



Apps for Family Physicians and Patients
Dr. Chandi Chandrasena

June 13, 2019: Every Step Conference Ottawa

© Chandi Chandrasena, MD. Not to be reproduced without permission.

Conflicts of Interest Disclosure of Commercial Support

Presenter Disclosure

- no financial interests, no commerical support
- similar talks for University of Ottawa CME (with Dr. Brendan Connelly) and Academy of Medicine
- OntarioMD Peer Leader

Potential for conflicts of interest

iPhone users with a Telus Health EMR.

Mitigating Potential Bias

- Most of the Apps are free!
- Evidence for each App or website is very limited. The suggestions made are for Apps that seem to be most used by family physicians.
- Most Apps available on Android or Google Play, as well as iTunes.
- The audience is the expert! We invite you to share your best Apps!

Objectives:



- * Identify useful apps to use in practice
- * Identify useful apps to offer
- * Share apps that other doctors will find useful

Why use Apps?



an app a day keeps the doctor away

© Chandi Chandrasena, MD. Not to be reproduced without permission.

What to ask before downloading

- •Who produced it? (medical journal, medical publisher? institution, drug company?) Conflict of interest?
- Is it regularly updated?
- Is it properly referenced?
- *Is it possible to give feedback?
- Is it Peer Reviewed?
- Is the app's primary purpose to inform health professionals? Patients?
- Issue with Privacy?

Government?

- NHS in United Kingdom: has government-approved medical mobile apps and a library that stores them
- Health Canada: new division for premarket review of digital health technologies. The new Digital Health Review Division will handle licensing of wireless medical devices, mobile medical apps, software as a medical device (SaMD), AI, cybersecurity and related digital health products.
- FDA: will regulate apps that transform your mobile device into a regulated medical device or apps that are used as an accessory to a medical device
- UK, USA and Canada all use medical device regulations for licensing mobile medical apps and have similar risk-grading systems. In Canada, high risk apps are those that⁹ aid in diagnosis and treatment

CMAJ: 2015, 187

Medical Apps for Docs

- Point of Care Apps
- Prescription Databases
- Guideline Apps
- Medical Calculators
- Journal Apps
- Other Apps



© Chandi Chandrasena, MD. Not to be reproduced without permission.

Point of Care

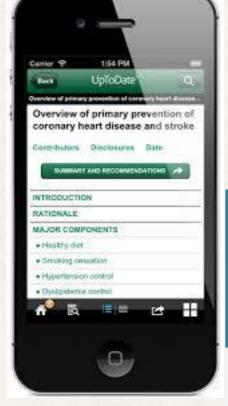
MEDICAL
CALCULATORS
DOWN SECONDS

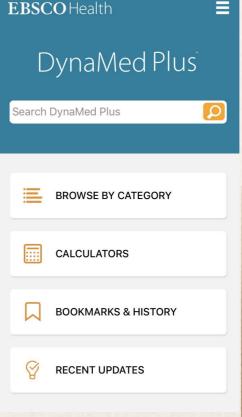
PILL IDENTIFIER
High resultive off colcuses

MOTES &
FAVORITES

DOWN SECONDS

- Up to Date discount for CMA/CCFP/CFCMS members (USD\$519 Mobile Complete app inclu.) Residents USD\$199). By far the most comprehensive
- Joule (Dynamed (Plus) (\$395US/year) <u>free</u> with CMA membership (\$195Cdn)
- Medscape (free)
- Pepid (\$299.95 US/year)

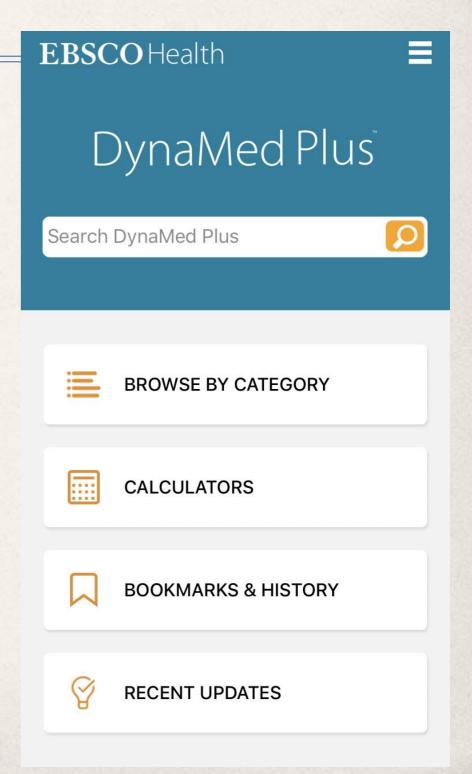






DynaMed Plus:

- Point of Care App made acquired by EBSCO and founded by family physician.
- Covers 3200 topics and monitors over 500 journals
- PROS: easy to use, Micromedex drug content integration, thousands of photos/graphics
- CONS: less comprehensive than uptodate
- **ACCESSIBILITY: Apple/Android, \$395/year, Canadian, (free with CMA membership)****



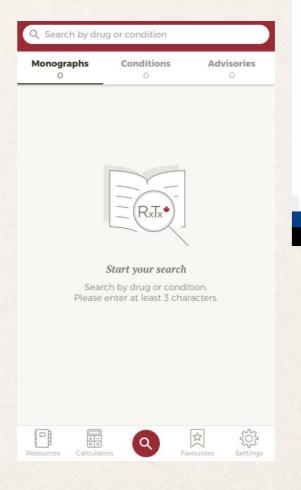
© Chandi Chandrasena, MD. Not to be reproduced without permission.

