There’s an App for That!
Use of Handheld Technology at the Point of Care

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Objectives

1) Participants will identify many useful “just-in-time” learning resources and tips for use in their own clinical practice

2) Participants will recognize the need for objective, evidence-based reviews to guide App “prescribing.”

3) Participants will want MORE!
Overview

• Just-In-Time Learning

• App Reviews and Demonstrations

• The Smartphone Physical

• Questions
Just-In-Case Learning
Just-In-Time Learning
Key Point

• Just-In-Time Learning is the Ultimate CME

– You keep up to date on the things that matter most in YOUR practice, one patient at a time
App Recommendation Disclosure

- Personal Experience
- Biased Reviews
- Objective Criterion-Referenced Reviews
- Peer-Reviewed Study Data
App Types

- Medication/Antibiotic References
- Diagnostic Lab References
- Medical Calculators
- Differential Diagnosis Builders
- Medical Literature Curators
- General Utilities
- Patient Empowerment/Education
- Smartphone “Medical Devices”
Medication References

• Features:
  – Searchable with extensive information, drug interaction checker, pill identification, regular updates, free of commercial bias, local prices

• Good options:
  – Micromedex, Epocrates, Medscape Mobile, Mobile PDR, Skyscape Rx (all free), GoodRx (local pricing reference- free)

Review:
http://med.emory.edu/pa/about_us/mobile_medicine/free_drug_reference_apps.html
Antibiotic Reference Tools

• Key Features: Accurate, up-to-date, referenced, and comprehensive disease, drug, and dosing information. Resistance patterns.

• Best Options: Sanford Guide (30$/yr), Johns Hopkins Antibiotic Guide (30$/yr), CDC Bugs and Drugs (limited data BUT has local antibiogram and is free)

Diagnostic Lab Reference

• Key Features: comprehensive, updated regularly, evidence-based, searchable, intuitively organized.

• Best Options: ARUP Consult (free), Pocket Guide to Diagnostic Tests ($45)

Medical Calculators

• Key features:
  – Large database of validated calculators
  – Searchable and catalogued intuitively
  – Referenced with formula shown

• Good options:
  – QxCalculate (f), MedCalc($10), Mediquation ($5), Medicalc($5), Epocrates Medmath (f)

** one is NOT enough

Differential Diagnosis Builders

• Key Features: Input symptoms, demographics, findings to generate differential. Comprehensive, detailed, evidence-based.

• Best option: Isabel ($11/mo or $120/yr).

• Good Option: DDx (from BMJ group and available in UK itunes store only ~$10)

• Free option: Diagnosaurus. Browse only (by symptom, disease or organ system)
Dermatology Resources

• Key Features: differential builder, huge visual database, updated regularly, searchable in different ways.
• Good options: Visual Dx ($150/yr), Derm101 ($10/mo)
• Cheap options: iRash ($3), PocketDerm ($1)

Review article in medical journal:
Medical Literature Curators

- Key Features: Tailored journal articles and collections; email summaries; archiving and organization of key articles; sharing; search function.
- Best option: QxMD Read (free)
- Good Option: Omnio (free)

Professional Experience

General Utilities

- Document Readers
- Password managers
- File Storage
- Browsers
- Internet security/filtering
- Printing from device
Document Readers

• Key Features: Import/export, annotation, editing, form completion of multiple document types (pdf, microsoft office documents/spreadsheets/presentations)

• Good Options: Goodreader ($5), PDFExpert ($10)

• Review: http://appadvice.com/appguides/show/pdf-annotation
Password Management

• Key features:
  – Password management (auto form fill, password generation, 1-click login)
  – Security (encryption, track record of hacks)
  – Mobile tools (online sync, biometrics, etc)
  – Price (initial cost, annual subscription)

• Good options: Keeper ($10/yr), 1Password ($18), Roboform ($10/yr)

File Storage/Synchronization

• Key Features: integration with other apps, desktop integration, synchronization across platforms, intuitive interface.

• Good Options*: Dropbox (free), Google Drive (free)
  • *What you use at work and home on your desktop is the most important consideration (some institutions block Dropbox)
Browsers

• Key Features: customizable search bar, tabbed browsing, Flash enabled, dropbox integration, filters

• Good options: Atomic Web(2)**, Skyfire(5)*, Safari(f), iChromy(f), Mobicip Safe (f)

* the ability to customize the search bar is a big plus for Atomic Web
** this browser is Flash enabled (rare for iPad apps)

http://appadvice.com/appguides/show/ipad-web-browsers
Adding Clinical Search Engines To Your Web Browser

http://www.sumsearch.org/searchplugins/
Google Scholar Pearl.....

