

# Apps and Devices for Our Health (Part II)



by Steve Maynard - for GAMUG Tuesday, January 8, 2019

In July of 2017 I gave a presentation on health related apps. As is usually the case, technology improves quickly, so since my first presentation I've read about many new products and apps.

# Topics

Diabetes

Hydration

Hip and Knee Replacement

Heart Health

Emergency Medical Info

WebMD

Preventive Medicine

Health Care Robot

Detecting When You Fall

Apple's Health app

# Diabetes



and  
Continuous Glucose Monitoring  
(CGM)

When it comes to diabetes, the Holy Grail of endocrinology is “Continuous Glucose Monitoring,” or CGM. Ordinarily people with diabetes, particularly Type 1, have to stick their fingers several times a day, extract a drop of blood, and feed the blood into a device that measures the glucose level. CGM has been a goal of health providers for decades, but the technology didn’t exist until recently. Now it does, and that means painful finger sticks will soon be a thing of the past.



and  
Continuous Glucose Monitoring  
(CGM)



One of the leaders in this field is Dexcom. The company was founded in 1999 for the purpose of improving glucose monitoring. They introduced a CGM device in 2006 that required wires implanted under the skin.

# Dexcom G6



(cost depends upon insurance)

## Diabetes

### Dexcom G6



(cost depends upon insurance)

When CGM technology was still in development, many thought the Apple Watch would have a wristband capable of CGM. That may still happen, but for now the most advanced device is the Dexcom G6, a patch device about the size of a quarter. It's applied to the skin of the abdomen and contains a sensor that measures the amount of glucose in body fluid every few minutes. The device lasts 10 days and requires no finger pricks or implants.

With most patients there is an initial cost of a few hundred dollars and then a charge for each device. You can expect to pay about \$2000 per year, which will (hopefully) be offset by insurance.

The G6 itself can be set to emit a beep when a user's blood glucose is outside normal range. If you want more detailed data, then you need an app. The G6 transmits real-time glucose readings every five minutes via Bluetooth to your app of choice on an iPhone or Apple Watch.

<https://www.howmuchisit.org/how-much-does-a-dexcom-cgm-cost/>

Dexcom app  
(free)



Dexcom created its own app for the iPhone and Apple Watch. However, user reviews of the app gave it only 2.6 stars out of 5. The general criticisms were poor tech support and too many unwanted features that cannot be turned off.

## Sugarmate (free)



Sugarmate is compatible with the G6, and it received five stars. It has more user-friendly display options and good customer service. It allows up to five iPhones to monitor the same device, which parents of diabetic children will appreciate. It's Siri friendly so you can verbally ask for your current blood glucose level. It can also read bar codes on grocery items to provide feedback on how glucose levels will be affected. And you can create up to 20 displays to show graphs and statistics of glucose levels after food intake, exercise, or other activity.



# Don't forget to **HYDRATE!**

Most people, especially in winter, do not drink enough water. Ideally we should drink eight-ounces of water eight times per day. Adequate intake of water has a number of health benefits, such as improved digestion, improved immune system, reduced risk of cancer, weight loss, skin health . . .

[regulation of body temperature, improved metabolism, better delivery of nutrients and oxygen to your cells, relief from fatigue, and it helps improve your mood.]

Daily Water  
(free)

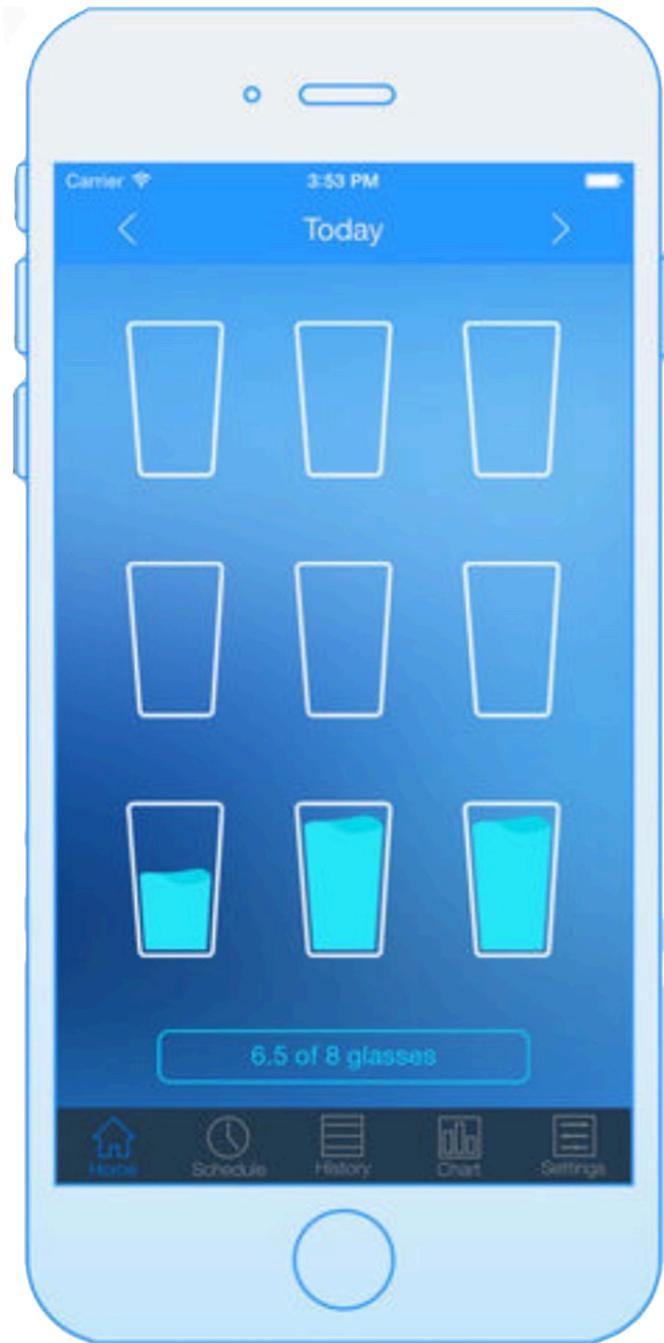


So if you think a prompt would help you hydrate adequately, then there is an app called **Daily Water**. I started using the app last week, and it is keeping me on a schedule. The app is free, but you pay for it in the form of occasional pop-up ads.