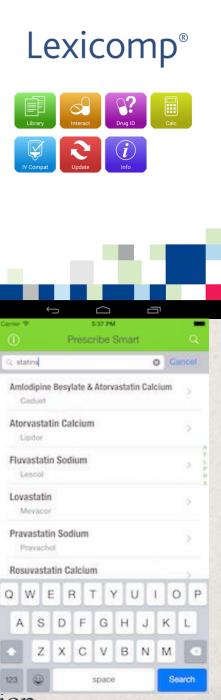
Drug Wars!





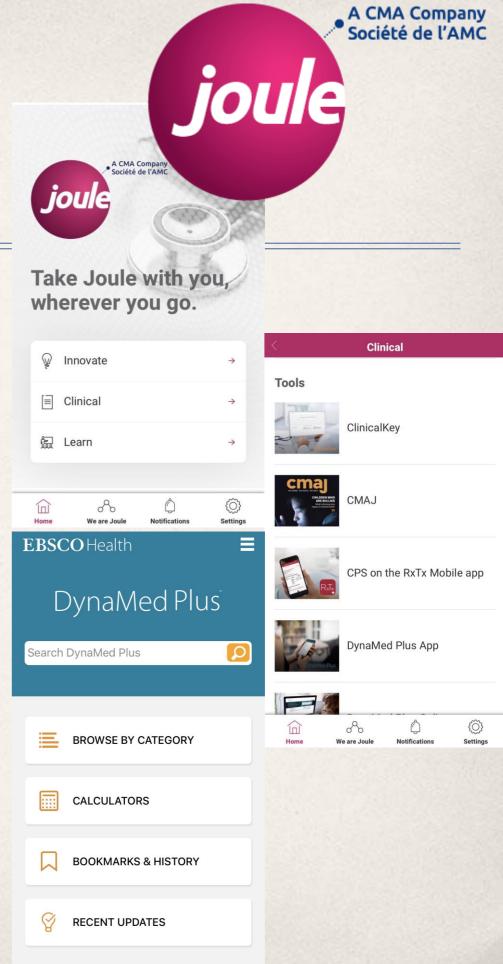
- Epocrates (free with in-app purchases)
 US data and drugs
- RxTx Mobile (free) Canadian Pharmacists Assoc., bilingual
- Lexicomp (price varies, used in Up to Date)
- Micromedex (drug reference) for essentials
- Prescribe Smart (free), Canadian, LUcodes, prices, available Apple only





Joule: CMA App

- PROS: easy to use, searchable database Infopoems and InfoPratique, free Dynamed Plus, access to Clinical Key (1000+ texts, 600 journals, handouts, videos), journals (AFP, Lancet, BMJ, NEJM, etc.) Clinical Practice Guidelines, RxTx, CMAJ, podcasts
- **CONS**: need to remember login and password!
- ACCESSIBILITY: Apple Iphone/Android, Ipad, Canadian, (cost of CMA membership \$195)****



Guidelines Apps

- STILE SAVOIR PREND FORME

 STORY

 Connaction

 Connactio

Thrombosis Canada
Thrombose Canada

Canada

- CPG (Diabetes Canada)
- * iCCS (Canadian Cardiovascular Society)
- CDN STI-ITS (free)
- INESSS: Quebec govt (free)
- Thrombosis Canada (free) EXCELLENT!
- ASCCP: Cervical cancer and colposcopy (\$13.99)
- Ortho 911: University of Laval, Ortho, French





Guideline Apps:



MUMS 2016 Anti-infective Guidelines (\$29.99)



- Bugs and Drugs (\$14.99) Alberta Health Services
- Trekk: Translating Emergency Knowledge for Kids
- Spectrum: CHEO formulary



- Pedi-Stat: \$6.99: rapid response in the ER or Critical care environment
- Choosing Wisely: free

Thrombosis Canada

- Made by Thrombosis Canada
- PRO: Clinical guidelines and algorithms for the use of antiplatelet agents and oral anticoagulants, easy to use, can put in patient data for proper dosage
- CONS: really can't think of any
- ACCESSIBILITY: continuously updated, Apple/Android, free, English mainly. Some of the app can be switched to French. Has a privacy policy present and important to read.



INESSS







- French App (now in English) which is put out by the Institut national d'excellence en sante et en services sociaux. Series of practice guides and tools for clinicians for Alzheimer's, Antibiotics, anticoagulants and more
- Pros: English and French, Easy to use
- Cons: can't think of any
- Accessibility: updated 6 months ago, Android and Iphone, privacy policy is present (Quebec govt)

Mums Anti-infective Guidelines



- Well known "orange book" that we all love! PAACT (Partners for Appropriate Community Therapy)
- **PROS**: the "orange book" that we love so much, ease of use, price comparisons, updates
- **CONS**: not entirely searchable, not as detailed as Sanford or Hopkin's guides, Apple only (2019 paper copy available, but not updated yet)
- ACCESSIBILITY: \$29.99, Apple only, English only, v 1.0.2 updates 1 year ago

Spectrum





Ampicillin

Local susceptibility

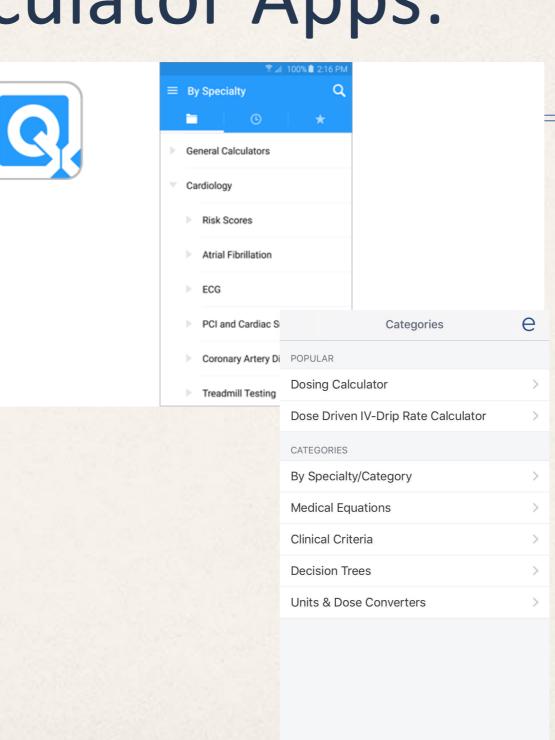
Think "what would CHEO do?" ...or many other hospitals. App can be specific to a particular institution in Canada. It's like a combination of Sanford Guide and the "Orange book".

