

Mobile Health: Concepts & Thoughts

Robert Napoli

Chief Information Officer

Planned Parenthood of the Great Northwest and the
Hawaiian Islands



OVERVIEW

- a. What is Mobile Health?
- b. Mobile Health Today
 - Industry
 - Users & Organizations
 - Types of Mobile Health apps
- c. Challenges
- d. Lessons Learned
- e. Questions



DEFINITION

Mobile Healthcare, or mHealth, can be broadly defined as the “delivery of healthcare services via mobile communication devices.”

More specifically, mHealth refers to the delivery, facilitation and communication of health-related information via mobile telecommunication and multimedia technologies including cell phones, tablet devices, PDAs and wireless infrastructure.



[2011 mHealth Report: Mobile Health Technology Trends and Innovations](#); mobileStorm, 2011

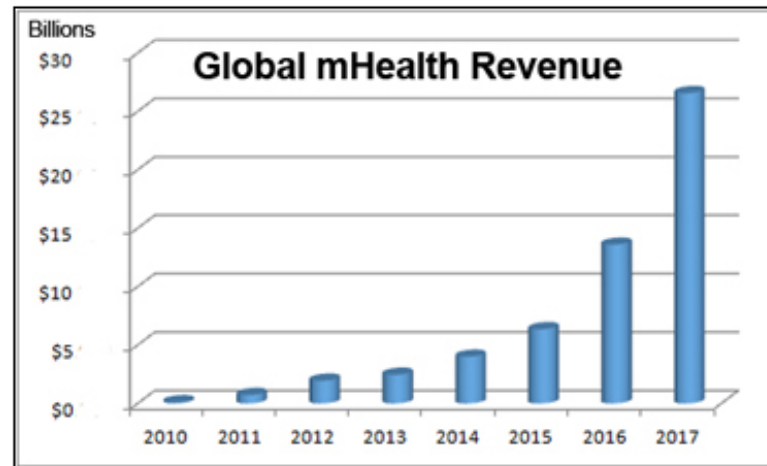
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MARKET REVENUE

Global revenue projections for mHealth applications:

2010:	\$104 million
2011:	\$718 million
2012:	\$1.95 billion
2013:	\$2.453 billion
2014:	\$4.0 billion
2015:	\$6.353 billion
2016:	\$13.587 billion
2017:	\$26.560 billion



Alternative estimates/projections include \$49.12 billion by 2020



The bulk of this is coming from development

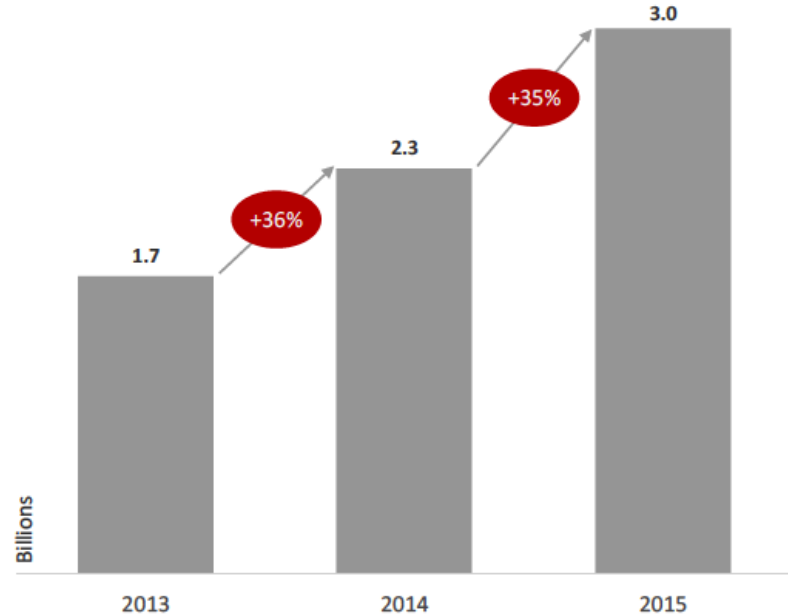
[Mobile Health Market Report 2011-2016](#); research2guidance, January 25, 2012
[mHealth App Developer Economics 2014](#); research2guidance, May 6, 2014

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MOBILE DEVICE DEMAND

- The demand for mHealth apps is increasing every year
- Since 2013, seeing 35% annual increase in downloads
- mHealth market has 45,000 publishers
- 165,000 apps now available in the Apple iTunes and Android app store
- In 2015, the iTunes store alone, had more than 90,000 apps; double the number from 2013
- Health & Fitness category includes slightly more apps (56%) compared to medical category (44%) within app store

total downloads of mHealth apps (billions)



[mHealth App Developer Economics 2015](#); research2guidance, November 16, 2015

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MOBILE HEALTH APP POPULATION

- 64% of American adults own a smartphone of some kind
- 62% of smartphone owners have used their phone in the past year to research information about a health condition
- More than half of patients use a healthcare mobile app; 59% of them do so to prepare for a MD visit
- Of those using mobile apps 55%, do so to remind them to take their medication
- 15% of Americans own a Fitbit or other activity tracker



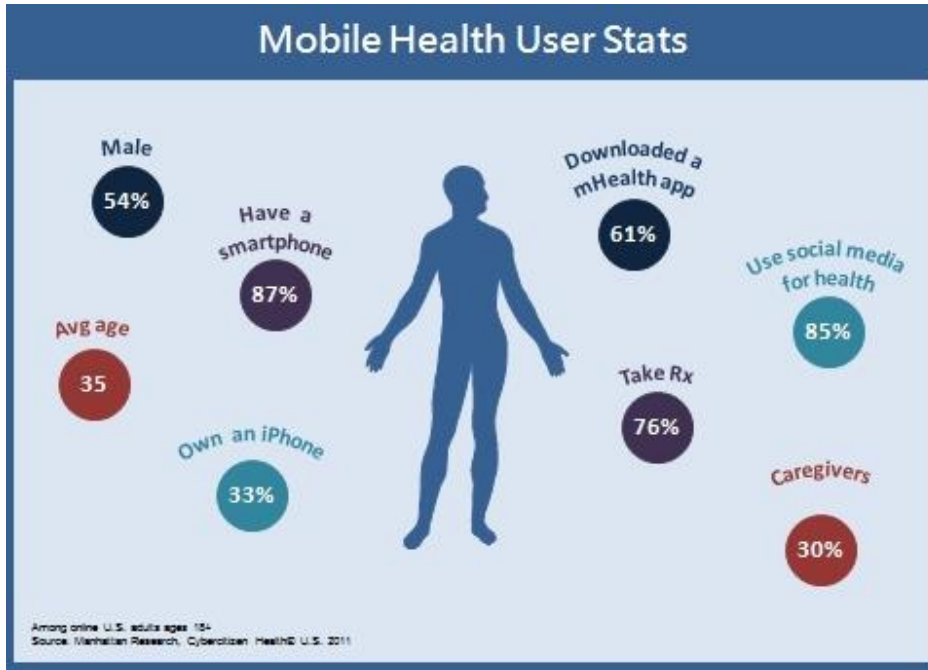
<http://www.pewinternet.org/2015/04/01/us-smartphone-use-in-2015/>

http://www.cbinet.com/sites/default/files/files/Taylor_Dave_pres%283%29.pdf

<http://www.healthline.com/health-news/consumers-concerned-about-privacy-personal-health-data-wearabl>