<https://www.appstoreapps.com/app/daily-water-drink-reminder/>

<http://www.maxwellapps.com/apps.html>

## Hydration



# Daily Water app

After you drink, tap on a full glass to empty it.

**Daily Water** lets you set up a schedule and how much water you want to drink at a time, such as a full eight ounces, or a half glass, or a quarter glass. After each time you drink, tap a glass on the app to empty it. You get a short sound effect of someone swallowing and then saying, “Ahh!” The app records the number of glasses you empty out of a goal number—eight for most people.

<https://www.appstoreapps.com/app/daily-water-drink-reminder/>

<http://www.maxwellapps.com/apps.html>

## Daily Water

Bar graphs  
and logs



The app then keeps records and creates bar graphs. You can keep a log and share it with someone you hold yourself accountable to.

The app was created by Maxwell Software, and their web site has 30 apps for daily living—health and medical, maternal and infant, finances, and business.

<https://www.appstoreapps.com/app/daily-water-drink-reminder/>

<http://www.maxwellapps.com/apps.html>

# Joint Replacement



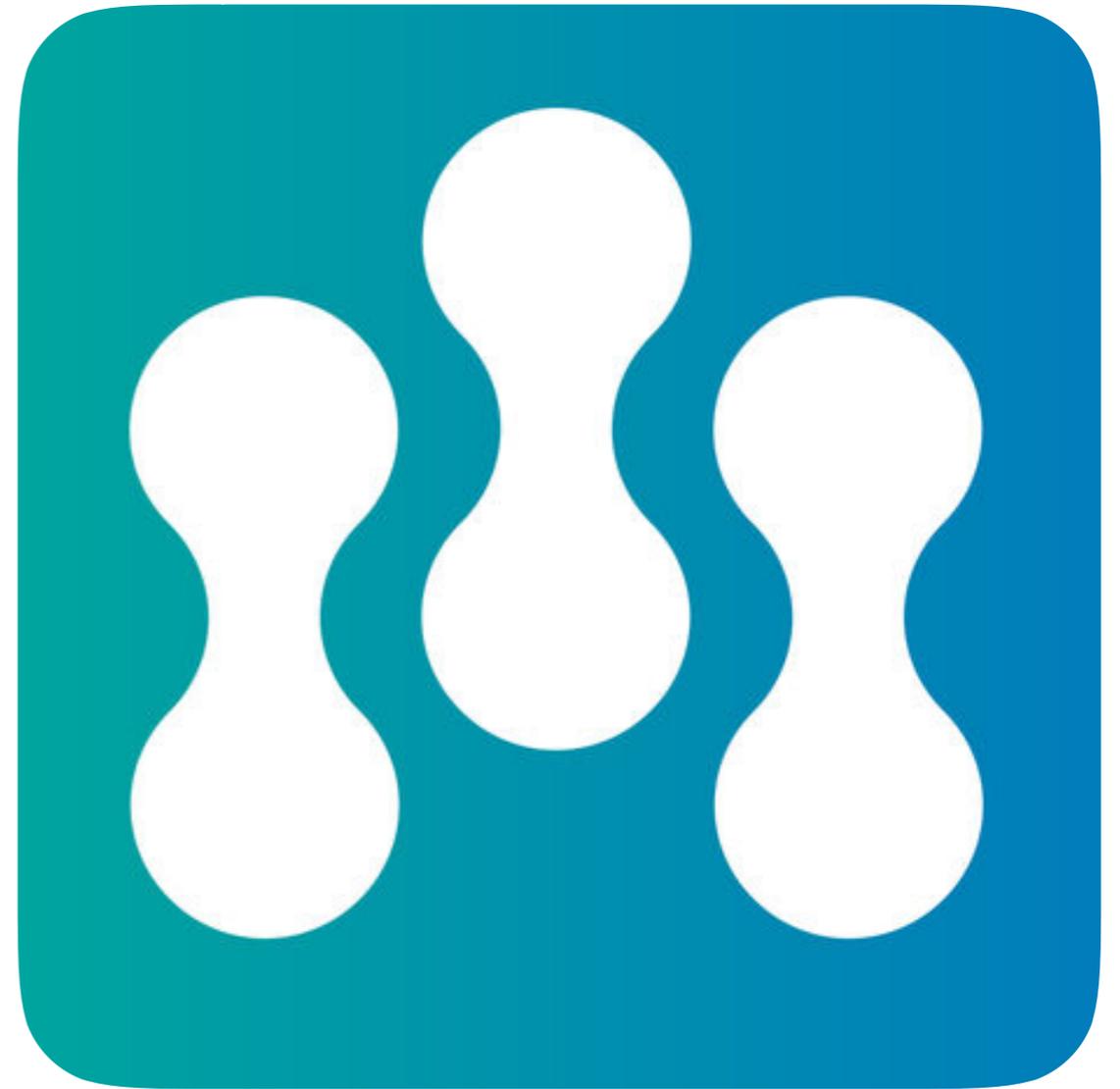


# Joint Replacement



Every year one million Americans have a hip or knee replaced. Some of the most pervasive problems are the result of patients not doing their rehab exercises. They don't exercise because it hurts, and it hurts because they don't exercise! Orthopedic surgeons have been wanting an app that will provide them with patients' rehab data.

# ZB mymobility (Zimmer Biomet; free)



Zimmer Biomet is one of the top manufacturers of reconstructive products, and they teamed with Apple to develop the app “**mymobility.**” The app enables surgeons to better determine how well patients follow directions before and after joint replacement and to analyze potential setbacks. The app includes educational resources and exercise videos. It even has a way for a patient to contact his surgeon and care team to answer questions. Participants who don't own an Apple Watch are given one for the duration of their rehab. In short, it holds the patient accountable for his own recovery in a way that was not previously possible through traditional in-person visits.