- **Pros**: Local guidelines and resistance patterns, very comprehensive including specimen collection, treatment suggestions based on syndrome ie. Tick bite management, cellulitis antibiotic choice and duration, inpatient or outpatient pneumonia etc... Taste profile of antibiotics
- **Cons**: focus on Pediatrics since linked to CHEO, not all regions included. Level of evidence not linked.
- Accessibility: iOS and Android. Developed in Canada University of Calgary Critical Care and ID

© Chandi Chandrasena, MD. Not to be reproduced without permission.

Medical Calculator Apps:

- QxCalculate
- **Epocrates**



7:25 AM

MedCalc is no substitute for clinical

DynaMed Plus

BROWSE BY CATEGORY

BOOKMARKS & HISTORY

RECENT UPDATES

CALCULATORS

reasoning. No medical decision should be based solely on results

provided by this program.

EBSCO Health

Search DynaMed Plus

Especially to Tamás Ferenci!

News

MedCalc

Medical Calculator

Version 2.1 (1416)

Help

99 %

Settings

AT&T 3G

About

Development

Disclaimer

Thanks

Pascal Pfiffner, MD Mathias Tschopp, MD

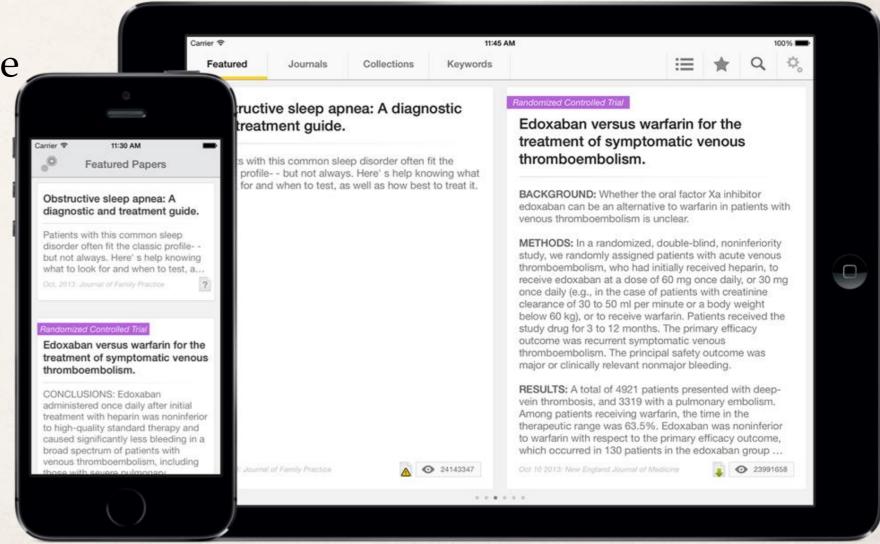
Journals

Read by QxMD

or pick your favourite journal

Joule

CMAJ, AFP, Lancet, BMJ, NEJM etc...



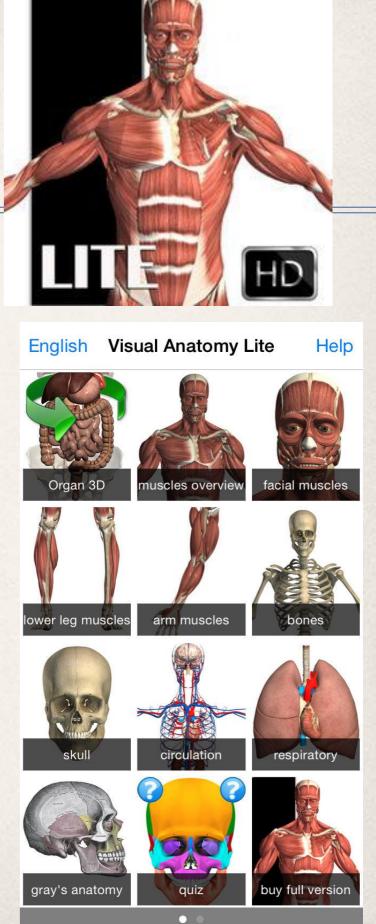
Other Apps to consider:



© Chandi Chandrasena, MD. Not to be reproduced without permission.