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MOBILE HEALTH USER STATISTICS



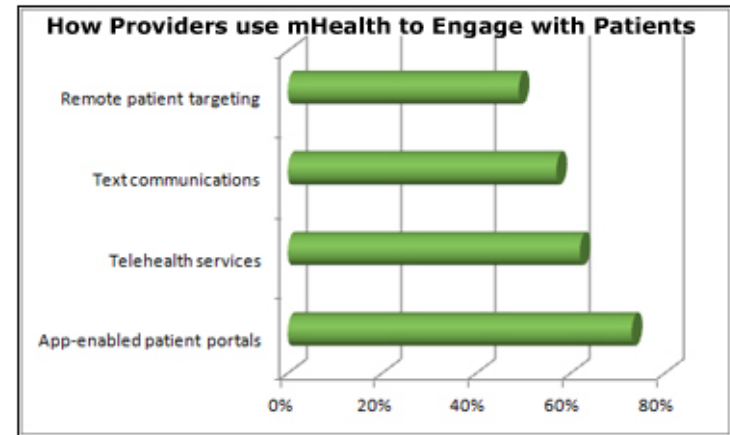
“A typical mhealth user is a 35 year old man, using a smartphone to download an app, participates in social media for health, and takes prescription drugs.”

[Mobile Health Trends for 2012](#); Manhattan Research

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MOBILE HEALTH & U.S. HEALTHCARE ORGANIZATIONS

- 90% of healthcare providers maintained mobile devices to engage with patients
- Providers used a variety of means to engage with patients:
 - app patient portals (73%)
 - telehealth services (62%)
 - text communications (57%)



- 36% of respondents believe the use of app-enabled patient portals is the most effective tool in patient engagement
- 30% are currently developing an app
- 67% reported that partial portions of mobile device information is uploaded into the org's EHR; Only 8% reported that all mobile device data is uploaded into their EHR
- 51% identify lack of funding as the top barrier for the effective use of mobile technology

[2015 HIMSS Mobile Technology Survey; HIMSS, April 14, 2015](#); Pew Press Release, May 11, 2012

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MOBILE HEALTH MARKET SEGMENTS

1. Clinical assistance apps
2. Monitoring apps
3. Reminder apps
4. Reference/database apps
5. Healthy life apps
6. Efficiency/communication apps
7. General facility information apps
8. Patient portal apps
9. Specialty apps
10. “Super apps”

<http://blog.capterra.com/everything-need-know-mobile-health-apps/>



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CLINICAL ASSISTANCE APPS

Clinical assistance apps have various functions, such as allowing doctors to check EHRs or access lab results during an appointment.

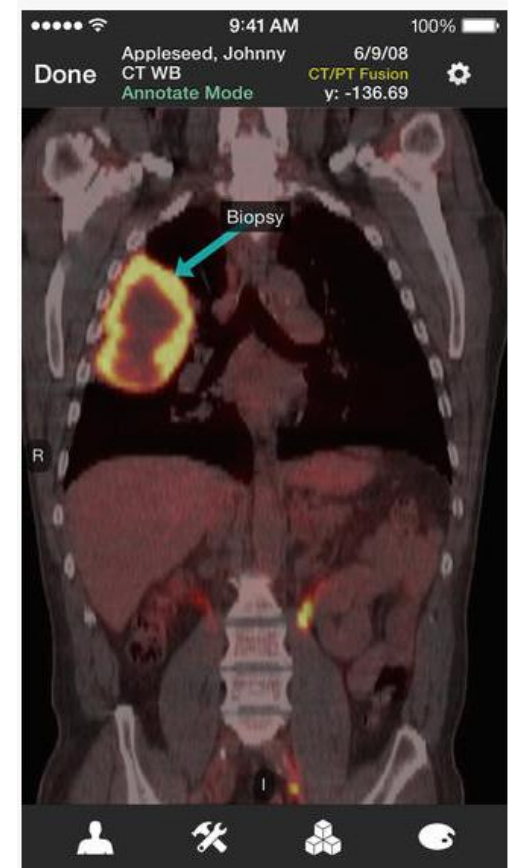
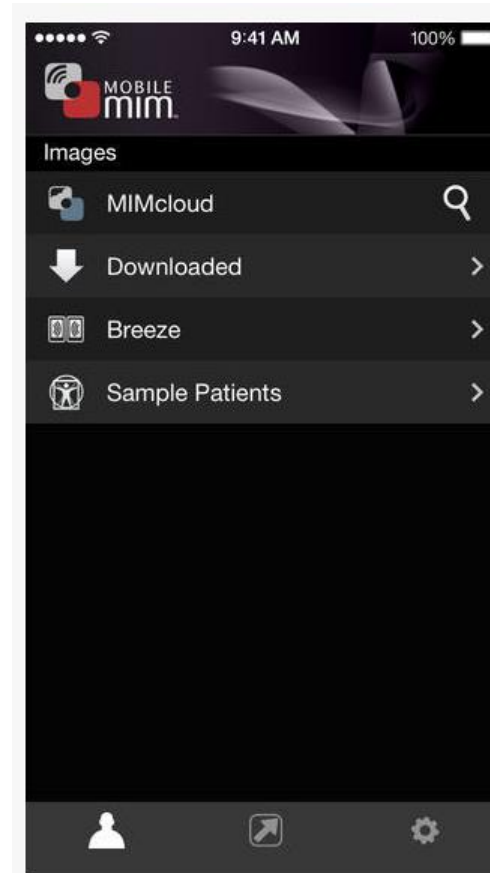
These apps may also allow for image viewing and patient education, so a doctor can use them during an appointment to illustrate the information he or she is giving to a patient.



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CLINICAL ASSISTANCE APPS

The **Mobile MIM** app is used for the viewing, registration, fusion, and/or display for diagnosis of medical images from the following modalities: SPECT, PET, CT, MRI, X-ray and Ultrasound.



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MONITORING APPS

Monitoring apps allow a doctor to keep an eye on the behavior or symptoms of a patient remotely.

- For example, a patient could use an app to take an EKG and then send the results to his or her doctor.
- Monitoring apps also give doctors telehealth capacities, an increasingly popular option right now.

