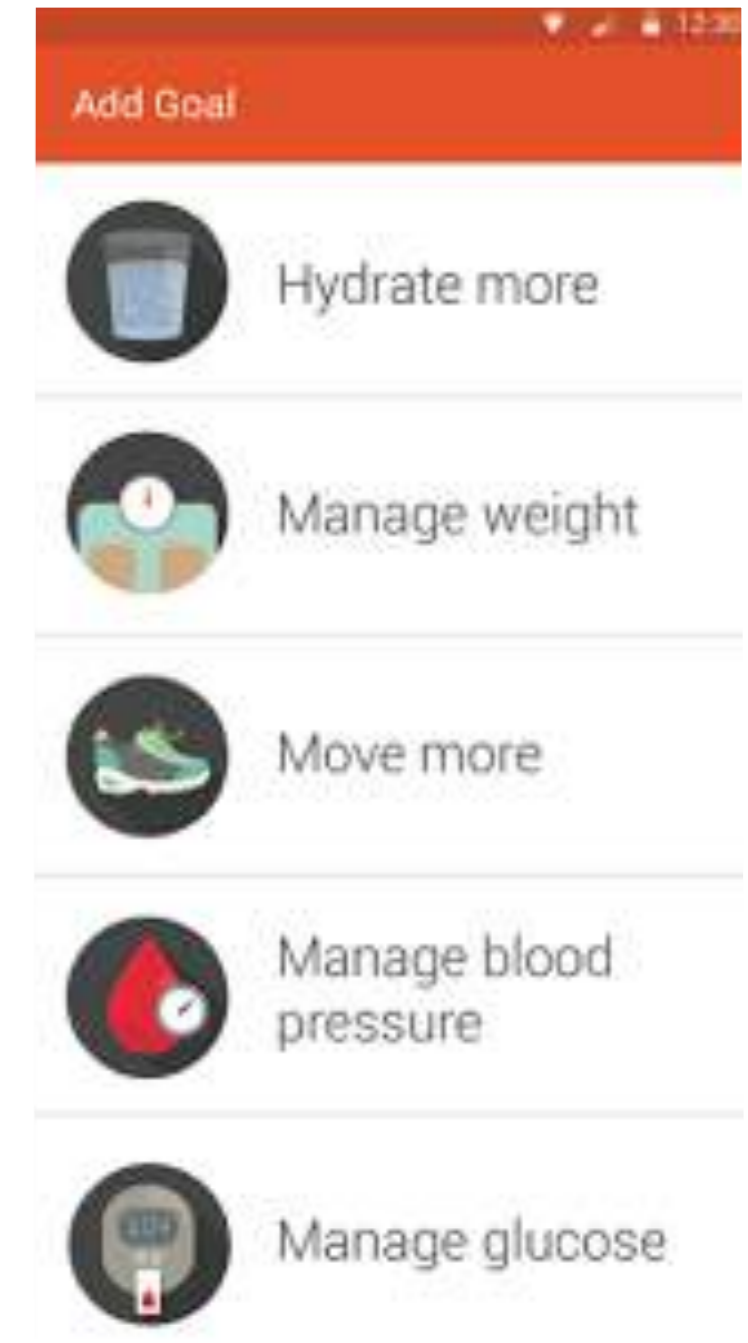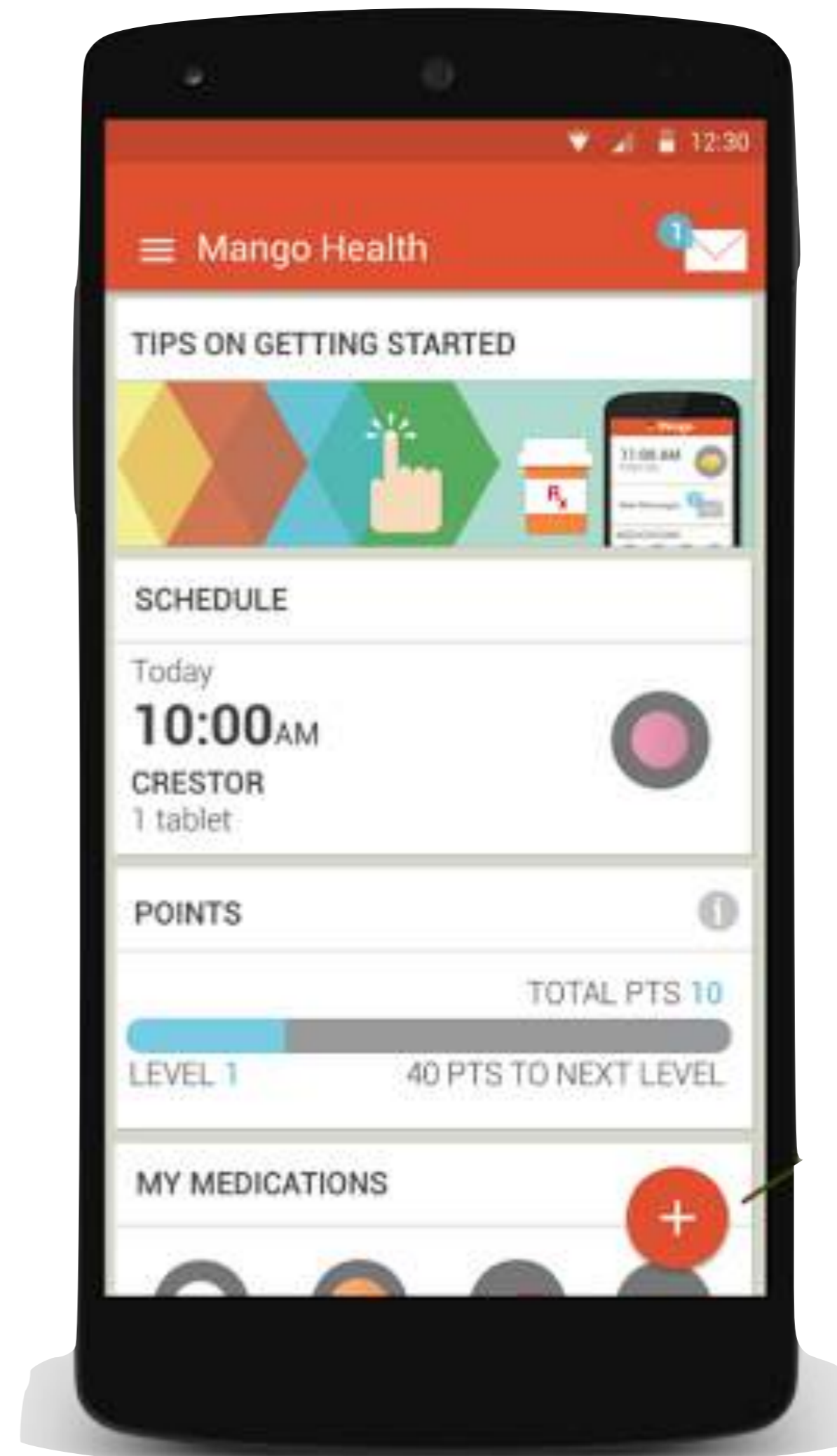Developer: Mango Health, INC