Visual Anatomy Lite

- Many anatomy apps in App Store
- PRO: Free, Covers MSK, Circulation and Organs. Good information on innervation and insertion of muscles.
- CON: advertisement links. Less dynamic and no 3D layering compared to higher paying Apps
- ACCESSIBILITY: Free, iphone and Google Play



GRC-RCMP

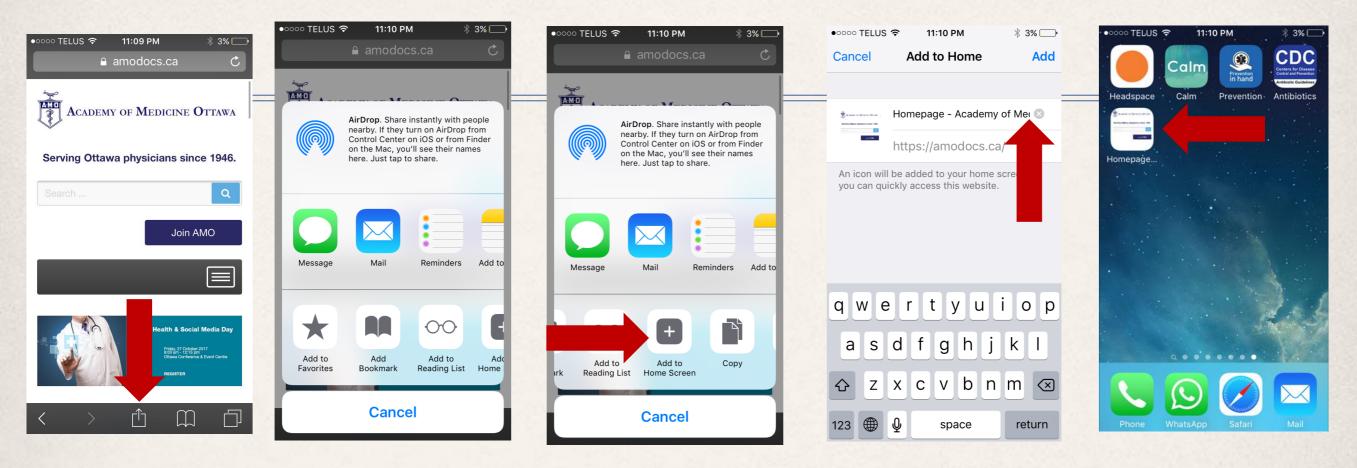






- **PRO:** Where else can you learn about illegal drugs and all the names that are used to refer to them? Talks about drug, effects, visible signs and symptoms, myths and truths, info for parents, legal status and more
- **CON**: Doesn't have all the drugs, missing some terms but there are so many terms!
- ACCESSIBILITY: Free, iphone and Google Play, updated 1 month ago when changed legal status of cannabis, Privacy policy is present. French and English.

Make any website into an app!

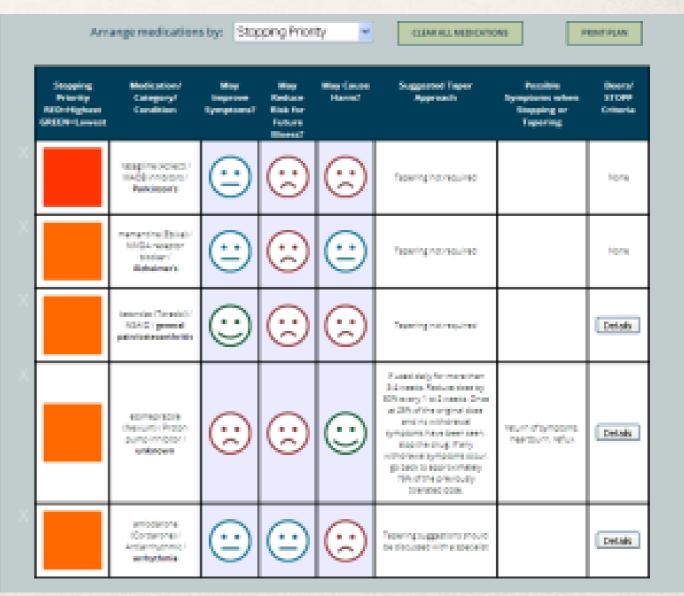


- Go to website you use often
- There is an icon on bottom of page that looks like a square with an arrow pointing up (press that)
- Scroll across to icon "add to home screen" (press that)
- Name your "app" and it will show up on your home screen.
 - © Chandi Chandrasena, MD. Not to be reproduced without permission.

Medstopper.com

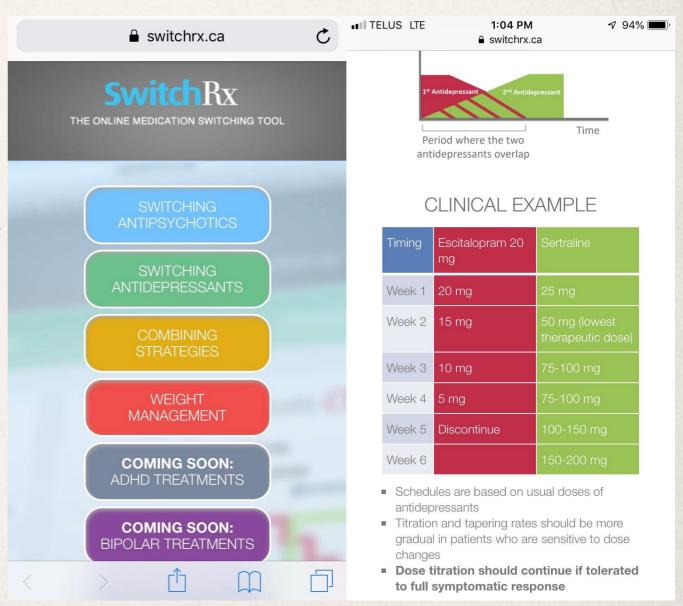
- Example of making your own App
- Great website or frail elderly which helps you de-prescribe
- Go to website, and find square icon with arrow and push.
- Find "add to homescreen" and add





SwitchRx

- Switching antidepressants
- Switching antipsychotics
- Combining psychiatric medications
- Weight management medications combined with psychiatric medications



Great websites to make into Apps:

- Medstopper.com
- SwitchRx (switchrx.ca) the online medication switching tool for antipsychotics, antidepressants and treatment guidelines
- Frax (fracture risk assessment tool)
- Econsult (The Champlain BASE)
- Drugshortagescanada.ca: (website operated by Bell Canada under contract with Health Canada)