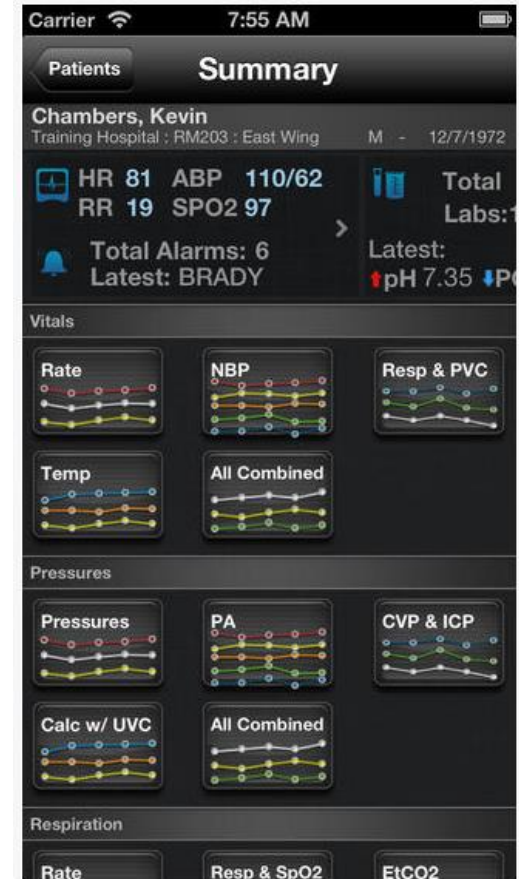
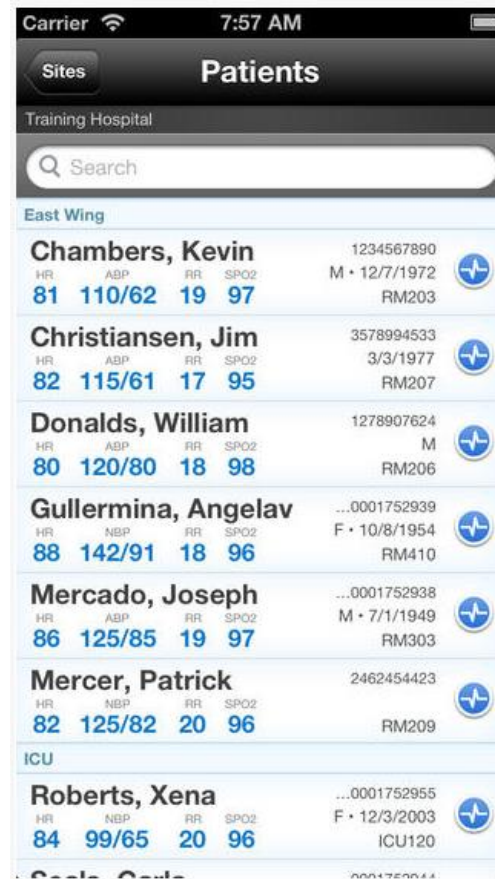


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MONITORING APPS

AirStrip is a Remote Patient Monitoring solution.

- With AirStrip, clinicians can check patients and review their vitals, cardiac waveforms, labs, medications, intakes and outputs, and allergies.

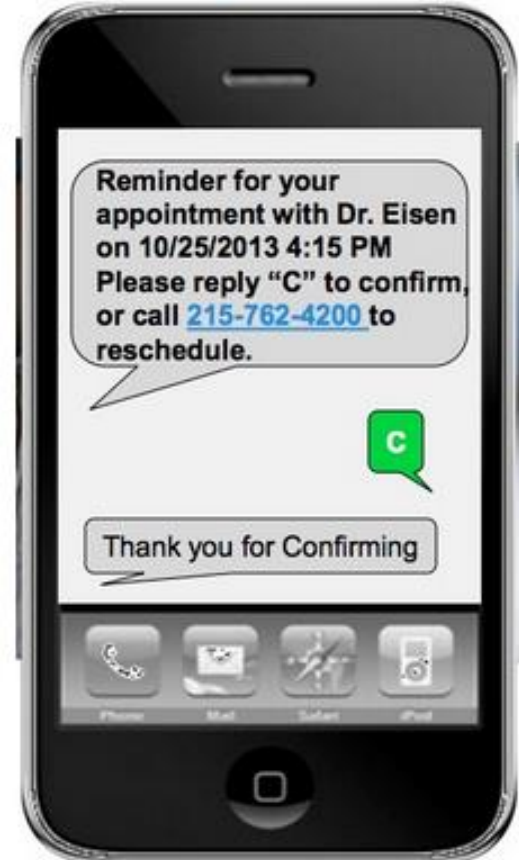


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REMINDER APPS

This is a basic kind of app that can be used as a way to remind patients of appointments or when to take medications.

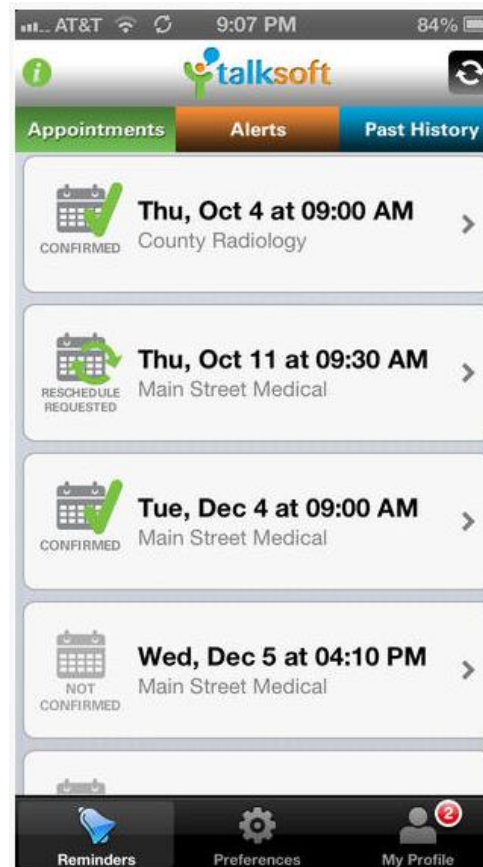
- Sometimes reminder apps come as part of an EHR package or as part of a larger app, but they are also available independently



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REMINDER APPS

Talksoft Connect allows patients to download, view details of, and confirm appointments they have with participating service providers.



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REFERENCE DATABASE APPS

Probably the oldest kind of app, the reference app allows doctors to look up drug dosages or symptoms.