mangohealth.com

Better health tracking from the patient in an easy and fun way to develop good habits around daily health management.

Strengths

Get motivated to stay healthy thanks to points and reward system.

Features highlights

· Get informed about your medicines, including alerts of interactions or side effects

· Reminders and reward system for good performance

Caregiver

C

P   D

Patient   Doctor

Mango Health

TIPS ON GETTING STARTED

SCHEDULE

Today

10:00AM

CRESTOR
1 tablet

POINTS

TOTAL PTS 10

LEVEL 1   40 PTS TO NEXT LEVEL

MY MEDICATIONS

Add Goal

Hydrate more

Manage weight

Move more

Manage blood pressure

Manage glucose
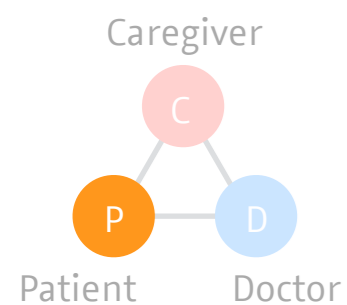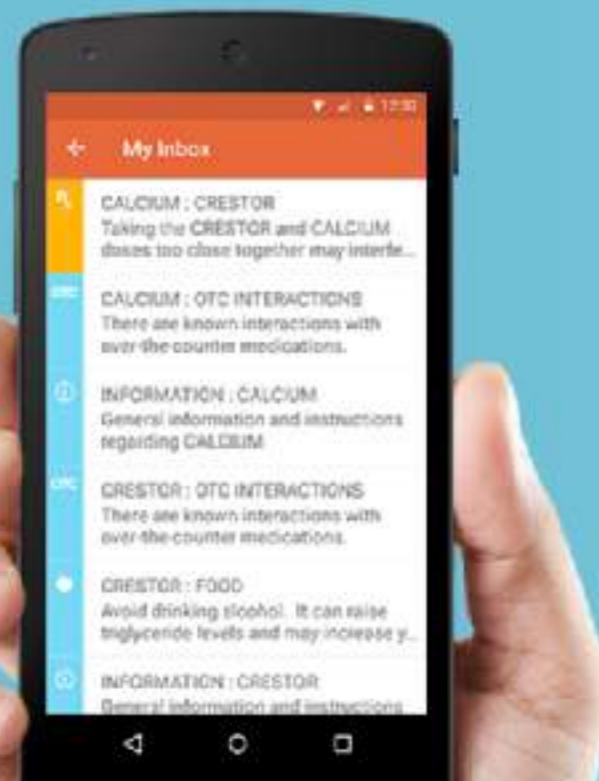
Mango health (2/2)

GET REMINDERS
Never miss a dose again! Mango Health will alert you whenever it's time to take your medicine or follow through with one of your healthy habits.

ADD YOUR ROUTINE
Create a schedule of healthy habits, including taking your medication on time, recording your weight, checking your blood pressure, and more.

GET INFORMED
Mango Health will provide all the information you need about your medications, including drug interactions or side effects. You'll have this information available everywhere you go.

GET LUCKY!
Earn points every time you take your meds properly and maintain healthy habits. Points unlock the chance to win gift cards and charitable donations in raffles held each week.

My directives

Developer: MyDirective

mydirectives.com

Digital cloud-based advanced medical directives platform via Web and App.

Strengths

Interactive living will: promotes person engagement and will, helping with the organization and integration of informations.

Information

Living will

Caregiver

C

P   D

Patient   Doctor

Features highlights

· Create, store, and share advance medical directives
· Share treatment goals, preferences, priorities

· Designate representative to make healthcare decisions
· Messages, video posts, music and photos to help caregivers know the patient better
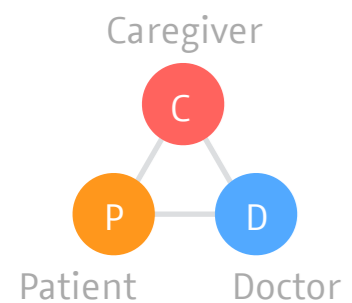
3. Review of selected apps

Apps for professionals

MD calc (1/2)

Evidence based

Calculation

Knowledge

Developer: MD Aware LLC

mdcalc.com

MDCalc clinical decision support is created exclusively by board-certified physicians for use by physicians, physician assistants, nurse practitioners, pharmacists, and medical students.

Strengths

Evidence Based Practice Tool for managing error of calculation.