<https://www.zimmerbiomet.com>

<https://finance.yahoo.com/news/hip-knee-surgeons-apple-watch-140335604.html>

<https://www.cnbc.com/2018/10/15/apple-and-zimmer-biomet-bring-apple-watch-to-people-getting-new-knees.html?source=yahoo%7Cfinance%7Cheadline%7Cstory%7C&par=yahoo&yptr=yahoo>

## ZB mymobility app displays

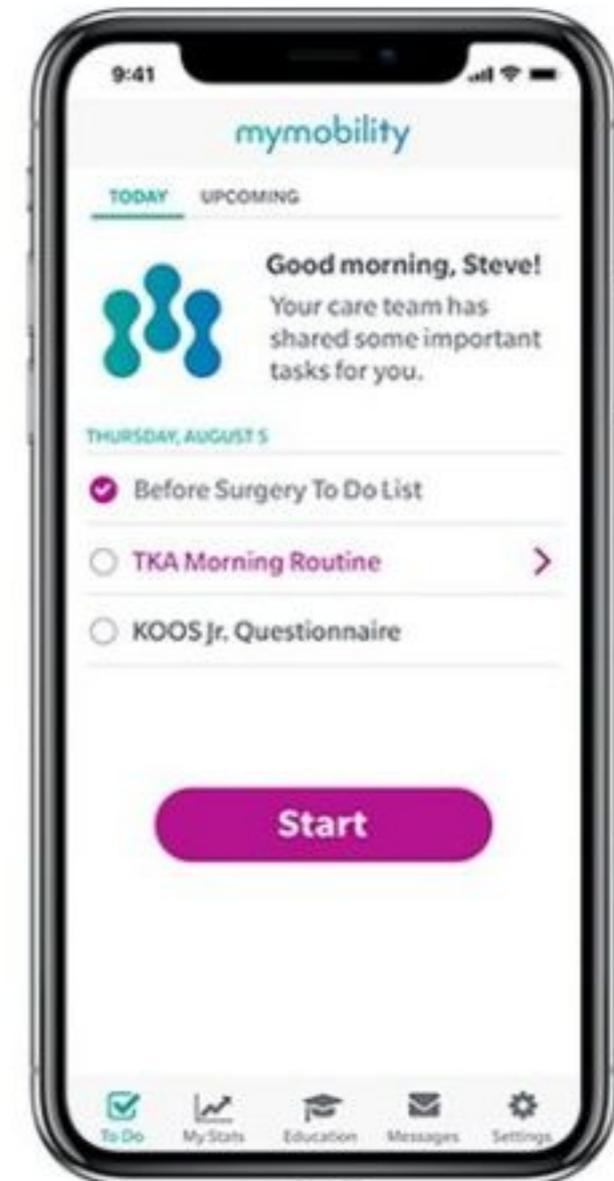
1) Install the App



2) Get Convenient Reminders



3) Complete Tasks



<https://www.zimmerbiomet.com>

<https://finance.yahoo.com/news/hip-knee-surgeons-apple-watch-140335604.html>

<https://www.cnbc.com/2018/10/15/apple-and-zimmer-biomet-bring-apple-watch-to-people-getting-new-knees.html?source=yahoo%7Cfinance%7Cheadline%7Cstory%7C&par=yahoo&yptr=yahoo>

<https://ryortho.com/breaking/early-reviews-of-zimmer-biometapples-mymobility-app/>

# ZB mymobility app displays

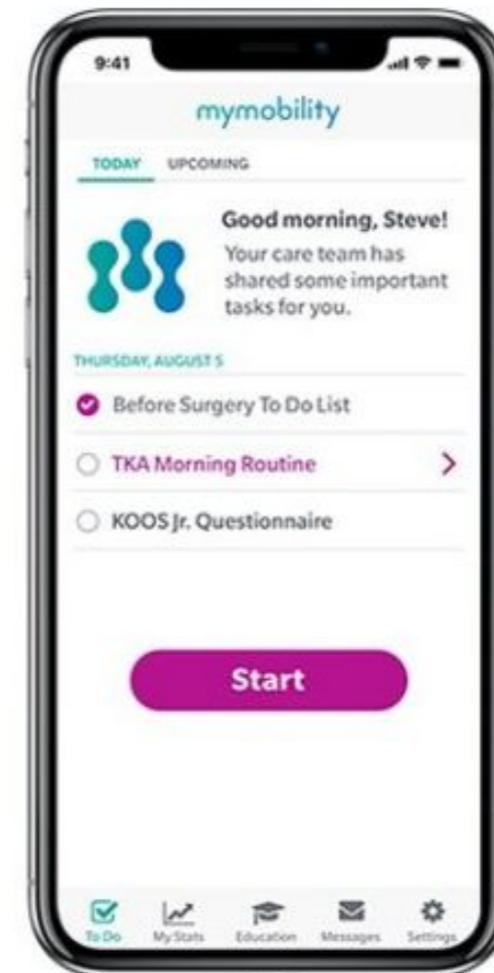
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Accelerometers in the Apple Watch record a patient's movements and report the data to the surgeon.

One of the first surgeons to prescribe **mymobility** said, “. . . with just a few patients enrolled so far, people are definitely excited.” At the same time, Zimmer Biomet is collecting and analyzing data, then tweaking their recommendations on what patients should and should not do during their rehab.