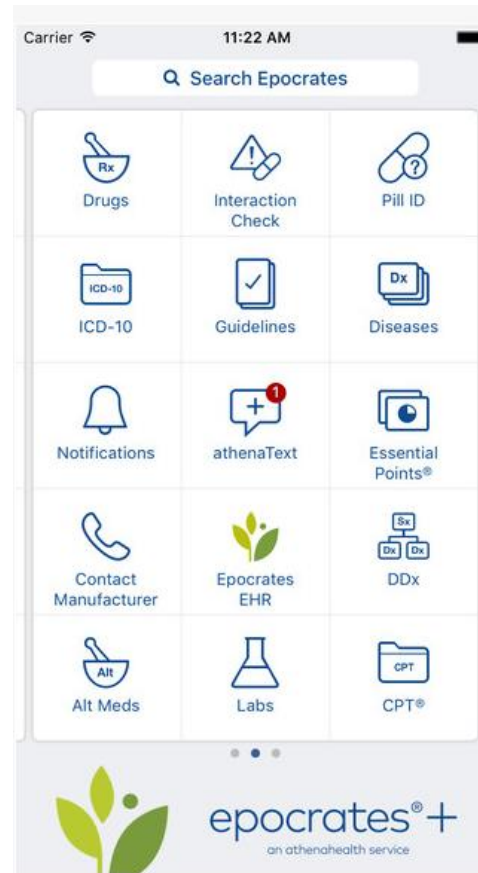
It is quickly replacing older databases, and taking the spot once held by large reference books



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REFERENCE DATABASE APPS

Epocrates provides drug prescribing and safety information for thousands of brand, generic and OTC drugs.



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HEALTHY LIFE APPS

A category that encompasses fitness and diet apps, as well as other types of apps, healthy life apps are largely used by patients rather than by doctors.

- They are probably the most popular mHealth apps, especially those focused on fitness.



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HEALTHY LIFE APPS

Fitbit is an app for tracking all-day activity, workouts, sleep and more.



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EFFICIENCY/COMMUNICATION APPS

These apps, which allow doctors to communicate within and between medical facilities, foster interoperability, collaboration, and, ultimately, better patient care.

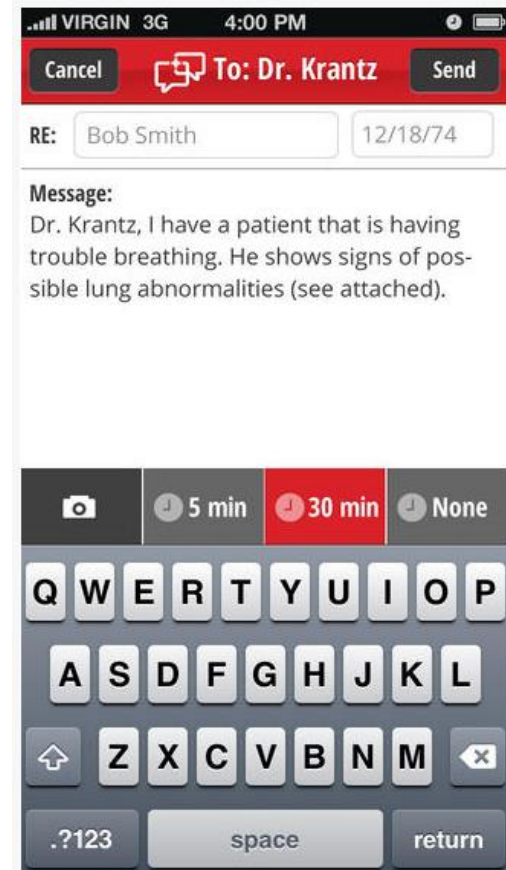
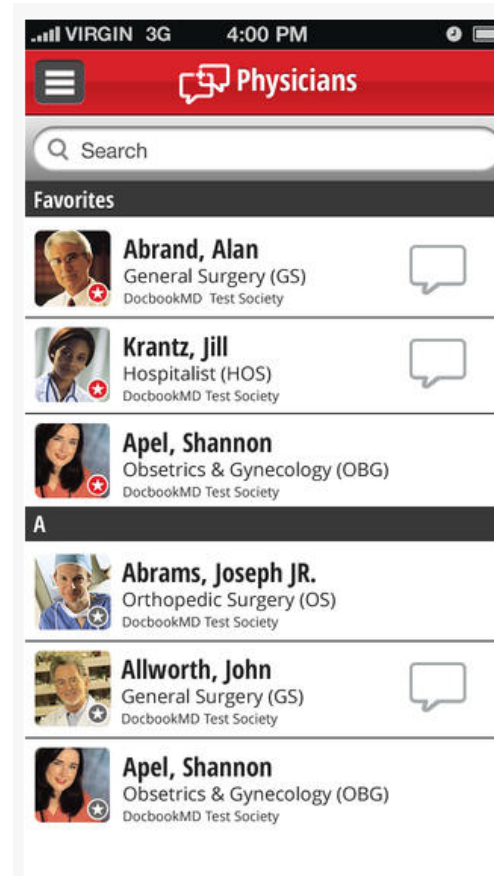
- For example, using a communication app allows a doctor to securely send information about a patient to a specialist at another facility.



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EFFICIENCY/COMMUNICATION APPS

DocbookMD is a data-sharing and communication tool for physicians and their team, who are members of an enterprise or a medical society that has contracted with DocbookMD.

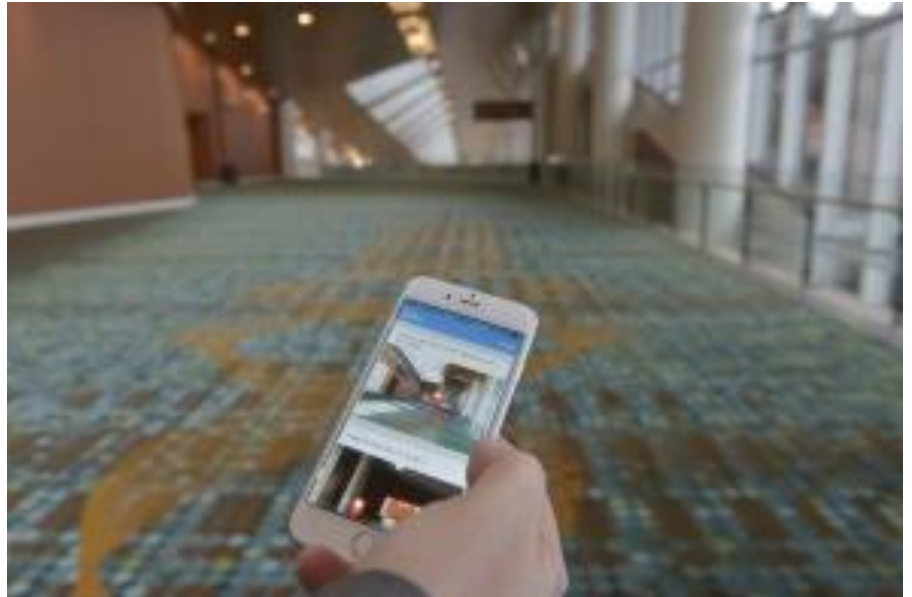


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GENERAL FACILITY INFORMATION APPS (Wayfinding)

These are apps developed by a particular practice, usually a hospital or large healthcare organization. General facility apps give patients and family members general information about the facility, the services it offers, and amenities it provides.