Features highlights
- Dictionary of all kinds of medical questions
- Calculation of syndrome stages
- Offers advice

D

Doctor

Quickly Calculate Scores with Interpretations

ABCD² Score

Age ≥ 60 years   +1   Y   N

BP ≥ 140/90 mmHg   0   Y   N

Clinical Features of the TIA   Unila... +2

Duration of Symptoms   10-5... +1

History of Diabetes   0   Y   N

Full Results

4 points

According to the validation study, 4-5 points: Moderate Risk.
2-Day Stroke Risk: 4.1%.
7-Day Stroke Risk: 5.9%.
90-Day Stroke Risk: 9.8%.

MD calc (2/2)
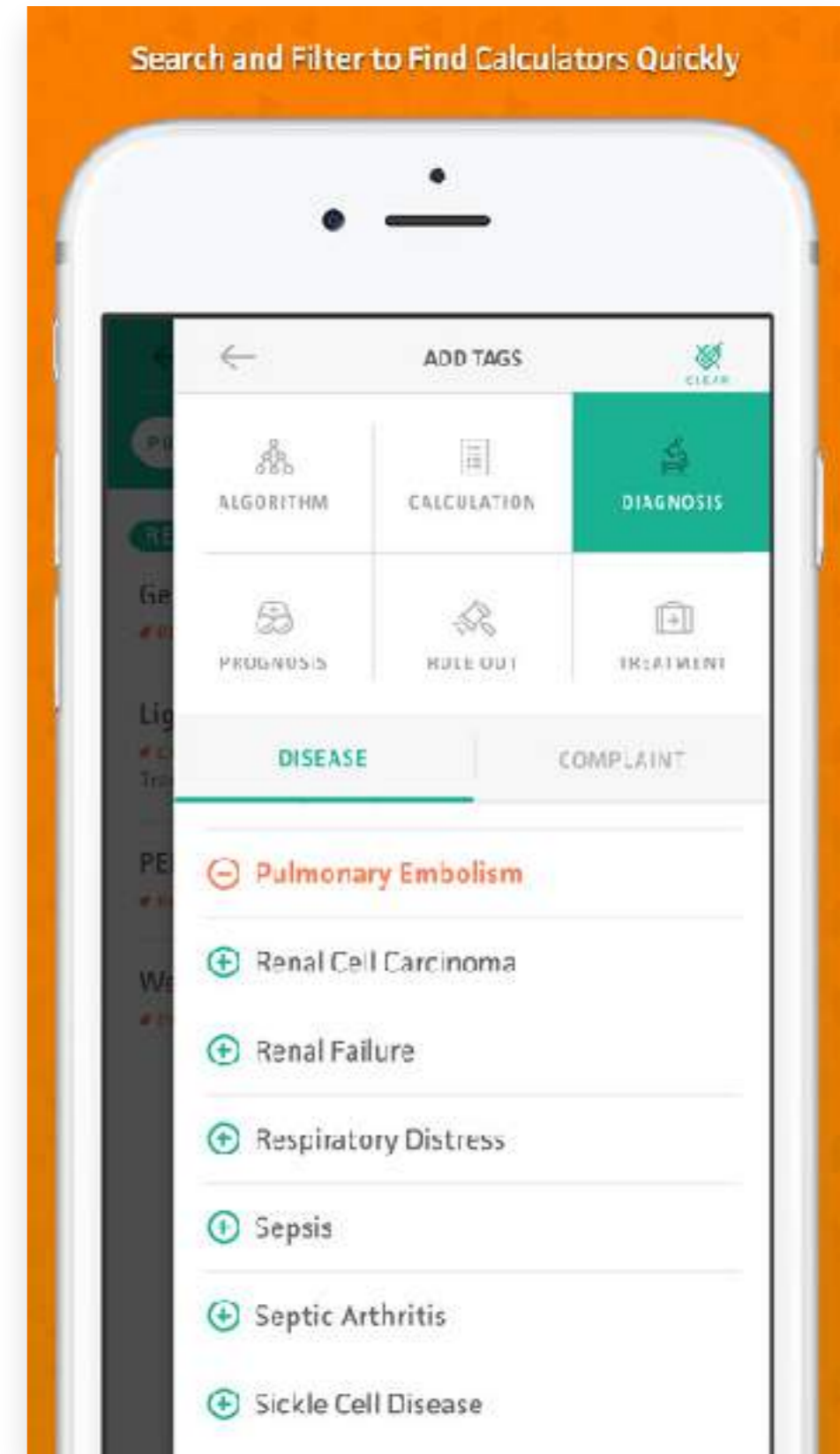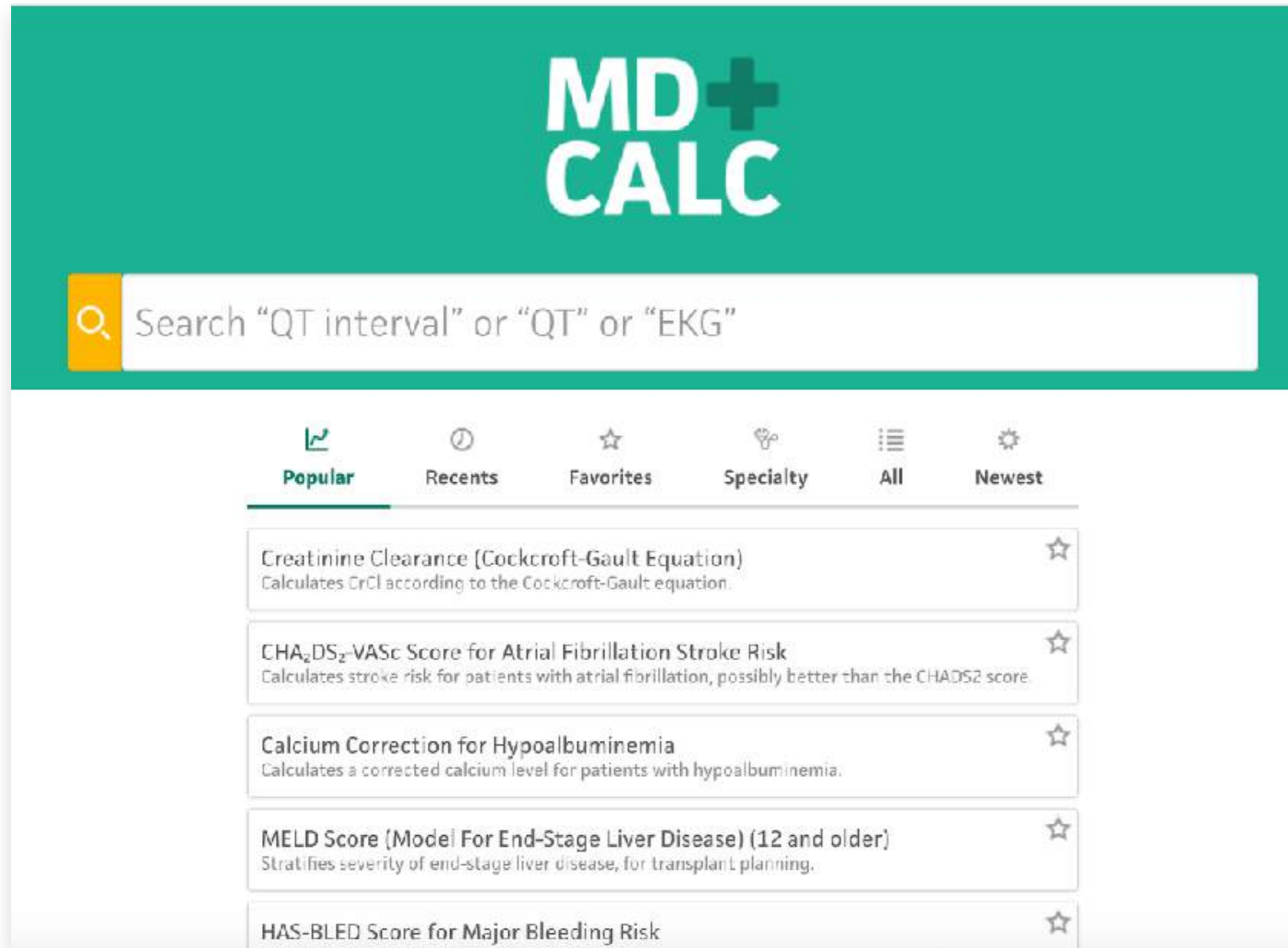
RheumaHelper