<https://www.zimmerbiomet.com>

<https://finance.yahoo.com/news/hip-knee-surgeons-apple-watch-140335604.html>

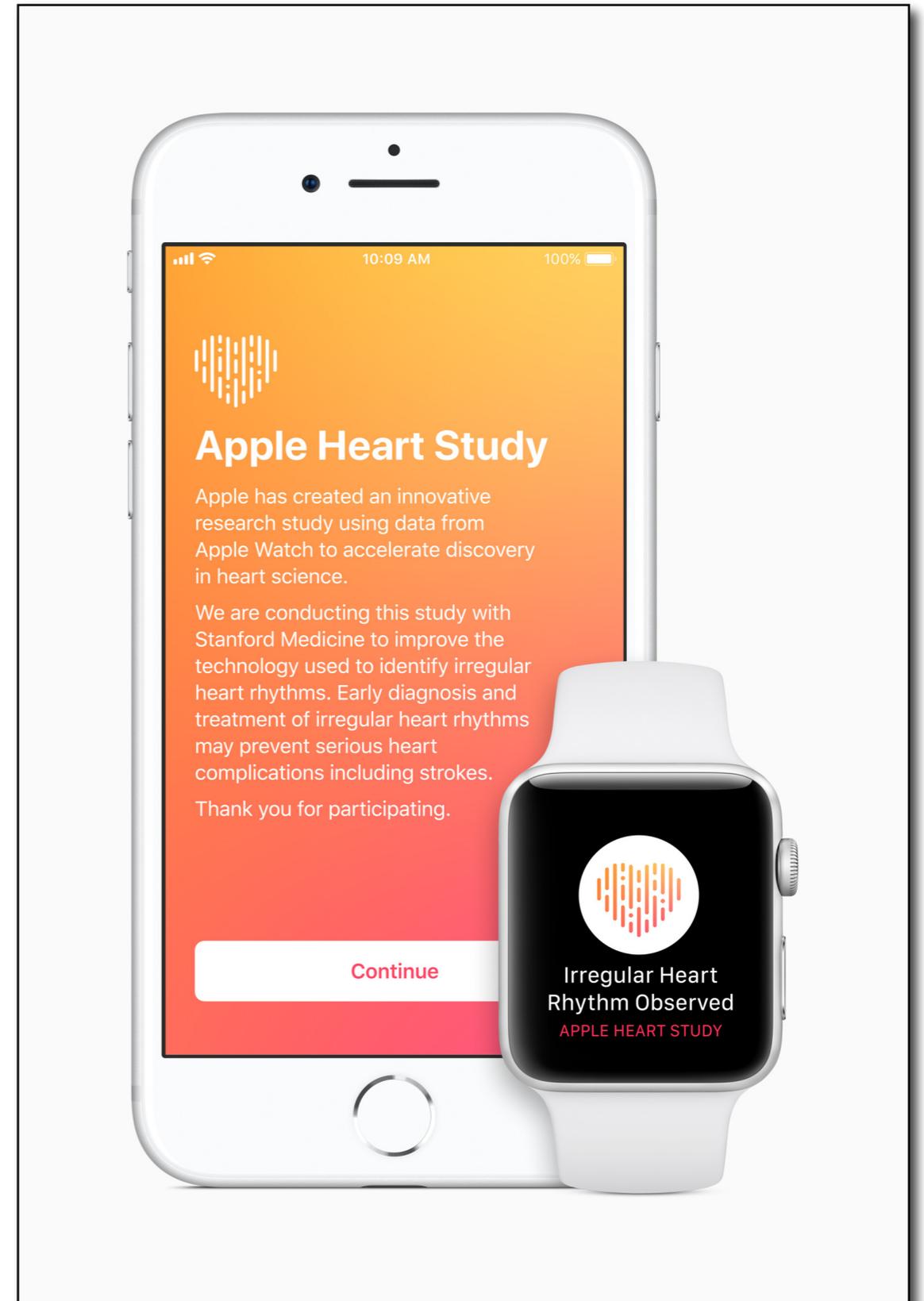
[https://www.cnbc.com/2018/10/15/apple-and-zimmer-biomet-bring-apple-watch-to-people-getting-new-knees.html?\\_source=yahoo%7Cfinance%7Cheadline%7Cstory%7C&par=yahoo&yptr=yahoo](https://www.cnbc.com/2018/10/15/apple-and-zimmer-biomet-bring-apple-watch-to-people-getting-new-knees.html?_source=yahoo%7Cfinance%7Cheadline%7Cstory%7C&par=yahoo&yptr=yahoo)

<https://ryortho.com/breaking/early-reviews-of-zimmer-biometapples-mymobility-app/>

# Heart Health

Since Version 3 the Apple Watch has had the ability to take heart measurements during workouts, in recovery, and at rest, which was simple enough.

Apple took this a step further, partnering with Stanford University to launch the Apple Heart Study. Apple sent emails to Apple Watch users asking for volunteers and provided an easy way to sign up online. They got a staggering response—over 419,000—making it the largest investigation of its kind ever. (A similar Swedish study on heart arrhythmias could recruit only 25,000 volunteers.) The FDA announced in September it had cleared *two mobile medical apps* designed for use with the Apple Watch and the release of WatchOS version 5.1.2.





## Apple Watch warning of possible AFib

The first feature appeared on the Apple Watch 3—the ability to detect a spike in your heart rate that typically accompanies atrial fibrillation (A-Fib). Many patients don't know they have the condition, since it rarely produces symptoms. If a patient's heart rate is above 120 or below 40 while they have been inactive for 10 minutes, the user will receive a notification.

<https://www.apple.com/healthcare/apple-watch/>

<https://www.engadget.com/2018/11/02/stanford-apple-watch-heart-rate-study/?yptr=yahoo>

<https://finance.yahoo.com/news/apple-masses-biggest-heart-study-234800732.html>

## Apple Watch ECG



The second app is available only on the Apple Watch 4. It creates a scaled-down electrocardiogram to detect a wider range of irregular heart rhythms. It should be made clear that the Apple Watch's ECG function works in tandem with an iPhone. The actual readout appears in the phone's Health app, not on the watch itself. All the articles I've read say the ECG function is easy to use and performs well.

Also, neither of the heart-related apps is intended to replace a visit to the doctor and a typical ten-point ECG, but they can provide a starting point for a consultation with your physician.

<https://www.apple.com/healthcare/apple-watch/>

<https://www.engadget.com/2018/11/02/stanford-apple-watch-heart-rate-study/?yptr=yahoo>

<https://finance.yahoo.com/news/apple-masses-biggest-heart-study-234800732.html>

# More info on Apple Watch and Heart Health

If you want to peruse this topic more, here are some web sites that have good descriptions of what Apple is doing in the area of Heart Health.