- If you get the dreaded PAY page for an article, click the “all x versions” tab under the listing and often you will find a free pdf!
Internet Security/Filtering
Printing from your device…

• Print Central will print from your computer to any printer it is linked with. Uses WiFi, 3G/4GLTE, or Bluetooth.

• Or use Airprint in iOS
Patient Empowerment/Education

You sure he's absorbing all of this?
Evidence-Based Strategies in Weight-Loss Mobile Apps

Sherry Pagoto, PhD, Kristin Schneider, PhD, Mirjana Jojic, MD, Michele DeBiasse, MS, RD, CNSD, Devin Mann, MD, MS

Background: Physicians have limited time for weight-loss counseling, and there is a lack of resources to which they can refer patients for assistance with weight loss. Weight-loss mobile applications (apps) have the potential to be a helpful tool, but the extent to which they include the behavioral strategies included in evidence-based interventions is unknown.

Purpose: The primary aims of the study were to determine the degree to which commercial weight-loss mobile apps include the behavioral strategies included in evidence-based weight-loss interventions, and to identify features that enhance behavioral strategies via technology.

Methods: Thirty weight-loss mobile apps, available on iPhone and/or Android platforms, were coded for whether they included any of 20 behavioral strategies derived from an evidence-based weight-loss program (i.e., Diabetes Prevention Program). Data on available apps were collected in January 2012; data were analyzed in June 2012.

Results: The apps included on average 18.83% (SD=13.24; range=0%–65%) of the 20 strategies. Seven of the strategies were not found in any app. The most common technology-enhanced features were barcode scanners (56.7%) and a social network (46.7%).

Conclusions: Weight-loss mobile apps typically included only a minority of the behavioral strategies found in evidence-based weight-loss interventions. Behavioral strategies that help improve motivation, reduce stress, and assist with problem solving were missing across apps. Inclusion of additional strategies could make apps more helpful to users who have motivational challenges.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>DPP session title</th>
<th>Description</th>
<th>% apps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight-loss goal</td>
<td>Welcome to the Lifestyle Balance Program</td>
<td>Participants are given a goal of 7%, or 1–2 pounds per week.</td>
<td>93.3</td>
</tr>
<tr>
<td>Dietary goal</td>
<td>Getting Started Losing Weight</td>
<td>Participants are given a fat and/or calorie goal that is consistent with weight-loss goal.</td>
<td>90</td>
</tr>
<tr>
<td>Calorie balance</td>
<td>Tip the Calorie Balance</td>
<td>Participants learn how healthy eating and being active are related.</td>
<td>86.7</td>
</tr>
<tr>
<td>Physical activity goal</td>
<td>Getting Started Being Active</td>
<td>Participants are encouraged to get 150 minutes of moderate-intensity physical activity per week.</td>
<td>20</td>
</tr>
<tr>
<td>Exercise safety</td>
<td>Being Active a Way of Life/ Jump Start Your Activity Plan</td>
<td>Participants are instructed on how to measure exertion and avoid injury.</td>
<td>20</td>
</tr>
<tr>
<td>Benefits of healthy diet and physical activity</td>
<td>Welcome to the Lifestyle Balance Program</td>
<td>Participants learn of the health benefits of making lifestyle changes.</td>
<td>13.3</td>
</tr>
<tr>
<td>Food substitutions</td>
<td>Be a Fat Detective</td>
<td>Participants learn healthy substitutions for foods that are high in fat and calories.</td>
<td>10</td>
</tr>
<tr>
<td>Food pyramid</td>
<td>Healthy Eating</td>
<td>Review current food pyramid and its recommendations.</td>
<td>6.7</td>
</tr>
<tr>
<td>Stimulus control</td>
<td>Taking Charge of What’s Around You</td>
<td>Participants learn about food and activity cues and ways to change them.</td>
<td>6.7</td>
</tr>
<tr>
<td>Portion control</td>
<td>Be a Fat Detective</td>
<td>Participants learn to use scales, measuring cups, and spoons.</td>
<td>6.7</td>
</tr>
<tr>
<td>Lifestyle activity</td>
<td>Being Active a Way of Life</td>
<td>Participants are encouraged to engage in lifestyle activities (e.g., parking further away).</td>
<td>6.7</td>
</tr>
<tr>
<td>Target heart rate</td>
<td>Jump Start Your Activity Plan</td>
<td>Participants are instructed on how to measure their target heart rate.</td>
<td>6.7</td>
</tr>
<tr>
<td>Problem solving</td>
<td>Problem Solving</td>
<td>Participants learn a five-step process to brainstorm new solutions to problems that inhibit their progress.</td>
<td>3.3</td>
</tr>
<tr>
<td>Stress reduction</td>
<td>You Can Manage Stress</td>
<td>Participants learn how to prevent stress and cope with unavoidable stress.</td>
<td>0</td>
</tr>
<tr>
<td>Relapse prevention</td>
<td>Slippery Slope of Lifestyle Change</td>
<td>Participants learn to identify what causes slips from healthy eating and being active and how to recover from them.</td>
<td>0</td>
</tr>
<tr>
<td>Negative thinking</td>
<td>Talk Back to Negative Thoughts</td>
<td>Participants learn how to identify negative thoughts and talk back to them with positive ones.</td>
<td>0</td>
</tr>
<tr>
<td>Social cues</td>
<td>Make Social Cues Work for You</td>
<td>Participants learn how to identify problem social cues and add helpful ones.</td>
<td>0</td>
</tr>
<tr>
<td>Develop regular pattern of eating</td>
<td>Healthy Eating</td>
<td>Participants are instructed to eat three meals.</td>
<td>0</td>
</tr>
<tr>
<td>Time management</td>
<td>Being Active: A Way of Life</td>
<td>Participants learn strategies for fitting exercise into their schedules.</td>
<td>0</td>
</tr>
<tr>
<td>Nutrition label reading</td>
<td>Be a Fat Detective</td>
<td>Participants learn to read nutrition labels.</td>
<td>0</td>
</tr>
</tbody>
</table>

