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  – Please refer to learning goals and objectives
  – Learners must attend the full activity and complete the evaluation in order to claim continuing education credit/hours
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  – by the Food and Drug Administration.

Learning Objectives

• Describe the promises and perils of mobile health for diabetes care
• List the categories and classifications of mobile apps
• Identify the core functionality elements of mobile apps
• Discuss key usability elements
• Discuss six critical criteria and best practice elements for a successful mobile app
• Analyze a mobile app in terms of the usability and the six critical criteria
• Develop a patient centered mobile health education plan

Diabetes Wheel of Fortune: Help People Choose the Best Mobile Health Solution For Them

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Mobile Health
aka
mHealth, Wireless Health, Digital Health, Connected Health, eHealth, Remote Monitoring

"Healthcare is a Click Away"
mHealth Coined
Coined in 2003 by Professor Robert Istepanian of Kingston University in London and defined as ‘emerging mobile communications and network technologies for healthcare’. The term since then evolved massively and is widely used today.

No Common Definitions
- Foundation for the National Institutes of Health (FNIH): mHealth is “the delivery of healthcare services via mobile communication devices”
- NIH Consensus Group: “mHealth is the use of mobile and wireless devices to improve health outcomes, healthcare services and health research.”

The Mobile App Revolution
There’s an App for that
A mobile application, most commonly referred to as an app, is a type of application software designed to run on a mobile device, such as a smartphone or tablet computer. Apps are individual software units with specific functions.

Health Care Applications: New & Growing Industry
- 165,000 mHealth apps – destined to grow
- A rise in mHealth systems with a deep focus on patient engagement and interventions
- Includes software like digital coaching and coordinated outpatient education – well-architected services that direct the right information to patients outside the clinical environment

Putting the M in Health: Health Care Goes Mobile – The Evolution
- In a survey by Ruder Finn:
  - 33% of patients want access to remote monitoring technology
  - 40% of seniors want a form of technology that alerts their physician in a health emergency
- 70% of Americans use a mobile health (mHealth) app every day
- Physicians are carrying the momentum forward too as they become more comfortable with remote data. Nearly 42% of doctors report being comfortable prescribing medications based on mHealth data
Mobile Health: Just What the Doctor Ordered

Across the patient journey, mHealth solutions can be divided into two main areas:

1. Those which facilitate overall wellness such as exercise and diet
2. Those which specifically focus on disease management

7 Industry Leading Trends in mHealth for 2016

1. Medication Adherence... gets a boost from sensor tech
2. Talking to Technology: Conversational interfaces go mainstream
3. Predicting Health: Analytics debut for patients and clinicians, not just payers
4. Disease & Risk Detection... on your smart phone
5. Digital Care Planning: It’s how to get better patient outcomes in a tech driven world.
6. Patient Engagement: Most care is self care.
7. Virtual Helpers: The digital health companion in your pocket – Siri meets Dr. Watson

Two Main Classifications

Rapid Movement in Diabetes

• The first diabetes app for iOS (according to the App Store as of April 2013) was developed and released on July 17, 2008. Glucose-Charter by e-agent
• The first Android diabetes app (according to Google Play as of April 2013) followed on November 8, 2009. Body Sugar by Adibu
1200 + Diabetes Mobile Apps
1. Medical management of diabetes
2. Apps for tracking and displaying health information
3. Apps for teaching/coaching/motivation
4. Food reference databases, weight loss, fitness
5. Predictive analytics
6. Social forums/blogs
7. Middleware/connectivity

Promise
Healthcare consultant, Joe Flower, notes that the industry may soon reach a “tipping point” where apps used in clinics or prescribed to patients will “become so commonplace that we will have difficulty remembering how we did without them.”

For disease management, apps help doctors and patients work more closely and improve communication between them.

Shopping for mHealth apps is...
like fishing in a lake that is stocked with many different species of fish.

But Too Many Choices?
• Disheartening is that just 12% of those apps account for more than 90% of consumer downloads
• Of 165,000 apps roughly about 20,000 are in play with consumers, physicians and providers
• Why? In addition to too many choices, there is little to no mechanism for evaluating the efficacy, accuracy and appropriateness

mHealth Minefield
• While many mHealth apps claim to offer accurate medical advice, most have been developed by people who have little to no medical knowledge
• Many apps have not been tested in clinical trials
• Potential privacy issues
Diabetes Educators Need to Become mHealth Experts

Unvalidated Health Apps = Noise

- A recent article, by The Journal of the American Medical Association (JAMA), concluded that “medical app development is outpacing the vetting process.”
- Few apps, if any, even attempt to prove the stated claims of their products.

How DE Need to Be Involved

DE should review smartphone apps their patients intend to use because it is likely the market of new health care apps will be too saturated for close FDA monitoring.

It is Difficult for Patients

For users, especially patients, it becomes increasingly difficult to find an app in the plethora of options that is suitable for one’s own needs. This is caused by:

- A lack of effective search criteria and filter functions in the app stores.
- More frequently, the diabetes apps chosen are ones that appear first in the search results.
- The sorting criteria in the app stores are not apparent.

Assist with Intimidating Choices

The biggest hurdle for a patient (or a clinician) is sifting through the 165,000 apps out there to find the one that will be useful to them.

An intimidating number of choices for consumers, leading some to simply select the most popular app and others to try multiple apps in an effort to determine what is best for them.