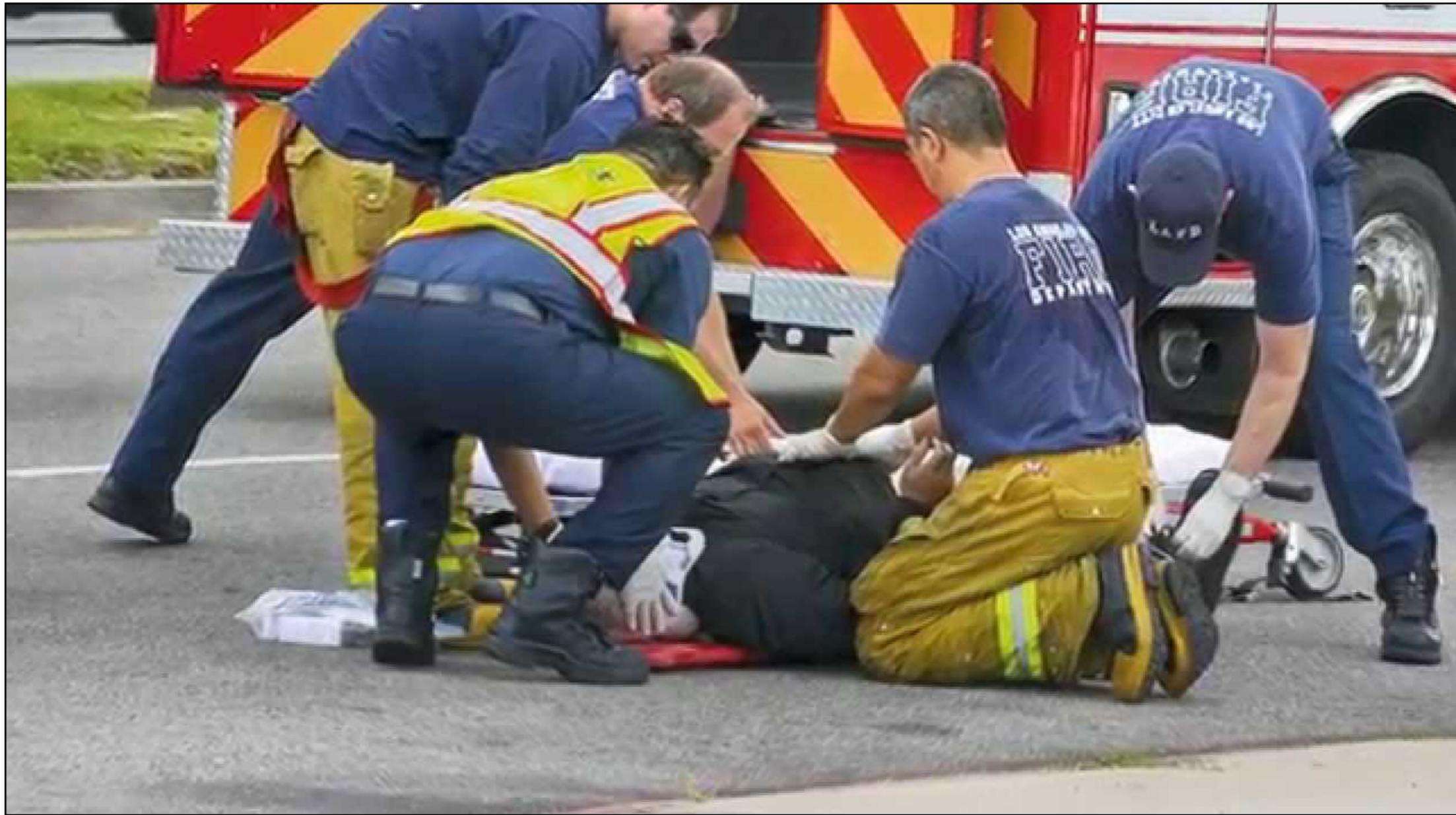
**Ars Technica:** [A look at the Apple Watch's ECG, from someone who needs it](#)

**MacTrast:** [How to Improve Your Heart Rate Readings on the Apple Watch Series 4 Using the Digital Crown](#)

**Time Magazine:** [An Inside Look at Apple's Biggest Step Yet in Health Care](#)

**Engadget video:** [Apple Watch 4's ECG feature is rolling out today \(Dec. 6\)](#)

# Emergency Medical Information



If you're in an accident or have a heart attack or stroke, providing medical staff with your medical information can cut minutes off the time required for the care you need. It can make all the difference in the kind of transportation you use to leave the hospital!

# ICE\* Medical Standard iPhone app (free)

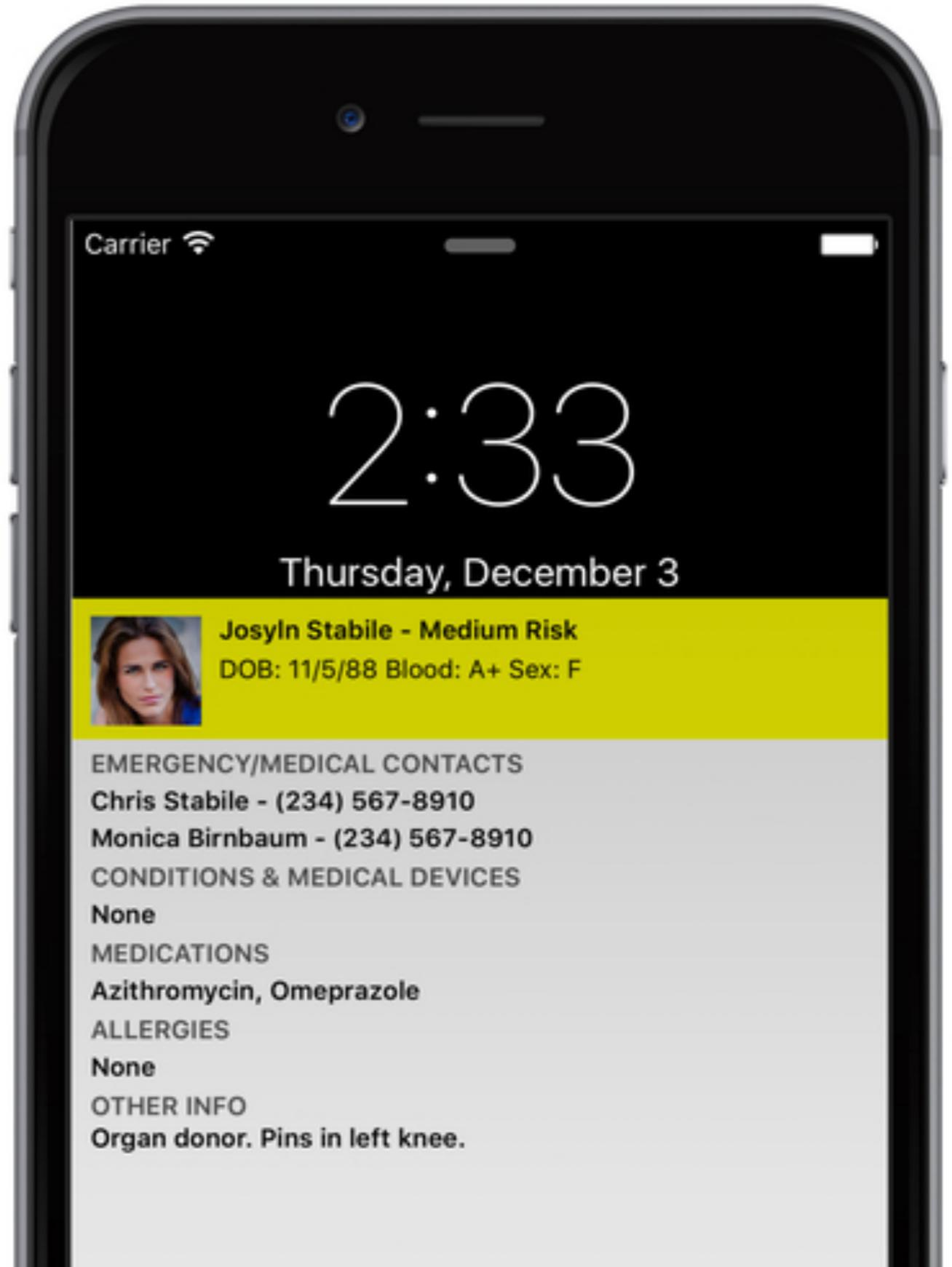


\*(In Case of Emergency)

ICE Medical Standard App lets you set your Emergency Medical Information as your iPhone's lock screen image. If you are in an accident, first responders and emergency room staff can view your medical information just by turning on your phone without having to unlock it.