*The DPP Lifestyle Intervention Protocol can be found at [www.bsc.gwu.edu/dpp/lifestyle/dpp_part.html](http://www.bsc.gwu.edu/dpp/lifestyle/dpp_part.html). DPP, Diabetes Prevention Program.
MyNetDiary

- Followed 65% of recommended evidence-based strategies (next highest was 25%)
- Syncs with Activity Trackers
- Utilizes barcode food scanning
Activity Trackers

- Steps, Calories burned
- Sleep quantity and quality
- Elevation gained (ie, stairs climbed)
- Syncs with MyNetDiary-type apps
- Can input foods, activities.

Activity trackers, also known as activity monitors, are like pedometers, but upgraded for this century. They count not only steps taken but also calories burned—and many measure sleep quality, compute calorie intake, and serve as alarm clocks or watches. Some display your progress in real time; all can show it later on a smart phone, tablet, or computer.

Trackers provide insight about habits and health, but using one might also help you shed a few pounds. Neil Baus, M.D., a Pittsburgh neurologist who lost 40 pounds in less than a year after undergoing heart-bypass surgery, credits a "personal health network" that includes an activity tracker, a calorie-counting app, a scale that interacts with the tracker, and a blood pressure monitor.

We measured how accurate six trackers were at counting steps and calories, checked how easy each was to use, and assessed their features. For our step-count test, four men and four women wore the trackers as they walked on a treadmill, used an elliptical exerciser, went up and down stairs, and picked up toys. We compared each device's step count against the actual counts we had recorded.

For our calorie-count test, the panelists used a treadmill and an elliptical exerciser while wearing the trackers. Then an instrument measured the actual calories panelists burned. We compared tracker counts with actual counts.

Bottom line. A basic pedometer tracks daily steps, but for more versatility, consider the Fitbit One, Nike+ FuelBand, or Up by Jawbone. There's a learning curve with activity trackers, but most offer instructions online.

Fitbit One


Cons. Hard to read in sunlight. USB dongle enabling wireless feed-up is tiny and could be lost.
Patient Education

- Keep it simple......

- MedlinePlus is THE safest, most reliable, comprehensive and bias-free consumer health information resource available
# The “Smartphone Physical”

<table>
<thead>
<tr>
<th>Device</th>
<th>Function</th>
<th>FDA +</th>
</tr>
</thead>
<tbody>
<tr>
<td>iHeath Scale</td>
<td>Wt, BMI, body fat, muscle, bone mass</td>
<td>Yes</td>
</tr>
<tr>
<td>Withings BP Monitor</td>
<td>BP, heart rate</td>
<td>Yes</td>
</tr>
<tr>
<td>Masimo iSpO2</td>
<td>O2 sat, pulse, perfusion index</td>
<td>Applied</td>
</tr>
<tr>
<td>Welch Allyn iExaminer</td>
<td>Fundoscopic examination</td>
<td>Yes</td>
</tr>
<tr>
<td>EyeNetra NETRA-G</td>
<td>Visual Acuity</td>
<td>No</td>
</tr>
<tr>
<td>CellScope Oto</td>
<td>Tympanoscopy</td>
<td>Proto</td>
</tr>
<tr>
<td>SpiroSmart Spirometer</td>
<td>Spirometry</td>
<td>Proto</td>
</tr>
<tr>
<td>AliveCor Heart Monitor</td>
<td>One-lead ECG</td>
<td>Yes</td>
</tr>
<tr>
<td>ThinkLabs ds32a+</td>
<td>Stethoscope</td>
<td>Yes</td>
</tr>
<tr>
<td>Mobisante MobiUS SP1 System</td>
<td>Ultrasound</td>
<td>Yes</td>
</tr>
</tbody>
</table>