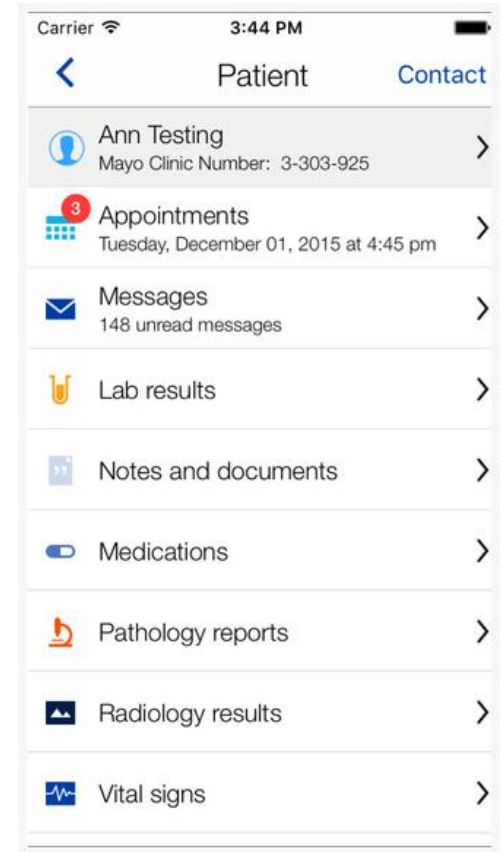
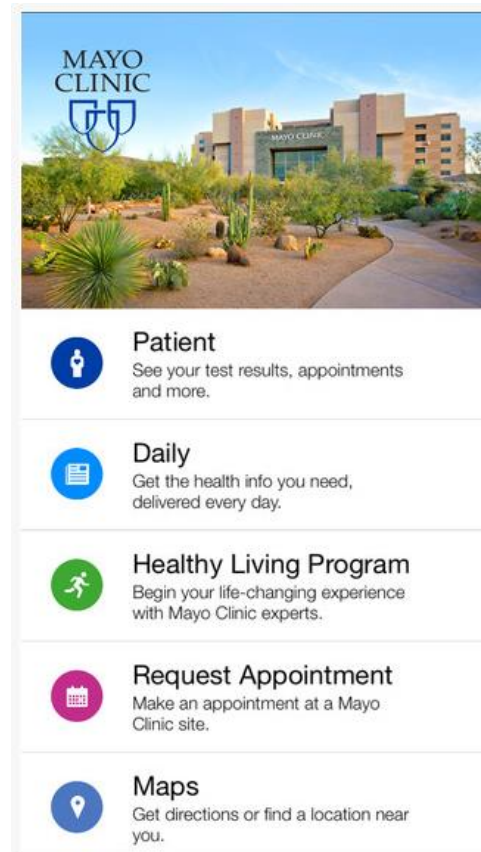
- An app could include maps of the hospital and surrounding neighborhood or lists of available doctors at the facility, among other things.
- Easiest way to offer a **branded app**



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GENERAL FACILITY INFORMATION APPS (Wayfinding)

The **Mayo Clinic** app allows patients to access their personal medical record, receive appointment reminders, or connect with their care team.



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PATIENT PORTAL APPS

An app which gives patients mobile access to their own electronic health records and allows for easier patient-doctor communication.

They usually come as part of an EMR software package.

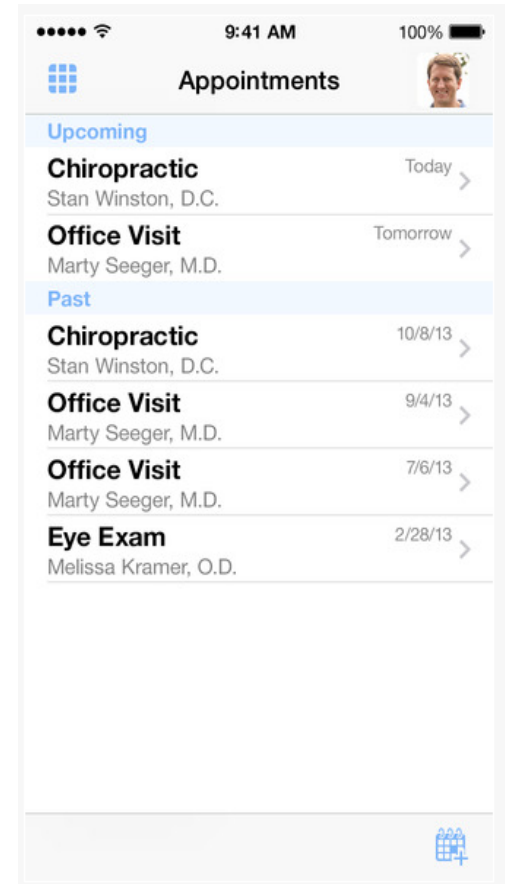


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PATIENT PORTAL APPS

MyChart (Epic):

- Use your existing MyChart account to manage your health information and communicate with your doctor on your mobile devices, including Apple Watch.

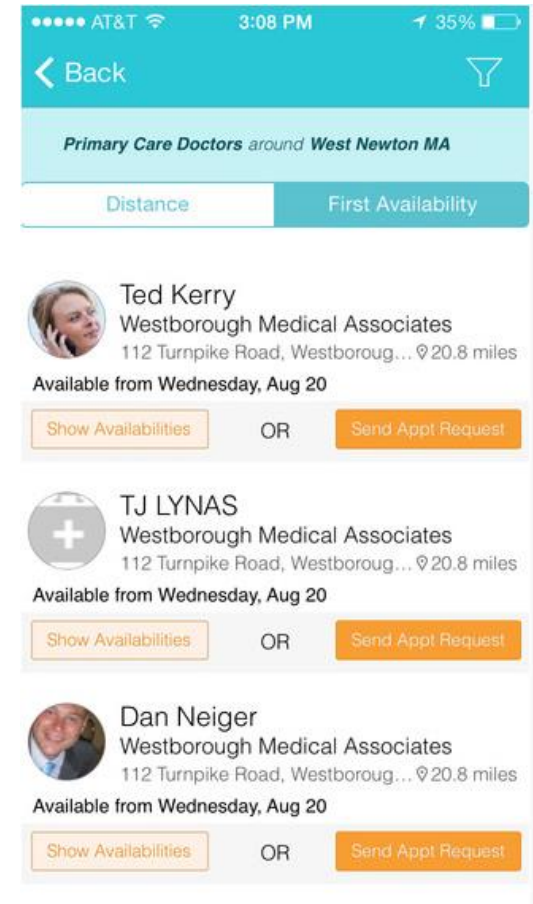
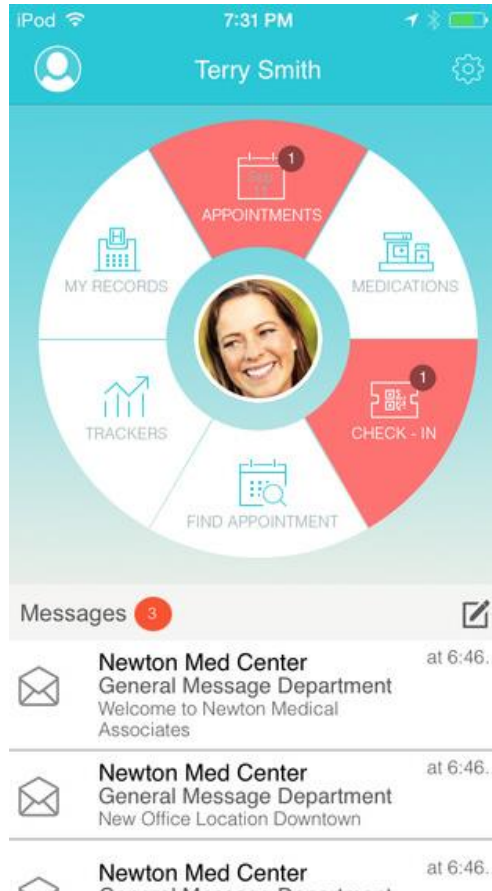