OMA App



- Developed by OMA as a companion app for all members
- PROS: OMA card to apple wallet, ease of use, LU codes, ODB formulary, Diagnostic Codes, Schedule of Benefits, OMA Advantages
- **CONS**: have to login to app and I always forget my username and password!
- ACCESSIBILITY: free, Canadian, Apple/Android, English only

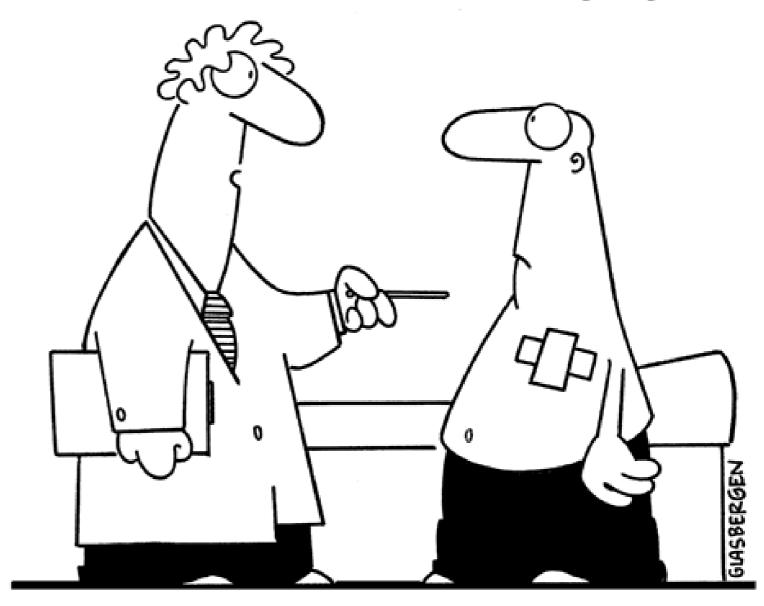
TELUS EMR Mobile

PROS: Ease of use, can look at schedule, patient demographics, patient record, can use camera and take pics to upload directly into EMR, now can send and read messages



- CONS:, can't chart but there is a work around where your can take a photo and enter a chart note, can't prescribe or fax
- ACCESSIBILITY: Only for TELUS App, Free with EMR, updated 2018

© Randy Glasbergen www.glasbergen.com



"It's a pacemaker for your heart, plus you can download apps for your liver, kidneys, lungs, and pancreas!"

Health Apps Downloads



Estimated 4.68 Billion people using a cell phone in 2019

50% will have downloaded a mobile health application

More than 318 000 health and fitness apps are available for download.

Apps for Patients...It's almost unlimited

- Important to consider <u>Privacy of the apps</u> before you recommend them
- Important to <u>consider efficacy</u> do some research before recommending
- Great websites to get information on this is on
- practicalapps.ca, psyberguide.org, or imedicalapps.com

Health apps vs mHealth Apps



- Both health apps and mHealth solutions can be used on-the-go to learn more about a specific illness and for self-monitoring purposes
- Health apps are only for users
- mHealth solutions improve the collaboration between patients and healthcare professionals, they deliver health
- Many mHealth solutions offer different types of information sharing such as data collection through patient self-assessments, electronic questionnaires, and sensor data



Guiding Principals for Recommending Mobile Health(mHealth) Apps to Patients (2015)

- Endorsement by a professional or recognized association or medical society or health care organization
- Usability (interface, design, recommend to look at updates)
- Reliability of information (how does the patient intend to use the info)
- Privacy and security (access to personal info)
- Avoid Conflict of interest (advice patient to look at developers)
- Does not contribute to fragmentation of health information (recommend ones that contribute to robust existing data repositories)
- Demonstrates its impact on patient health outcomes (validate this)

CMPA





- When recommending an app, physicians should review privacy policies of the apps to ensure third parties do not have access to identifiable personal health information without consent
- Both physician and patient must agree to be accountable for the protection of the patient's personal health information
- Consent: patients should provide their informed consent to using an mHealth app when suggested by a physician. CMPA has a "Consent to use electronic communications" form in guiding and documenting consent discussion. Document in chart.

CANImmunize

- Developed with Canadian Physicians
- PROS: Great digital alternative to paper records
- CANImmunize

 A digital immunization record for Canadians

 CANImmunize is a free, bilingual tool that helps you track your immunizations and get vaccinated on time

 Learn more >

 The Ottawa L'Hôpital Hospital d'Ottawa
- Will now synchronize with Ottawa Public Health and KFL&A Public Health (Kingston, Frontenac and Lennox & Addington)
- CONS: at times proactive advice was not always accurate
- PRIVACY: stored locally and complies with Ontario's Personal Health Information Protection Act 2004 (PHIPA) and password protected, doesn't synchronize with Public Health database
- ACCESSIBILTIY: free, Apple/Android, Bilingual

Prevention in Hand



- Developed by the College of Family Physicians of Canada and Public Health Agency of Canada
- **PROS**: quick access to lifestyle resources and evidence based health care information for patients. Great videos.
- CONS: none to report now, and links working better
- PRIVACY: no registration requirement and does not collect personal information
- ACCESSIBILTIY: free, Apple/Android, Bilingual, last update Nov 2015