Right now, not much is available to help clinicians evaluate the effectiveness of mHealth apps before prescribing them to patients.
Clinician Involvement Improves Retention

- 30-day retention rates for mHealth apps recommended or prescribed by clinicians are 10% higher than self selection
- For RX apps, the rate is 30% higher!

mHealth Apps Curation Landscape

The Best mHealth Solutions Extend Patient-Provider Relationships

1. Provide useful and timely education to patients between their scheduled in-clinic visits.
2. Help to establish a digital monitoring environment that enables providers to collect patient information remotely from a patient’s home or work.
3. Finally, facilitates collaboration & communication between all

mHealth Apps Evaluation

A framework that considers the engagement, quality, and safety of mobile apps is critical for stakeholders to identify trustworthy apps that serve the needs

No Current Official Assessments

- A group of experts, in a recent JAMA commentary, proposed that independent or government commissioned bodies review and certify mHealth apps
- CCH has a website called Wellocracy.com that rates several trackers and apps
- FDA Mobile Medical Apps Guidance Document
- WHO-mERA Checklist

mHealth Measurable Outcomes

- Clinical outcomes
  - Change in HbA1c
  - SMBG values
  - Short term complication rates
- Patient-reported outcomes
  - Quality of life
  - Mobility
  - Engagement
- Health system/population impact/delivery of care
  - Utilization
  - Cost
  - Receipt guideline recommended services – Workflow
### Functionality and Usability Elements

1. **Visibility of system status**: App’s ability to keep users informed about what is going on and/or how they are progressing toward a goal.
2. **User control and freedom**: App provides the ability to easily control interactions, such as exit, save, go back, or edit.
3. **Flexibility and efficiency of use**: App provides the ability to accomplish intended tasks (e.g., logging a meal or tracking blood pressure) quickly and efficiently.

### Six Critical Criteria & Important QUESTIONS

4. **Diabetes Key Opinion Leaders Endorsement**
   - Has it been endorsed by leaders in the medical community or academic medical institution?

5. **Diabetes Experts Involved in Development/Design**
   - Were clinicians, DE, PWD involved in design?
   - Presence of at least one related health professional in the conception or development of the application?

6. **Meets Security Standards**
   - Does the app meet privacy & security standards?

### Elements (con’t)

4. **Aesthetic and minimalist design**: App is pleasant to look at and not overcrowded with irrelevant information.
5. **Help users recognize, diagnose and recover from errors**: Error messages within the app use plain language, simply state the problem, and outline steps to fixing it.
6. **Usability**: Users value the layout of an app that is efficient, intuitive, and allows for easy input of information.
7. **Cost**: Users rate paid apps consistently higher than free apps, presumably because paid apps are usually void of advertisement.

### Can’t Evaluate All The Same

- Not all created equal—i.e., is it just presenting data in a fancy way or is it answering important diabetes management questions?

### Six Critical Criteria & Important QUESTIONS

1. **Clinical trial/research studies**
   - Has undergone a research study or clinical trial and had results published?
   - Uses reliable and valid bibliographic references to create the application contents?
   - Validation of the application in a peer-reviewed scientific paper?

2. **Usability testing**
   - Were usability tests done with real patients?

3. **Food and Drug Administration (FDA) or Design Control System**
   - Has been approved by the FDA or was it developed under a Design Control & QMS?

### Elements of an mHealth Education Plan

- **Diabetes Self-Care Goals**
- **mHealth Needs Assessment**
- **Smart Phone/Technology Options**
- **App Store Navigation**
- **mHealth Icons**
- **How to Evaluate Credibility of App**
- **Privacy & Security**
- **Risks & Benefits**
- **Template URL**: vigilant.insparktech.com
mHealth Care Planning

Tailor to patient-specific needs
- Recommend apps that are commensurate with patients’ comfort level with technology and tailored to patient-specific needs.
- Some apps are designed with simple, easy-to-use features, whereas others offer a multitude of features for technologically savvy populations.
- App quality and safety do not necessarily align with functionality and must be considered separately.

mHealth Care Planning

Encourage Repetition
- Patients should be encouraged to continue using a new app for at least a couple of weeks before deciding whether it will work for them.
- Navigating through an app may become easier in time, as proficiency improves with repetition.

Data Sharing

- Numerous apps have features that enable users to e-mail and export data into a file that can be shared with HCPs.
- Obvious benefits of this technology are that it can make data-sharing more frequent and is paperless.

Other Factors to Consider

Ease of navigation, logging, data modification, note-taking, and time-tracking should be considered based on each patient’s knowledge of technology.

The less the patient has to do the better!

Advice To Give Patients

- Patients should be advised that smart-phone apps may be used as helpful tools but should not be a substitute for regular check-ups or follow-ups with HCPs.
- Because many apps are developed by programmers who may not be in the health care field, apps sometimes contain outdated or inaccurate information.

Precautions for Patients

*You can’t list your iPhone as your primary-care physician.*
Diabetes Mobile App Wheel of Fortune Challenge

- Pair up
- Do a diabetes app search in the App Store or Google Play
- Find one App that you think “might” meet the “Six Critical Criteria”
- Find one App that seems questionable – discuss why?

Six Critical Criteria

1. Clinical trial/research studies
2. Usability testing
3. Food and Drug Administration (FDA) or Design Control System
4. Diabetes Key Opinion Leaders Endorsement
5. Diabetes Experts Involved in Development/Design
6. Meets Security Standards

The Future?

- Standards/Certification/Accreditation
- mHealth solutions/medical apps will need to be universally covered so widespread adoption occurs.
- Insurers, like clinicians, have the right to expect apps to be medically sound.
- Clinical trials are needed to determine which ones are.
- Can we expect to see “app formularies,” much like drug formularies, ideally tiered by degree of effectiveness.

Information, News & Guidance

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Information, News & Guidance

Thank You!

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