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PATIENT PORTAL APPS

Healow:

- Manage multiple provider accounts and patient portals with one app.
- Manage medical accounts of minor children and family members (with consent).

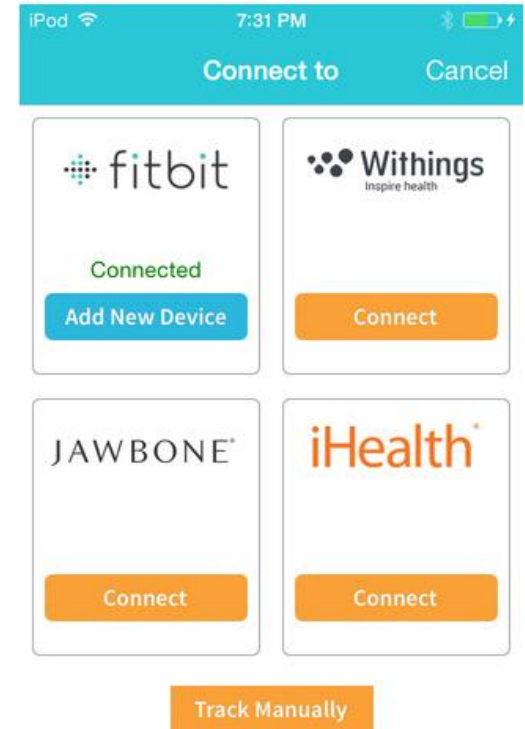
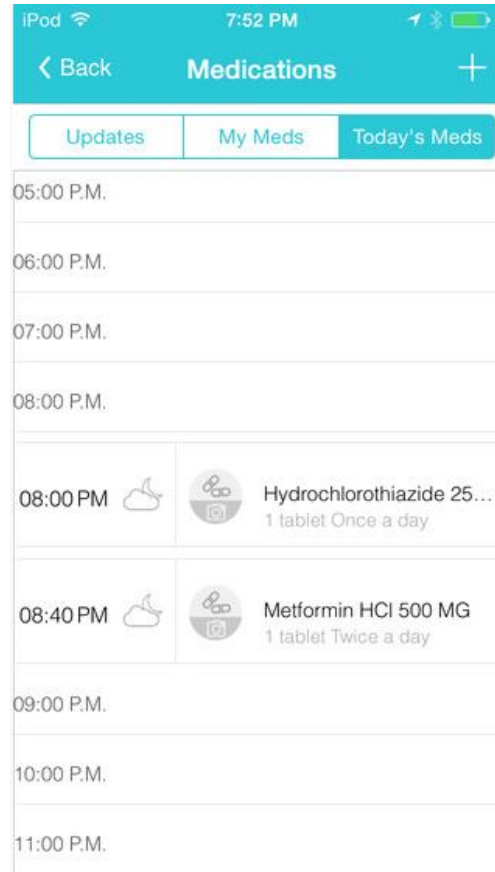


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PATIENT PORTAL APPS

Healow:

- Contains labs, imaging studies, and procedures, recent vital signs, allergies, medical problems, immunizations, and activity tracker.
- Automated reminders for upcoming appointments & easy check-in.



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SPECIALTY APPS

Aimed at specialists, they provide tools like vision screening tests or anatomical models, for instance.



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SPECIALTY APPS

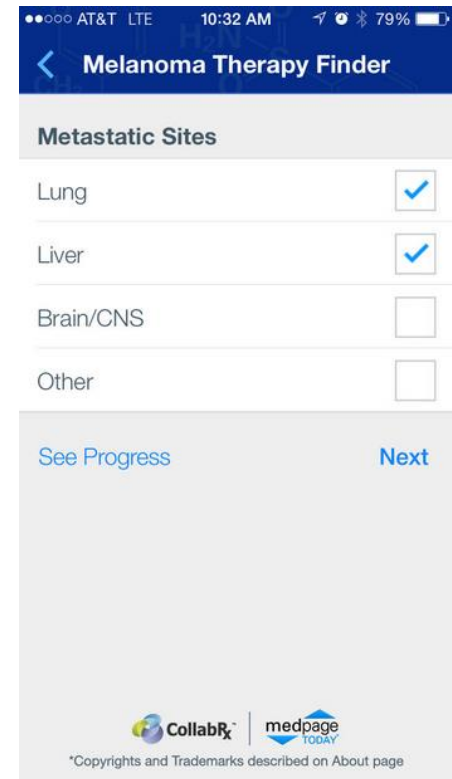
CancerRx:

CancerRx is a physician app that aggregates and contextualizes the world's knowledge of genomics-based medicine in oncology. It provides guidance at the point of care for the latest cancer treatment options.



22 hours ago
Failing Kidneys and Cancer: Is There a Link?

1 day ago
Morning Break: US Doctors Killed at Afghan Hospital



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“SUPER APPS”

This is a new type of app that is on the cusp of realizing its full potential.

- An actual super app is not yet available, but will be soon.
- The key element of a super app is its ability to access and analyze information from multiple connected health devices at the same time; this ecosystem is what Google Fit and Apple HealthKit are working toward.