Disease specific

Calculation

Knowledge

Evidence based

Developer: Reumahelper

rheumahelper.com

Support rheumatologists in their practice by providing a complete toolbox of classification criteria and disease activity calculators.

Strengths

Considers more then one classification and it quotes references. Diagnosis and monitoring could be faster.

Features highlights
· 15 classification criteria
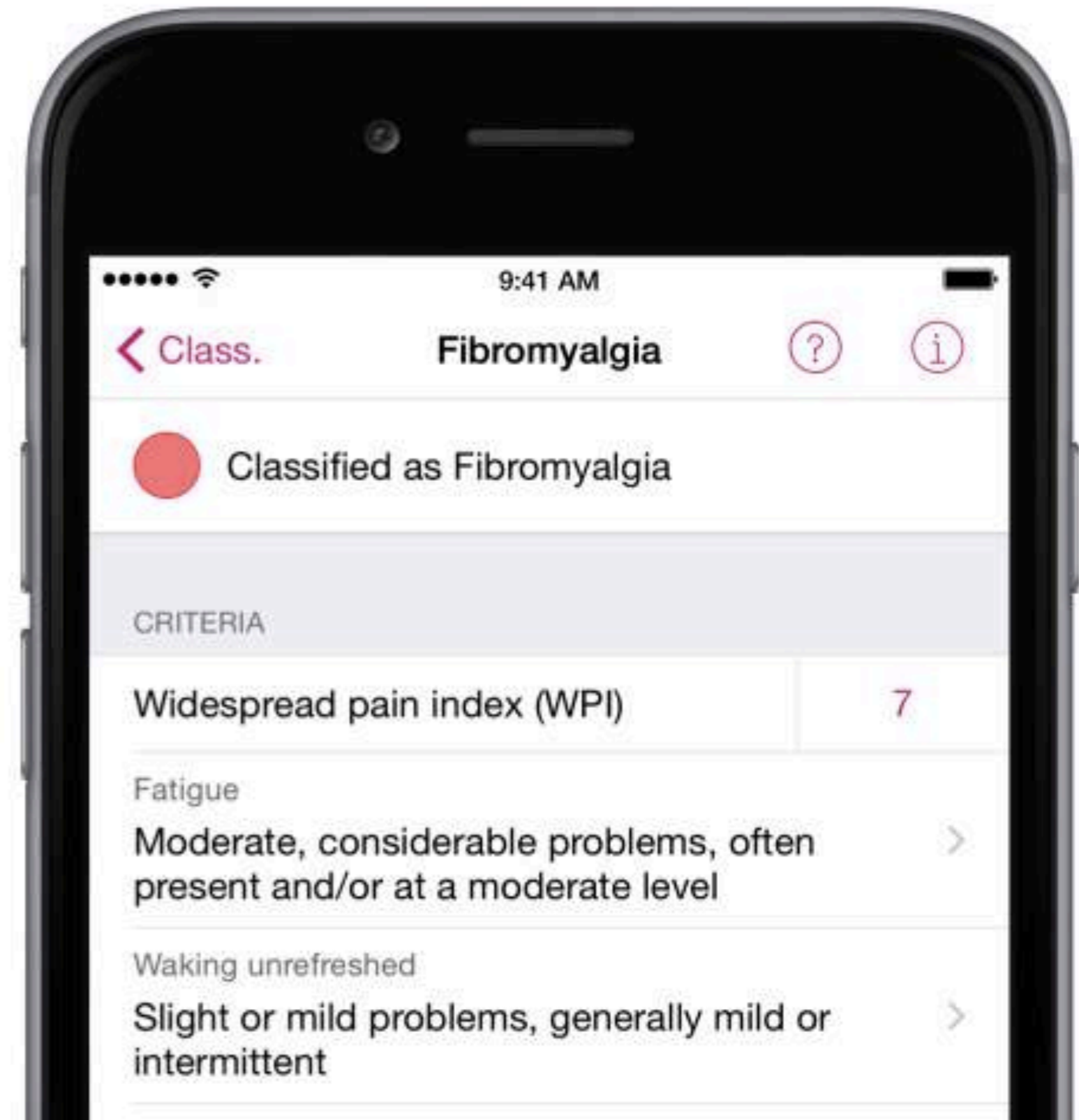· 9 disease activity calculator