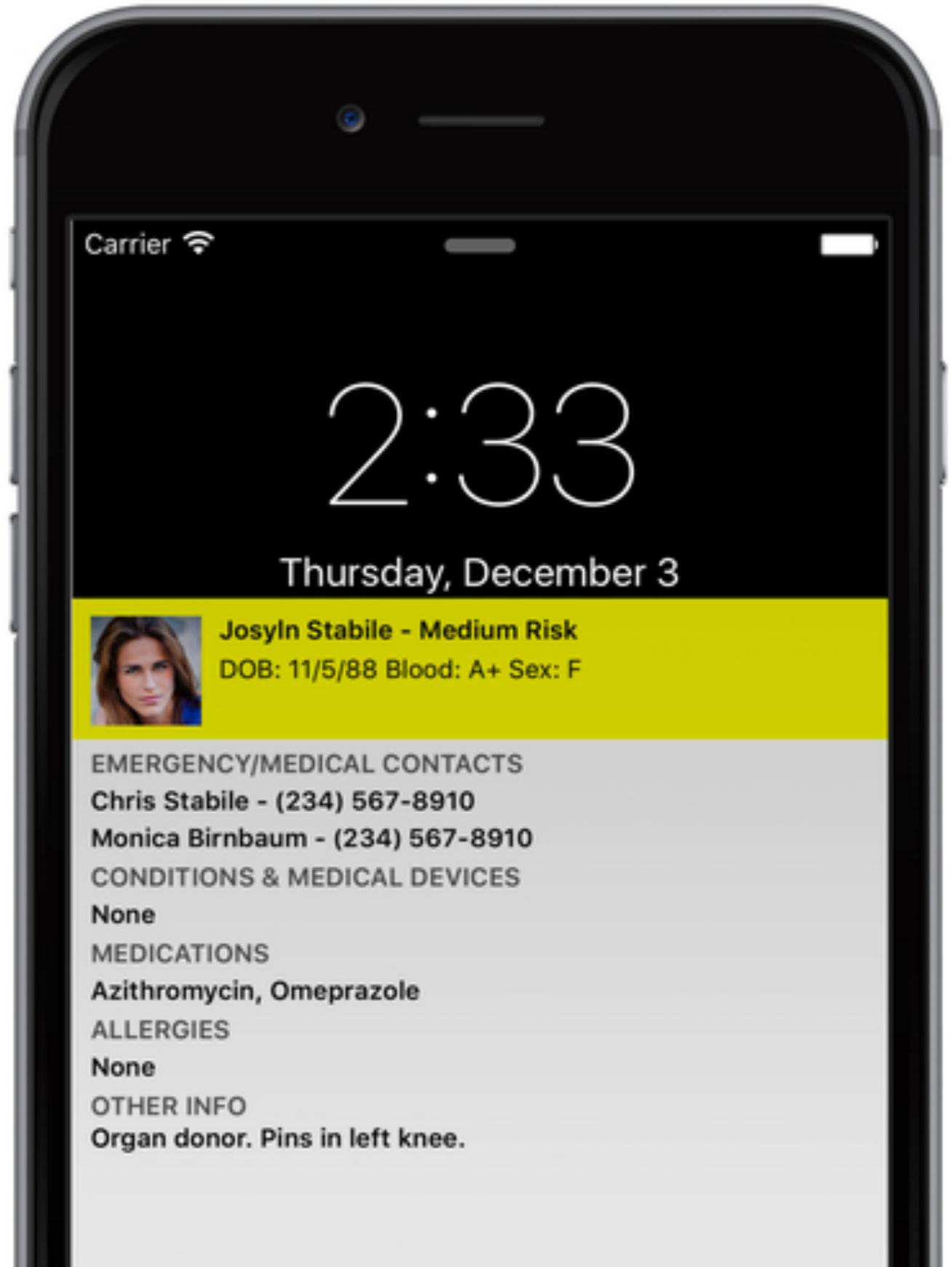
# Examples of what appears on your lock screen:

- Color-coded risk levels
- Emergency contact
- Health conditions
- Medications
- Allergies
- Other conditions



# Emergency Medical Information

Examples of medical information you would want an EMT to know include: color-coded medical risk (green, yellow, red); emergency contact; your health conditions (e.g., heart disease, diabetes, hypertension, etc.); medications; allergies; other pertinent information, such as surgeries you've had, joint replacements, coronary stents, whether you are an organ donor, etc.





## Suite of apps

WebMD is a company that created a suite of iPhone apps all pertaining to health. They are quick to tell you their apps not being a substitute for a physician. The apps can, however, help you identify your symptoms so that you can be prepared for talking with your doctor about your symptoms.