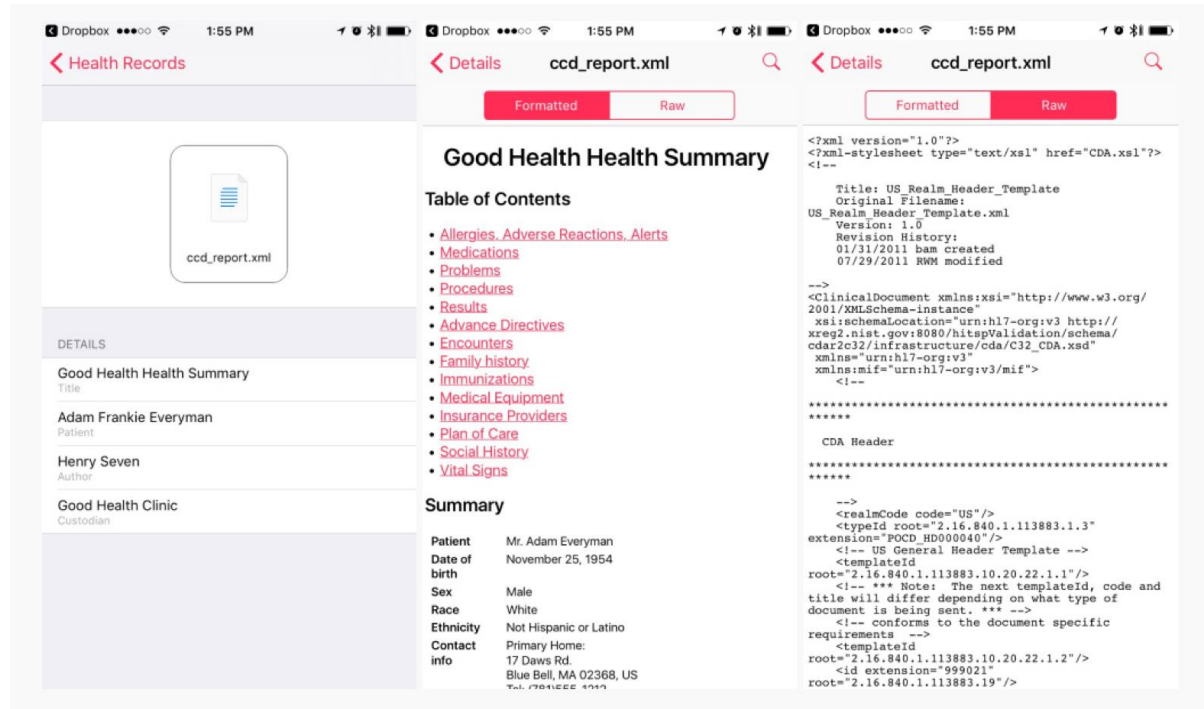


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“SUPER APPS” – Apple HealthKit (iOS 10)

Allows users to store their health records directly in the app using the Health Level 7 Continuity of Care Document (HL7 CCD) standard.

- Provides the ability to receive the entire medical record from any certified EHR on an Apple device.



<http://9to5mac.com/2016/06/15/hands-on-hl7-ccd-health-records-ios-10-health-kit/>

Planned Parenthood Care

Allows patients to conduct a video visit with a clinician to discuss birth control options, get treatment for a urinary tract infection (UTI), or order an at-home STD testing kit.

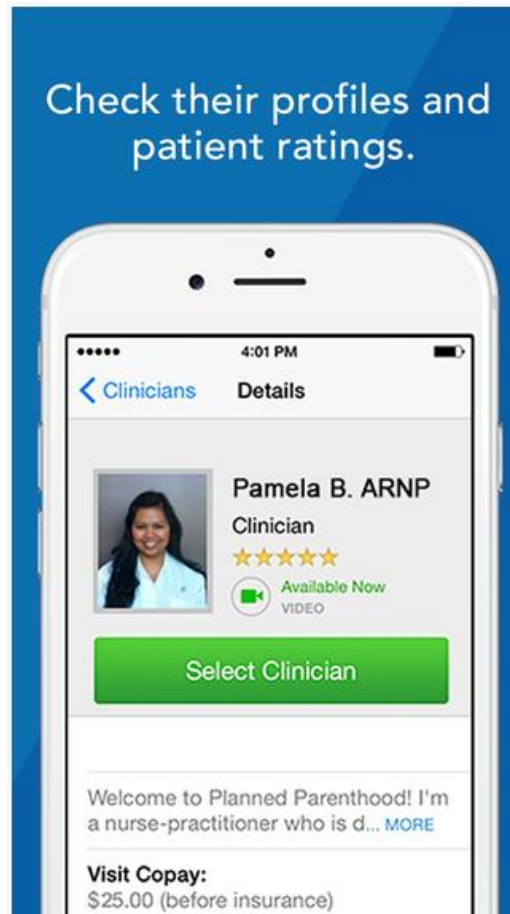


Planned Parenthood Care

See who's available.



Check their profiles and patient ratings.



Share your health data during visits.

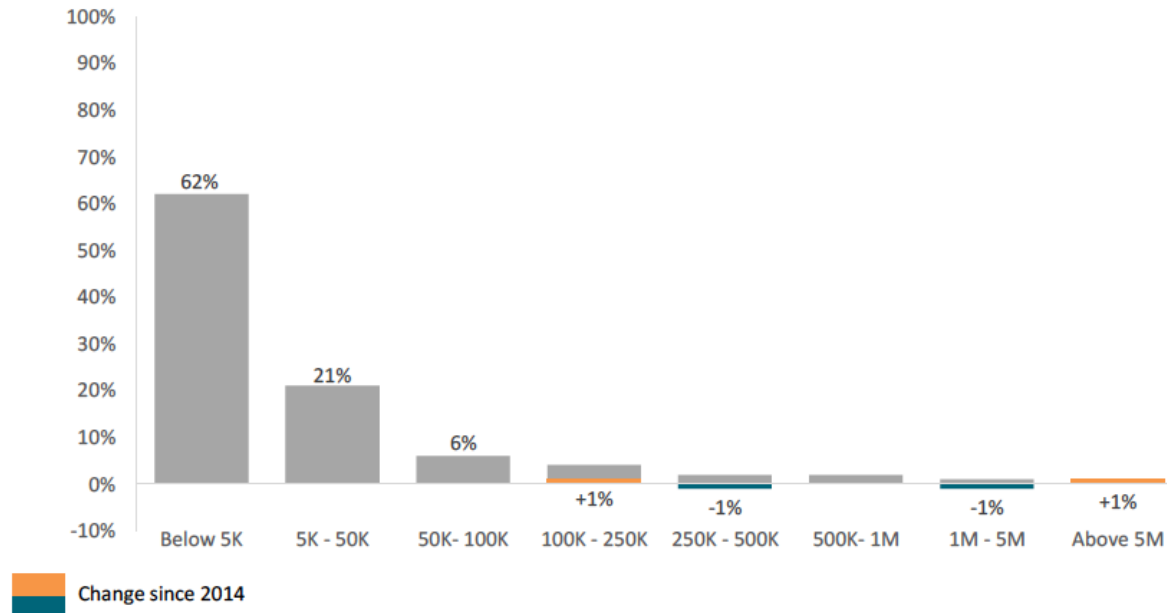


**Mobile engagement is
integral to any
organization's patient
experience strategy**

Challenges

- Just 12% of mHealth apps account for 90% of consumer downloads, and 36 apps generate nearly half of all downloads (despite more than 90% free)
- 60% percent of apps have fewer than 5000 downloads (only 25% focused on disease treatment and management)

How many downloads have all your mHealth apps generated last year (2014)?