D

Doctor

VisualDx

Disease specific

Decision-making
support

Developer: VisualDx

visualdx.com

Enhance diagnostic accuracy and therapeutic decisions and improve patient safety. Support primary care doctors, emergency room doctors and dermatologists in making diagnosis.

Strengths

Search for information on specific disease. Provide a list of possible diagnoses based on clinical signs entered by dermatologist.

Features highlights
· Search for information
· Providing images and clinical signs

· Diagnostic tools and tests, differential diagnosis, management and therapy

D

Doctor

YouDermoscopy (1/2)

Developer: Meeter Congressi S.R.L. et al

youdermoscopytraining.org

Increase knowledge and training in dermatology. Help
dermatologists to increase their diagnostic capabilities while
having fun. Users are required to diagnose lesions on the basis
of dermoscopy images.

Strengths

Training through gamification, with ability to train everywhere.

Features highlights
· Training levels containing a set of
  images requiring diagnosis within
  a 10 second interval
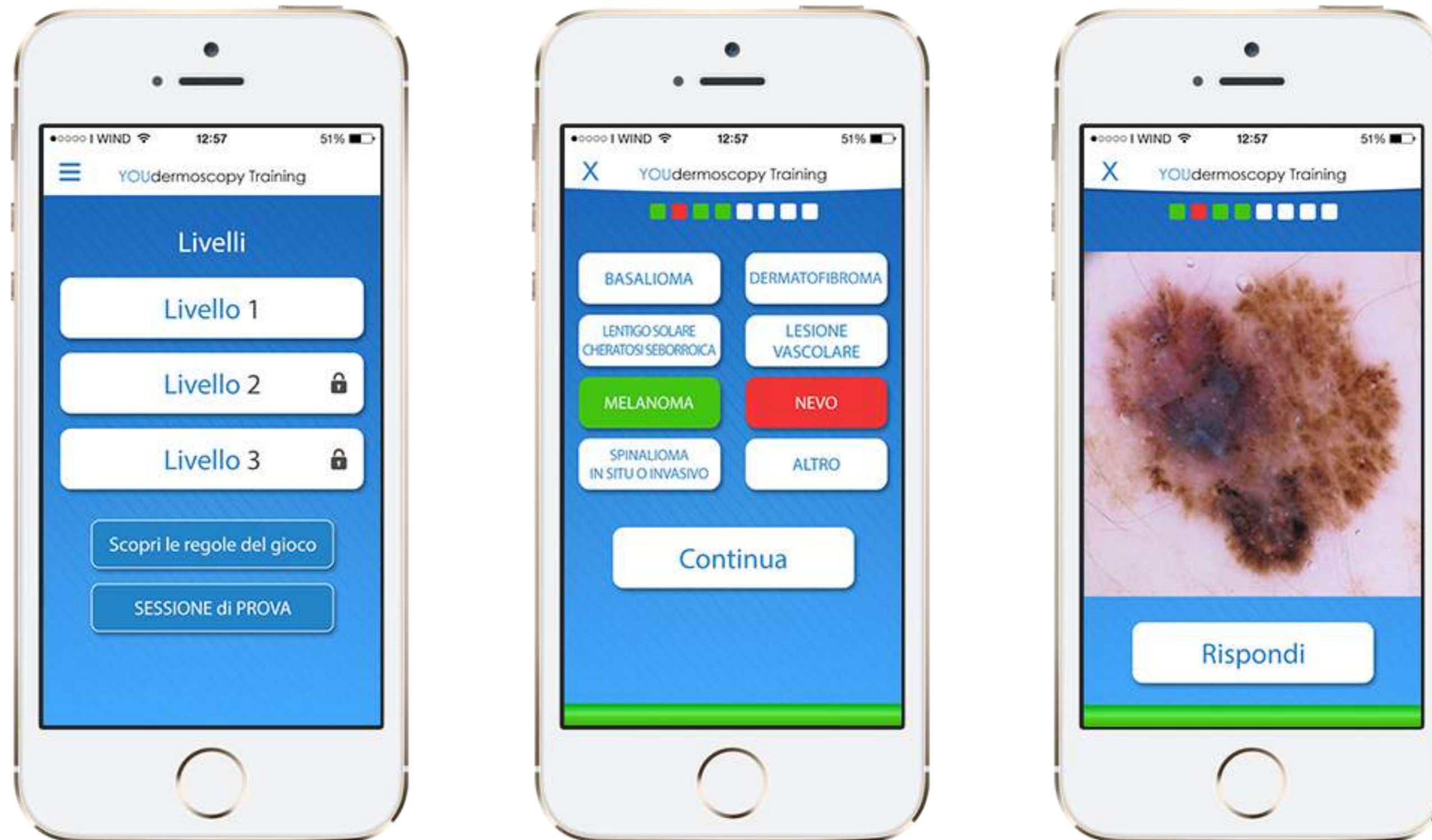· Double classification: national
  and international

