

## NDs: There's An App For You

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Ladies and gentlemen, I have seen the future and it fits it the palm of your hand. The smartphone has revolutionized communication and information technology by combining their distinct elements into one portable, utilitarian and (let's be honest) aesthetic package.

Leading the charge is the Apple iPhone. Beyond the marketing hype, the iPhone (and similar devices) offers consumers thousands of applications ("apps") to choose from, some frivolous and some practical. This article will look at the more practical application of smartphone tech in the field of health care, specifically regarding the iPhone, because it offers the most robust list of applications at this time.

As the iPhone tagline goes, "There's an app for that." And there literally are hundreds of medical and health-related apps available. While browsing through the app store can make me feel like a kid in a candy shop, separating the wheat from the chaff (excuse the gluten reference) can be a time consuming proposal. To that end, I will review some of my favourite iPhone apps. While some of these apps are exclusive to the iPhone, many can be found on a number of smartphone and personal data assistant (PDA) platforms.

### All-In-One Medical Apps

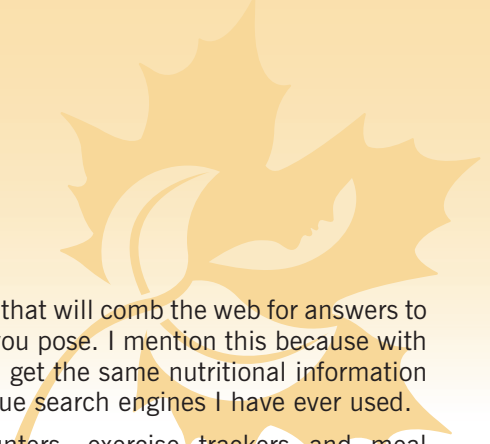
Back when smartphones were just a dream, I was using a PDA as my on-the-go medical reference tool. One of the best medical reference resources I used was **ePocrates**, so it was one of the first medical apps I added to my iPhone. There are several versions and price structures available, from a stripped-down free version (ePocrates Rx) that offers a basic drug index to the robust ePocrates Essentials Deluxe (\$199 US /yr), which adds alternative medicines, disease monographs, diagnostic and laboratory tests and a medical dictionary to its suite of resources. I settled on ePocrates Essentials (\$159 US /yr), which has all the features of the deluxe package, save for ICD codes and the medical dictionary. The price may seem steep, but it is well worth it as I use this app constantly in my private practice and when teaching. Some of its better features are: regular content updates; a drug interaction checker that can combine a number of drugs and natural medicines; a fairly comprehensive disease section that includes cross-searchable differentials and images; and medical news updates that can be customized to your areas of interest (within the confines of western medicine). It also boasts a tools section that contains useful medical calculators (BMI, Pregnancy Wheel, Ideal Body Weight, etc.) and stand-alone free apps that greatly expand tools, like their BMI app that calculates and charts BMI, BMR, and offers general treatment suggestions and algorithms. The main criticism I have of ePocrates is that it is missing a symptom check tool (which was present in the PDA version) that allows you to choose presenting symptoms to determine a differential list.

Also, it uses US drug brand names (though generic name is always referenced and searchable) and its disease database seems incomplete when it comes to less common diagnoses. However, content updates make this package a continually evolving resource.

Lest this become an ePocrates love-in, let's take a look at a few other all-in-one medical apps. **PEPID** evolved to the smartphone from the PDA, like ePocrates. The free version (PEPID Elements) is based around a toxicology database, but also contains a drug interaction checker and a differential diagnosis tool that allows you to enter symptoms for a list of differentials. However, there is no drug or disease information contained in this free version. PEPID Elements is the base app for a line of paid medical programs; the one most comparable to ePocrates is PEPID PCP Platinum (\$240 US /yr). It boasts primary care content, a drug database, a differential generator (as in the free version), a drug interaction generator (as in the free version), medical calculators, laboratory and diagnostic test information and many illustrations. Users can try out PEPID PCP Platinum in a free 14-day trial.