Practicalapps.ca

MyFitnessPal



- Developed by Under Armour (private company in US)
- PROS: calorie/exercise tracker, great list of culturally relevant foods, instant feedback, community access, connects to fitbit and applewatch
- **CONS**: see privacy policy and have to upgrade to premium to get other services, have to have access to wireless signal, based on BMI and calorie counting which is not always accurate
- PRIVACY: have to register and information is used to operate business, advertise and rarely to third parties (Patients to be aware)
- ACCESSIBILTIY: free but can upgrade, Apple/Android, Bilingual,

buddhify:

modern mindfulness for busy lives



- Made by Mindfulness Everywhere in UK
- **PROS**: urban meditation, >80 guided meditations, easy to use, beginner to expert
- **CONS**: no data on efficacy, little background info on meditation, no reminders given to meditate
- PRIVACY: requests info from users, no registration required
- ACCESSIBILITY: Apple/Android, English only, \$6.99, no monthly subscription fee, free samples on soundcloud.com



Mindshift



- Developed by AnxietyBC, BC children's hospital and Provincial Health Services Authority to help those struggling with anxiety
- → PROS: ease of use, great icons, CBT for youth and young adults, good Chill Out Tools
- **CONS**: bit overwhelming with all the information, must have excellent grasp of English, and may not remember to use everyday,
- PRIVACY: nothing disclosed, have to sign in with latest update
- ACCESSIBILITY: Apple/Android, free, English only, last update 2 months ago

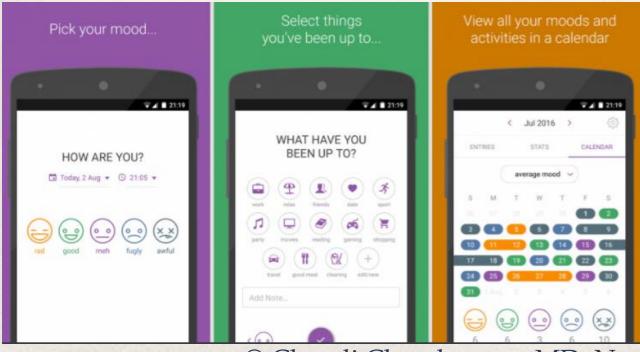
New Mood Related Apps

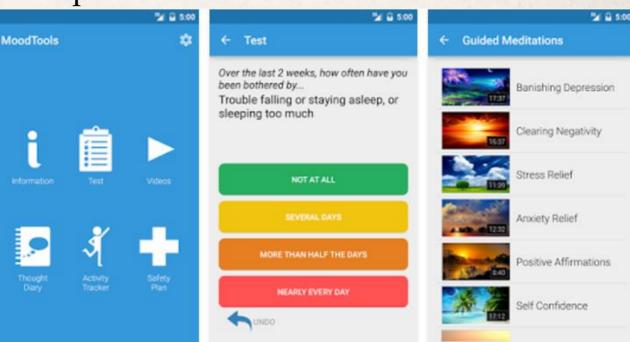
Daylio

- Free Free
- Pro: gives calendar of mood with activities to gain insight into daily life.
 Easy tap icons and no typing
- **Con**: limited to tracking mood only

MoodTools

- Free + \$ for added content
- **Pro**: Great links to meditation videos, calming sounds, TED Talks. Includes thought diary and PHQ 9 questions.
- **Con**: seems more focused on depression alone

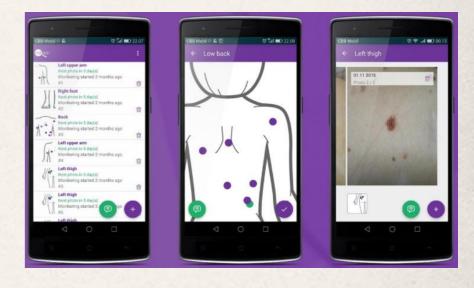




Miiskin



- Simple tool to document/organize photos of moles for comparison over time
- PROS: ease of use, can take serial photos and set reminder to take new ones. Supported by the Canadian Skin Cancer Foundation
- CONS: can back up photos require a subscription fee, can't import pictures (can export pictures so most won't need to pay fee)
- PRIVACY: found easily online, safeguards to storing personal info, nothing mentioned about photos
- ACCESSIBILITY: Apple/Android, English only, updates regularly



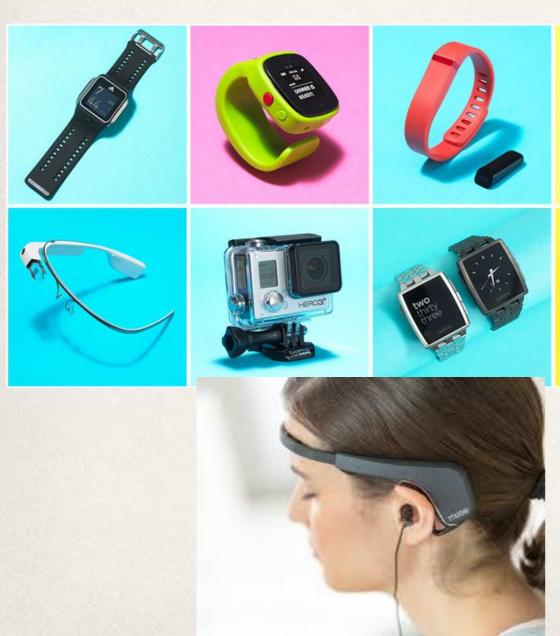
Future of Digital Health:

- Medical Device Apps
- Wearables
- Telehealth Apps



Wearables:









© Chandi Chandrasena, MD. Not to be reproduced without permission.

Mobile ECG abilities





AliveCor

- FDA-cleared and Health Canada Licensed electrocardiogram ECG monitor for Atrial Fibrillation
- 2 finger ECG approved in Canada
- ≈ \$129.99 on Amazon

© Chandi Chandrasena, MD. Not to be reproduced without permission.

JMIR Mhealth Uhealth. 2019 Feb 15;7(2):e11606: 10.2196/11606.