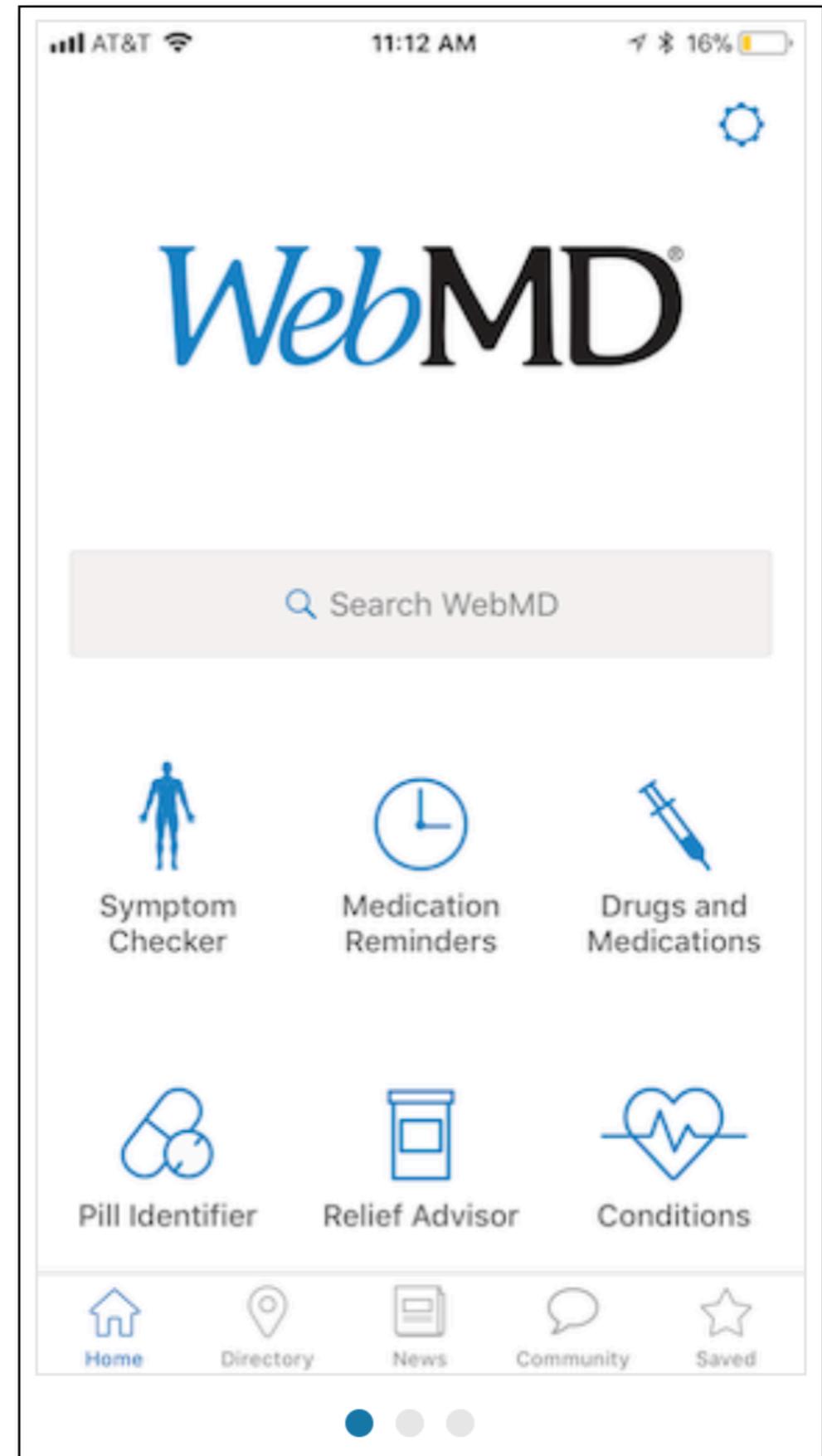
# WebMD app

- Research conditions
- Symptom checker
- Treatment information
- First Aid guidance
- Local health listings
- Health news

The app has several functions. You can set it to remind you to take your meds. It can help you identify a pill or capsule.

The most interesting function is the Symptom Checker. It asks you for your age and gender, your most prominent symptom, and what medications you currently take. It will come up with several possible diagnoses. You pick one, and it will give you information about additional symptoms, treatments, risk factors, how it is diagnosed, and if you should see a doctor right away. <https://www.webmd.com/mobile>

<https://itunes.apple.com/us/app/webmd/id295076329>



# WebMDRx

Free service that helps you  
save money on your  
prescription medications



**WebMDRx** is another app. It does price comparisons on prescription medications. The app searches over 60,000 pharmacies nationwide.

<https://www.webmd.com/mobile>

<https://itunes.apple.com/us/app/webmdrx-prescription-drug-savings/id1115280779>

# WebMD Allergy

- Allergy forecasts
- Prepare symptom reports for your doctor



**WebMD Allergy** gives you personalized allergy and weather forecasts along with doctor-approved tips you can customize for your specific allergies. You can track how you feel, record symptoms and treatments, and add notes in an allergy tracker and use those notes for a report for your doctor.

<https://www.webmd.com/mobile>

<https://itunes.apple.com/us/app/webmd-allergy/id588509171>



## Other WebMD apps

- WebMD Pregnancy
- WebMD Baby
- WebMD Magazine

WebMD has several other health related apps including **WebMD Pregnancy**, **WebMD Baby**, and **WebMD Magazine**.

<https://www.webmd.com/mobile>

<https://itunes.apple.com/us/app/webmd/id295076329#see-all/more-by-this-developer>

PHARMACY DIAGNOSIS DISEASE DIET HEALTHY DEVICE EXAMINATION  
PROFESSIONAL THERAPY CLINICAL HOSPITAL MEDICAL CARE HELP  
PROTECTION  
TREATMENT  
PRESCRIPTION  
PULSE PERSON SPECIALIST PHYSICIAN  
TEST DOCTOR HEALTH HEALTHCARE CLINIC PHARMACEUTICAL  
DIAGNOSTIC PATIENT STETHOSCOPE DRUG  
INSURANCE ILLNESS MEDICATION  
PREVENTION EQUIPMENT TABLET INSTRUMENT

# PREVENTIVE MEDICINE



A recent study by a large British insurance company concluded that Apple Watches and certain apps can be used as incentives to get their customers to take better care of themselves. Healthcare costs are skyrocketing, and insurance companies are doing everything they can to reduce the payouts they have to make.



## “Snapshot” from Progressive Auto Insurance

An insurance executive in Britain came up with the idea from the Snapshot device promoted by Progressive Auto Insurance. You connect Snapshot to your car’s onboard computer, and it monitors your driving habits. Then it rats on you, and Progressive adjusts your rates accordingly.



Good health practices = Rewards!



A leader in this approach is the British insurance company called Vitality. Vitality commissioned an experiment among its customers, and the results suggest people will respond positively to tangible incentives for practicing good health measures. Vitality rewards subscribers who look after their health. Unfortunately so far, the approach has not caught on among US health insurers!

For example, reaching a certain step-count target might get you a Starbucks gift card or a discount to a gym membership. The biggest reaction among customers resulted from the offer of an Apple Watch.