YouDermoscopy (2/2)

Skindiag

Disease specific

Knowledge

Sharing

Developer: Club dermaweb

clubdermaweb.com

This mobile teledermatology app, exclusively for HC professionals who are members of Club dermaweb, optimizes the treatment and advice that the patient is given and provides diagnostic and therapeutic assistance in 48 hours.
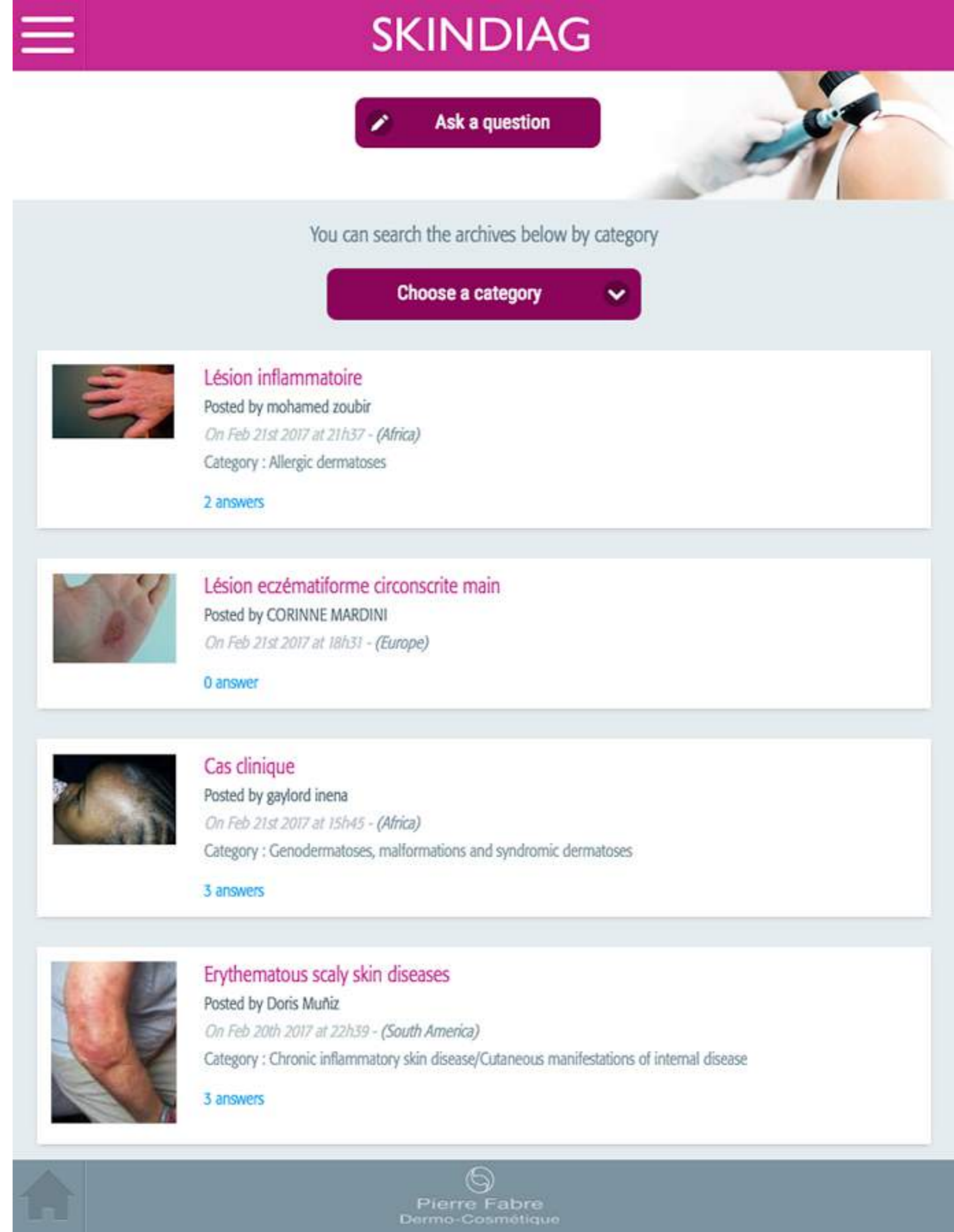
Strengths

Sharing knowledge, supported by a network, faster response.

Features highlights

- Receive a hospital-based expert's opinion depending on their continent

- Discuss cases with peers (more than 25,000 HC professionals) and consult cases archived by category for educational purposes

D

Doctor

4
Advanced technologies for healthcare professionals

Healthcare study

cNeuro (1/3)

Disease specific

Analytics

Visualization

Developer: Combinostics

cneuro.com

Provides physicians with clinical decision support in neurological disorders with a tool for quantitative assessment of brain images.

Strengths

Evidence based data helps in understanding through data analytics and visualization ion tools.