The Current State of Mobile Phone Apps for Monitoring Heart Rate, Heart Rate Variability, and Atrial Fibrillation: Narrative Review.

Li KHC^{#1,2,3}, White FA^{#3}, Tipoe T^{1,2}, Liu T⁴, Wong MC⁵, Jesuthasan A³, Baranchuk A⁶, Tse G^{#2,7}, Yan BP^{7,8,9}.

Abstract

BACKGROUND:

Mobile phone apps capable of monitoring arrhythmias and heart rate (HR) are increasingly used for screening, diagnosis, and monitoring of HR and rhythm disorders such as atrial fibrillation (AF). These apps involve either the use of (1) photoplethysmographic recording or (2) a handheld external electrocardiographic recording device attached to the mobile phone or wristband.

OBJECTIVE:

This review seeks to explore the current state of mobile phone apps in cardiac rhythmology while highlighting shortcomings for further research.

METHODS:

We conducted a narrative review of the use of mobile phone devices by searching PubMed and EMBASE from their inception to October 2018. Potentially relevant papers were then compared against a checklist for relevance and reviewed independently for inclusion, with focus on 4 allocated topics of (1) mobile phone monitoring, (2) AF, (3) HR, and (4) HR variability (HRV).

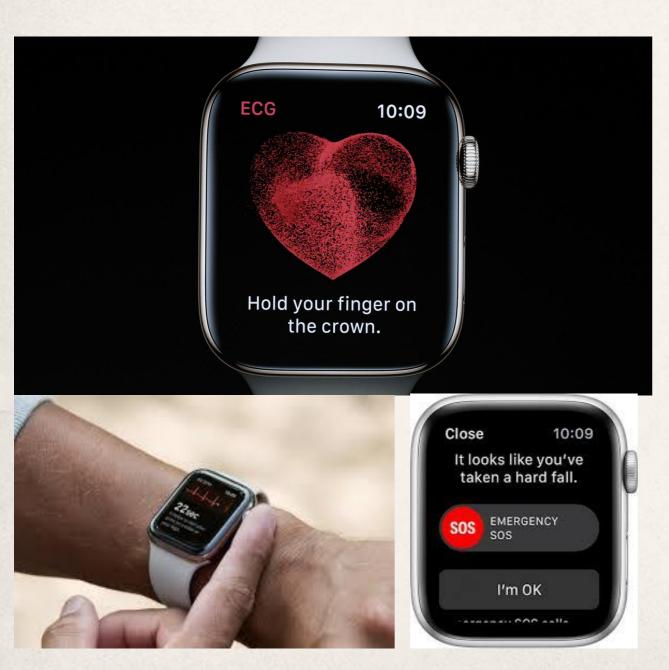
RESULTS:

The findings of this narrative review suggest that there is a role for mobile phone apps in the diagnosis, monitoring, and screening for arrhythmias and HR. Photoplethysmography and handheld electrocardiograph recorders are the 2 main techniques adopted in monitoring HR, HRV, and AF.

CONCLUSIONS:

A number of studies have demonstrated high accuracy of a number of different mobile devices for the detection of AF. However, further studies are warranted to validate their use for large scale AF screening.

Patients generating reliable data



Apple watch series 4

- Falls detection with emergency call
- Heart rate too low
- American Heart Association & FDA Approved in the USA only (no date set yet for Health Canada):
- Irregular rhythm detection: A. Fib
- ECG anytime in 30 sec (lead 1)

Digital Stethoscopes



© Chandi Chandrasena, MD. Not to be reproduced without permission.

Blood Pressure Monitor



© Chandi Chandrasena, MD. Not to be reproduced without permission.

Pulse Oximetry



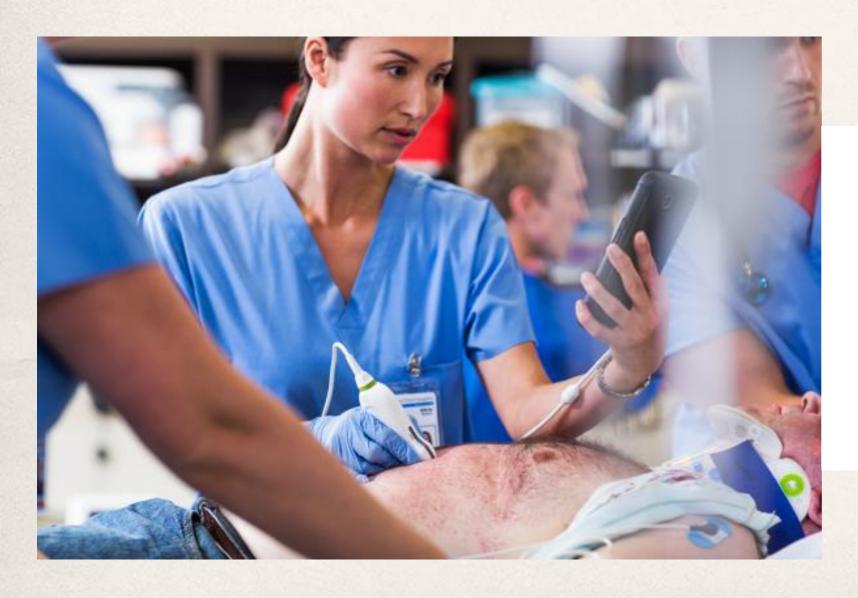
© Chandi Chandrasena, MD. Not to be reproduced without permission.

Glucometer:



© Chandi Chandrasena, MD. Not to be reproduced without permission.