http://www.smartphonephysical.org/tedmed.html
## Sample App “Prescriptions”

<table>
<thead>
<tr>
<th>Medical Condition</th>
<th>App “Prescribed”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>Breathe2Relax</td>
</tr>
<tr>
<td>Headache/Migraine</td>
<td>iHeadache</td>
</tr>
<tr>
<td>OCP Management</td>
<td>myPill</td>
</tr>
<tr>
<td>Menopause</td>
<td>myPause</td>
</tr>
<tr>
<td>Chronic Pain</td>
<td>WebMD Pain Coach</td>
</tr>
<tr>
<td>Insomnia</td>
<td>Sleep Diary, Fitbit</td>
</tr>
<tr>
<td>Urinary Incontinence</td>
<td>Bladder Pal, iP Voiding Diary</td>
</tr>
<tr>
<td>Obesity</td>
<td>MyNetDiary</td>
</tr>
<tr>
<td>Cancer</td>
<td>CaringBridge</td>
</tr>
</tbody>
</table>

Mobile Medical Applications

The widespread adoption and use of mobile technologies is opening new and innovative ways to improve health and health care delivery.

Mobile applications (apps) can help people manage their own health and wellness, promote healthy living, and gain access to useful information when and where they need it. These tools are being adopted almost as quickly as they can be developed. According to industry estimates, 500 million smartphone users worldwide will be using a healthcare application by 2015, and by 2018, 50 percent of the more than 3.4 billion smartphone and tablet users will have downloaded mobile health applications (http://www.research2guidance.com/500m-people-will-be-using-healthcare-mobile-applications-in-2015/). These users include health care professionals, consumers, and patients.

The FDA encourages the development of mobile medical apps that improve health care and provide consumers and health care professionals with valuable health information. The FDA also has a public health responsibility to oversee the safety and effectiveness of medical devices — including mobile medical apps.

The FDA issued the Mobile Medical Applications Guidance for Industry and Food and Drug Administration Staff (PDF - 269KB) on September 25, 2013, which explains the agency's oversight of mobile medical apps as devices and our focus only on the apps that present a greater risk to patients if they don't work as intended. and on apps that cause smartphones or other mobile platforms to impact the functionality or performance of traditional medical devices.

What are mobile medical apps?

Mobile apps are software programs that run on smartphones and other mobile communication devices. They can also be accessories that attach to a smartphone or other mobile communication devices, or a combination of accessories and software.

Mobile medical apps are medical devices that are mobile apps, meet the definition of a medical device and are an accessory to a regulated medical device or transform a mobile platform into a regulated medical device.

Consumers can use both mobile medical apps and mobile apps to manage their own health and wellness, such as to monitor their caloric intake for healthy weight maintenance. For example, the National Institutes of Health’s LactMed app provides nursing mothers with information about the effects of medicines on breast milk and nursing infants.

Other apps aim to help health care professionals improve and facilitate patient care. The Radiation Emergency Medical Management (REMM) app gives health care providers guidance on diagnosing and treating radiation injuries. Some mobile medical apps can diagnose cancer or heart rhythm abnormalities, or function as the “central command” for a glucose meter used by an insulin-dependent diabetic patient.

How will the FDA regulate mobile medical apps?

The FDA will apply the same risk-based approach the agency uses to assure safety and effectiveness for other medical devices. The guidance document (PDF - 269KB) provides examples of how the FDA might regulate certain moderate-risk (Class II) and high-risk (Class III) mobile medical apps. The guidance also provides examples of mobile apps that are not medical devices, mobile apps that the FDA intends to exercise enforcement discretion and mobile medical apps that the FDA will regulate in Appendix A, Appendix B and Appendix C.

We encourage app developers to contact the FDA — as early as possible — if they have any questions about their mobile app. It’s best to do this before you start designing your product, but we can provide guidance at any point in your development process.
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Thank you.

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