Features highlights

- cMRI, a tool for quantitative assessment of brain images providing clinical decision support in neurological disorders

- cDSI, a tool for clinical decision support in dementia based on combination of imaging, lab results and clinical data
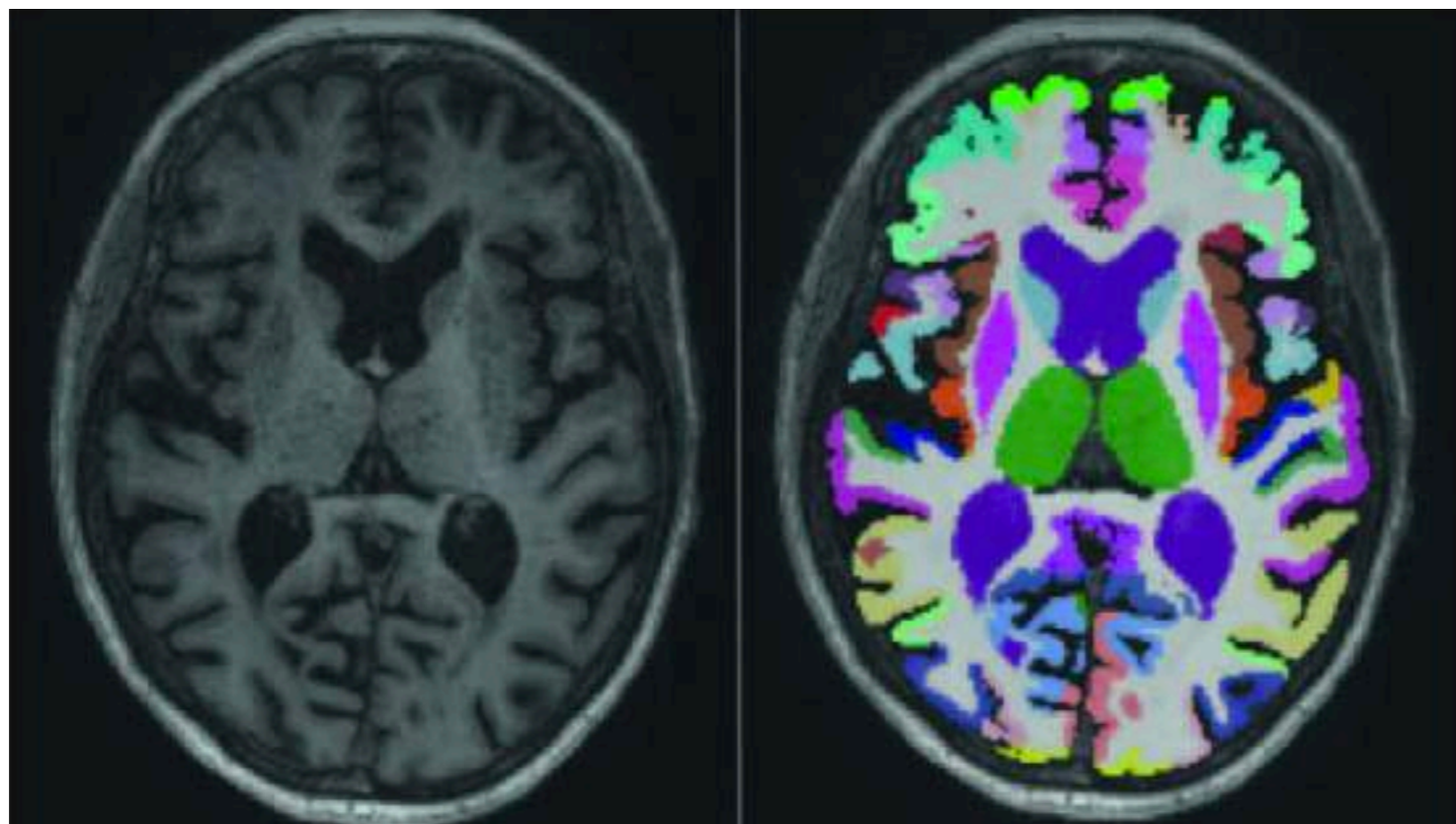
cNeuro (2/3)

Feature highlights (cMRI)

- Quantify (measurements such as volumes of 133 brain regions, vascular burden, medial temporal lobe atrophy score, etc.)