Participants in the Vitality study paid an upfront sum — £99 (\$127) for an Apple Watch 4 or £9 (\$12) for an Apple Watch 3, then a monthly payment of up to £12.50 (\$16), depending on how much they exercised. For those logging the most activity, there was no monthly charge!

At first the incentive was in the form of gift cards and discounts. But the study revealed that the biggest motivator was customers' fear of having their Apple Watches taken away!

# Health Care “Robots”



The term “robot” is not accurate in this usage, but science fiction has left its mark on the medical field as well.

### Sheldon’s “Virtual Presence” Device



The device I’m going to describe is more like what we saw on “Big Bang Theory” when Sheldon Cooper made a Virtual Presence Device so he wouldn’t have to go near anybody and be exposed to germs. That was the episode in which Steve Wozniak made a cameo appearance.

## “RP-VITA” from iRobot and InTouch Health



Imagine you had a stroke and you had unusual complications. Would you rather be seen by an internationally recognized expert in strokes or by the resident who happened to be next on the list for a case assignment? The **RP-VITA** enables patients to see specialists and have access to more sophisticated treatments.

The **RP-VITA** was developed by **iRobot** and **InTouch Health**. It allows doctors to interact with patients at their bedsides even when they are separated by thousands of miles.

## “RP-VITA” from iRobot and InTouch Health

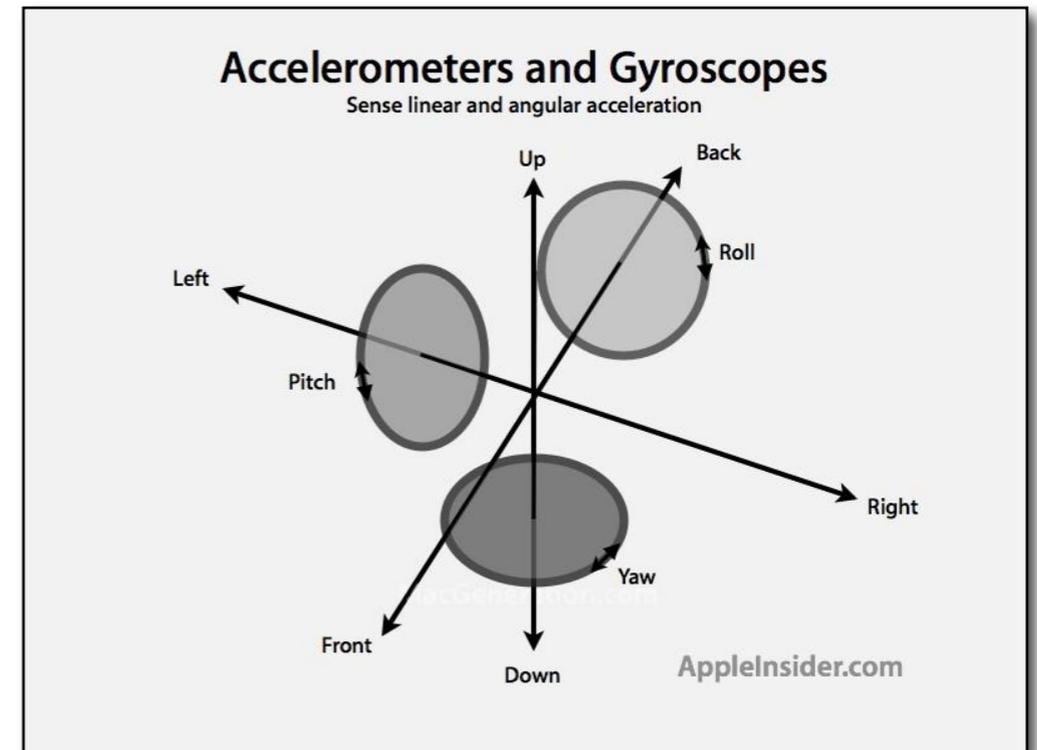


The **RP-VITA** rolls around hospitals controlled by an iPad. It not only interacts with patients, it also enables consultations among doctors. It transmits data and test results to specialists who can then reply with diagnoses and recommendations for treatment.



The Apple Watch 4 has a gyroscope and an accelerometer. These tiny mechanisms give the device the ability to detect when the wearer has fallen.

# Apple Watch Fall Detection:



The new Apple Watch has custom algorithms to more accurately sense when a fall has taken place. With this new feature, if it senses the user is immobilized after a fall, it gives the option say you are OK or if you want to call emergency services. If there is no activity for 60 seconds, it will automatically call 911 and send your location to the contacts of your choice.

# One more thing:

If you want to get serious about using your iPhone or Apple Watch to help you take better care of yourself, then familiarize yourself with the iPhone app called **HEALTH**. This app is from Apple, and it acts as a central collection point for data from many of the health related apps available from the App Store, including third party apps.



“Health”

## Health app

The Health app groups general health into four categories: Activity, Sleep, Mindfulness, and Nutrition.

Under *Activity*, the Health app data from your iPhone, such as the number of steps you've taken and the distance you've walked, and combines the data with metrics from third-party fitness apps. It also records kinds of movement, such as how often you stand, how much you exercise, and calorie burn.

The *Sleep* category helps you to go to bed and get up at the same time everyday and to get an adequate amount of rest. (rf "White Noise" app)

The *Mindfulness* category is designed to remind you to occasionally find a moment to take a few deep breaths and quiet your mind to relieve stress and improve your overall health.

(California?)

The *Nutrition* category helps you if you're counting carbs or calories, reducing caffeine intake, or monitoring a lot of other important nutritional metrics.

# “Health” categories



# “White Noise”



This is a last minute addition I added. I like to sleep with a fan on to produce what is known as “white noise.” White Noise cancels out sounds that keep us from getting deep sleep. The White Noise app, however, is more convenient for travel than a fan. I connect my phone to the charger on the night stand. Then I choose the sound I want to play all night while it recharges. You can choose babbling brooks, rain, a cat purring, and so on. I use one called “air conditioner,” since it’s the sound closest to a running fan. The app can also display a digital clock. I set mine to a dark blue so it’s not bright. If I wake up in the middle of the night, I just glance at my phone without having to press the home button.



Apple has committed itself to the health field and has opened the door for developers to create more and better apps. I enjoy keeping an eye out for the latest technology, and as a new product comes along I make a note of it, and that is how this presentation came about. Given the advances in technology and the medical community's increasing interest in Apple Watches and iPhones, this presentation could go on indefinitely, so maybe in another year or so I'll do Part 3.