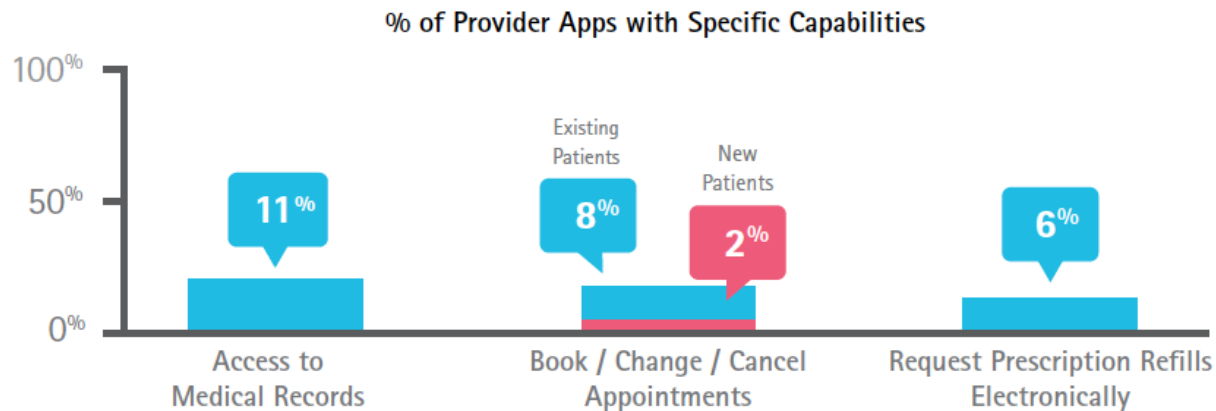
<http://www.medscape.com/viewarticle/851226>

mHealth App Developer Economics 2015; research2guidance, November 16, 2015

Challenges

Why?

- Poor user experience and functionality
- Only 11% of hospital designed apps have the top three features patients want:
 - Access to the EMR (integration is a major barrier)
 - Ability to book, cancel or change their appointments
 - Ability to make prescription refill requests



<https://www.accenture.com/us-en/insight-health-losing-patience>
mHealth App Developer Economics 2015; research2guidance, November 16, 2015

Lessons Learned

Know Your Data

- Collect as many stats, metrics, KPIs, costs, savings, ROIs as possible, well ahead of launching a mobile project
- Set clear expectations based on this data, because “build it and they will come” **does not work**; if necessary, research what your patients want

Start Small and Expand

- Don't try to squeeze every idea you might have into your first app;
- Launch with a solid set of use cases and collect feedback from users;
- Get comfortable with your process or development partner before expanding out;

Lessons Learned

Test, Test, Test ! Before and After Go-Live

- Performance Matters!!!
 - Devise an an ongoing, end-to-end test plan - don't have your patients do your QA;
- For apps requiring integration with your EHR or other systems, make sure all interoperability and security concerns have been addressed and tested;

Look to the Future

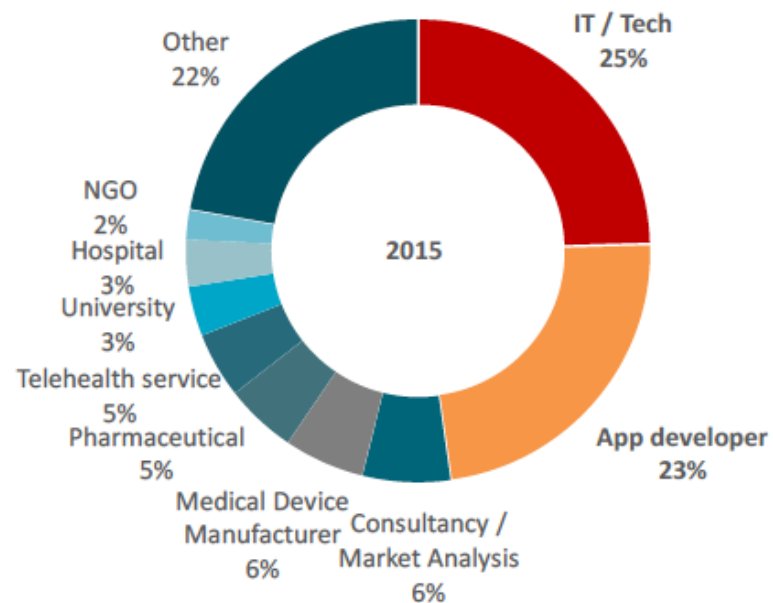
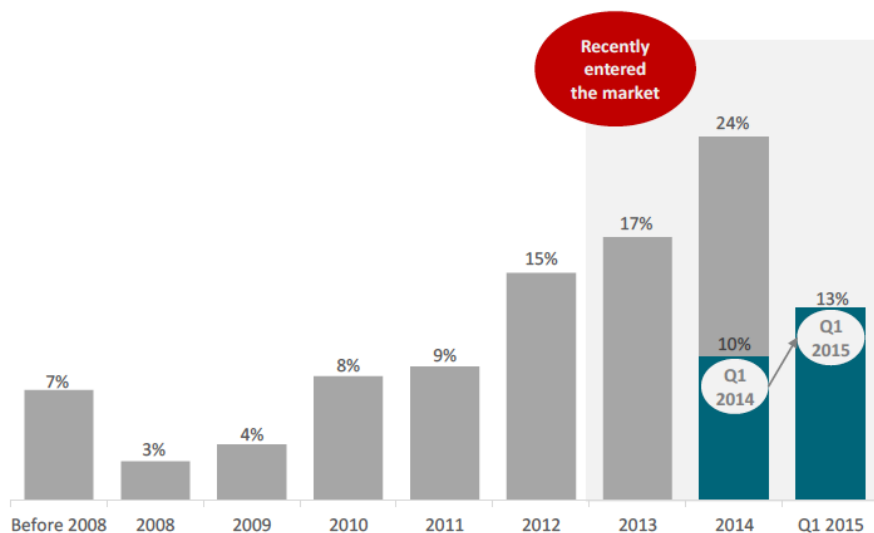
- It's not "One and Done" apps need to be updated on a regular basis - at least as often as the platform receives updates and when vulnerabilities are discovered;
- Make sure that you have an **App Management** plan including the technical resources and the budget for doing so;

Final Thoughts

Choose your developer very, very carefully...

- More than half of app publishers have only recently entered the market
- The majority of app publishers have an IT or Tech background

When have you published your first mHealth app?



[mHealth App Developer Economics 2015](#); research2guidance, November 16, 2015

Questions