- Compare measures to reference data

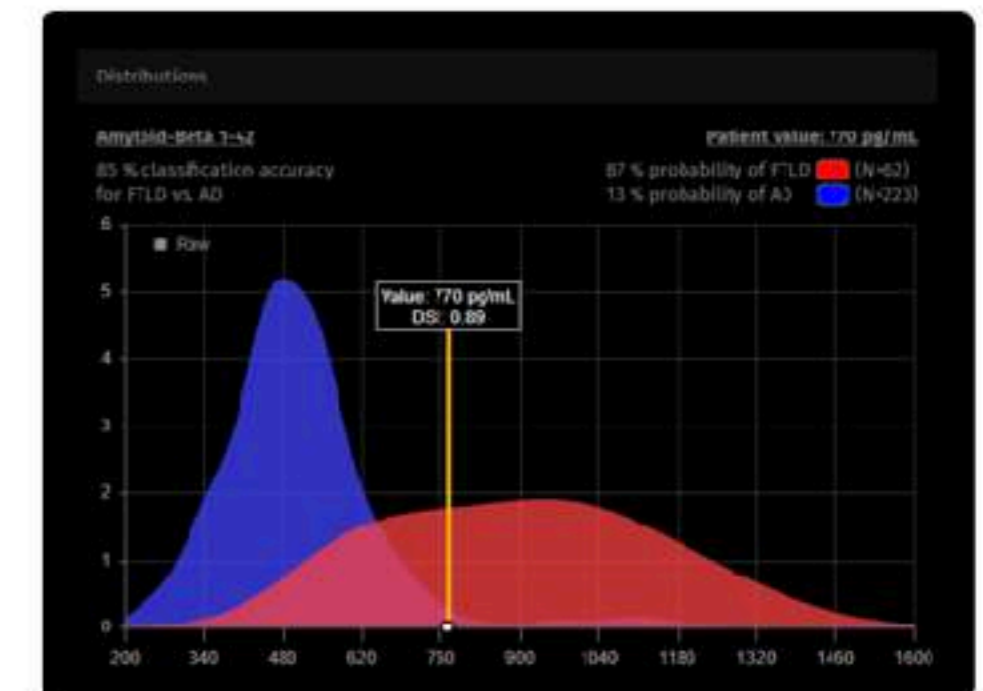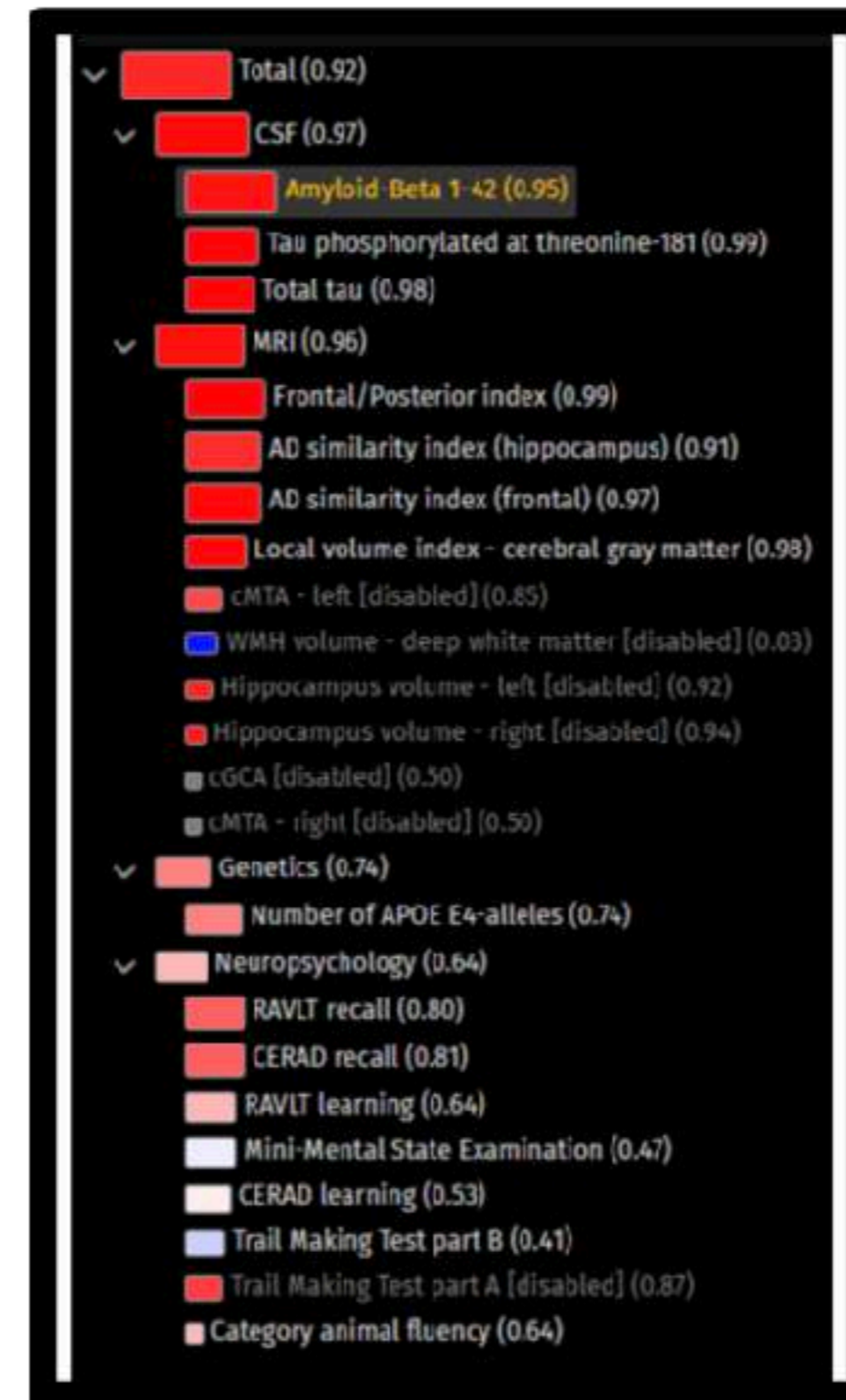- Review results interactively and obtain a report

cNeuro (3/3)

Feature highlights (cDSI)

· Compare neuropsychology, MRI, CSF and genetics measured from a person's data to data of previously diagnosed cases

· Quantify the patient's similarity relative to etiology and progression

· Visualize data

3D4 medical (1/2)

Developer: 3D4 Medical LLC

3d4medical.com

Visual aid tool for healthcare professionals.

Strengths

Visual design, supportive communication for patients.
Physicians can draw for a better explanation and send
annotation to the patient with email.

Education

Visualization

Features highlights

- · Visualize in 3D, the complex
  system in the human body
- · Interact with a single or
  multiple areas of the body

- · Simple navigation and user
  friendly
- · Can be easily used for
  educational purposes

3D4 medical (2/2)

5

Designing the next generation of health apps

A systemic approach

One of the main strengths of the analyzed digital tools is the **enhanced connection** they promote among different actors. They allow **value co-creation** and easy exchanges of different kinds of assets (such as knowledge, data, etc.) that otherwise wouldn't be possible or would be difficult to manage.

Experientia's service design expertise combines a human-centered approach and participatory design methodologies, from **field research**—allowing deep comprehension of the ecosystem—to the development of **solutions**, **testing** and **implementation**.

Work with us

Experientia approaches app design with our multidisciplinary approach, to develop solutions for new ways to integrate technologies into our lives.

We start with exploratory research, asking:

How is tech (e.g. apps, wearables, digital devices ingestible sensors, robotics, etc.) perceived? In which system of relationships does it act? In which way? What does this entail?

Then we design solutions that are tailored to your stakeholders—the patients, doctors and healthcare providers that you target.

Let's transform healthcare together!

We work in multidisciplinary teams with expertise in: medical anthropology, ethnography, information architecture, interaction/industrial/service/visual design, user experience, management, behavioral models, and usability engineering.

We understand diversity and speak: English, French, German, Italian, Spanish, Dutch, Turkish, Korean and Chinese on staff.

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PUTTING PEOPLE FIRST