Smartphone Ultrasound

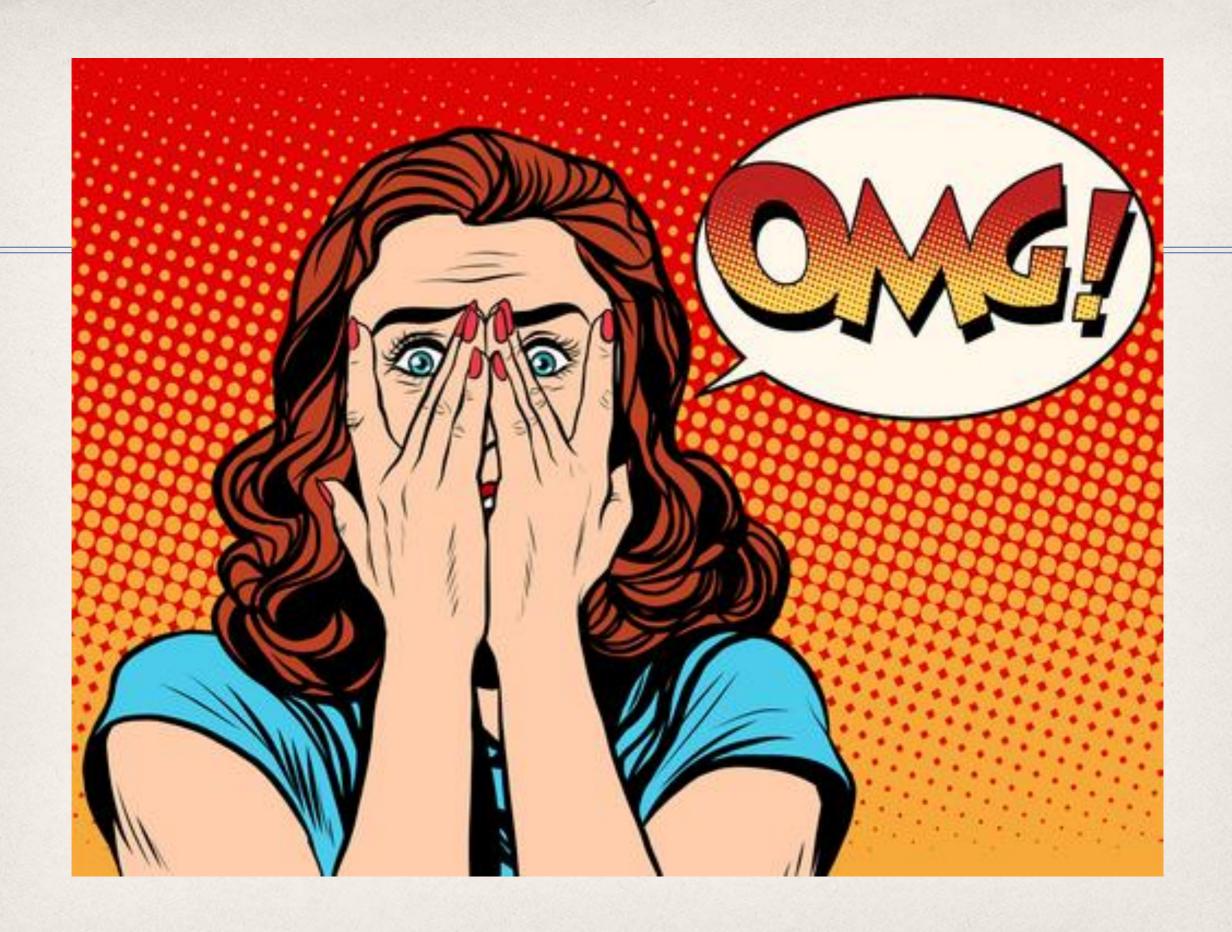




Dermatology



© Chandi Chandrasena, MD. Not to be reproduced without permission.



© Chandi Chandrasena, MD. Not to be reproduced without permission.

Akira/Maple/EQ virtual:

Doctor on demand apps

PROS: lets patients connect with a doctor/NP via text message or video chat. Doctors can then diagnose, prescribe and order labs. Timely and after-hours availability.



CONS: lacks continuity of care, ?ethical issue, second tier medicine for those who can afford, increased duplicate testing, and polypharmacy?



PRIVACY: EQ: servers in Canada, third party aggregate data, AKIRA: PHIPA and PIPEDA, MAPLE: ?



ACCESSIBILITY: AKIRA \$9.99/mth, bilingual, apple only, EQ virtual is \$49/visit, only English, MAPLE: \$49/visit and increases depending on time

51

Dermago.ca



- Direct-to-Consumer dermatology using a smartphone camera since Dec 2017. Ontario, Quebec and Alberta but expanding.

 Prescription can be phoned in, or a biopsy in their nearest office arranged if necessary.
- It costs \$179.99 to get an answer within 72 hours, and \$249.99 within 24 hours.
- Ethical? Telemedicine from patient to physician is not a service currently provided by the provincial health.



InkBlot



- PROS: Psychotherapy on your terms. From your home, or office. No need to go anywhere. More cost effective at \$75/hour vs \$200+, Developed by Dr. Arash Zohoor MD-psychotherapist founded company in Toronto
- **CONS:** Paradigm shift? Secure? Safety concerns? Over age 18.
- ACCESSIBILITY: Canadian, iPad, iPhone, English
- Other companies, TranQool

Fountain of Health



- Raise public awareness about science of brain health and give practical steps to promote resilience, emotional well being and health
- 5 factors for optimizing brain health and preventing dementia and chronic diseases.
 - Physical Activity, Social Activity, Brain Challenge, Positive Thinking, Mental Health
 - There is an App that patients can download and use. Allows patients to take a quiz to look at where they can improve and provides CBT techniques to help with change.
 - www.fountainofhealth.ca



" ... 'take better care of my health.' Okay, Doctor, I will try to find an app for that."

THANK YOU!