**Lexi-Comp** is another suite of medical apps in one, available on multiple platforms. Unfortunately, Lexi-Comp's free app is only a 30-day trial for its paid versions, so your options are limited. There are a variety of paid versions from Lexi-Comp to choose from, the most applicable to a primary care ND being: Lexi-Clinical Suite (\$180 US/yr), which offers drugs, drug interactions, lab tests and Harrison's Practice; Lexi-Select (\$220 US/yr), which adds natural product and infectious disease databases to the list, as well as a host of specialty specific databases; and Lexi-Complete (\$300 US/yr), their most comprehensive package, which adds resources like The 5-Minute Pediatric Consult, medical abbreviations, Stedman's Medical Dictionary and a medical calculator to the mix. The steep price tag to these Lexi-Comp products does not reflect their value to a naturopathic doctor. The best component is the natural product database, which is quite extensive, informative and well-referenced. The lab test and drug databases are comparable to other apps, as is Harrison's Practice akin to other disease databases mentioned. Finally, the functionality of this product is less user-friendly, as one has to scroll through each individual entry rather than being able to open separate elements individually (for example, drug dosing, interactions, adverse reactions).

The focus so far has been on apps that offer a lot, for a price. **Medscape**, from WebMD, which runs a popular web-based



medical information site, is a wonder, as it is free and loaded with practical information. At its core are the standard drug and disease databases, which are completely searchable and cross-referable. Plus, the drug section includes an extensive herbal and nutritional medicine database and interaction check that is comparable to the paid version on ePocrates. Medscape also sends the most current research and medical news to your iPhone. And did I mention it's free? This one doesn't take much clinical decision making to figure out its worthiness. Download it.

Finally, in the all-in-one category we look at **Skyscape**. Another program that started on the PDA platform, Skyscape is unique from the other apps discussed so far in that it is both a free suite of medical products and a platform for other medical databases and electronic texts. The base app contains a medical tool suite, a drug database and drug interaction tool, and updates from medical news, research and safety. The interface is slightly confusing when trying to access information in a busy clinical setting, but these basics are worth the price of admission (i.e. memory space). Where Skyscape truly excels is as a portal and platform to other purchasable content. From the perspective of a ND, it provides access to many specifically applicable texts and resources, one of which is Natural Standard, a web and smartphone based natural product resource. It is beyond the scope of this article to go into detail about the many resources available, so suffice it to say that it pays to have Skyscape on your smartphone for those texts and services you may want to purchase, along with the free resources mentioned.

## CAM Apps

With all the aforementioned medical apps (and more) available on the iPhone, the CAM-specific apps are paltry in comparison. There is a definite dearth of apps that contain the level of professional information NDs need. I will highlight some of the top apps in this category and point out the losers.

In the nutritional medicine category, the first app that catches the eye is **VitaminPlus** (free), a vitamin and mineral database. To say it is a bare bones database is like calling the Sahara a little bit dry. Medscape's nutritional information far outshines the content of VitaminPlus (I'm still trying to figure out what the "Plus" refers to). Don't waste your space on this app. There are a few apps that allow you to calculate nutrition content, like what appears on labels of food products. You can specify amounts in some of these apps to get incremental nutritional information. There is little reason to spend money on an app such as this, so if you are interested download the free **Nutrition Facts Calculator**. But, there is an app called Wolfram Alpha (\$1.99), that is a

scientific search engine that will comb the web for answers to the scientific question you pose. I mention this because with Wolfram Alpha you can get the same nutritional information in one of the most unique search engines I have ever used.

There are calorie counters, exercise trackers and meal planners galore in the app store. Most will be applicable to your personal life or as recommendations to your patients, but not as clinical applications. The Glycemic Index (GI) specific apps may be more applicable to a clinical setting. In this category it seems you get what you pay for; the free and less expensive apps are basic, though the paid apps may charge more than they are worth to you. However, the best from GI Diet focused apps are **Diabetic Meal Planner Pro** (\$13.99), which specifically focuses on low glycemic impact meals and allows the user to calculate the Glycemic Index (GI) and Load (GL) for individual meals or the entire day. **Diet Science Pro** (\$9.99) contains a number of diet-based calculators, including GI and GL, BMI and daily calorie requirements. Finally, a little app I love is **What's on my Food?** (free), provided by the Pesticide Action Network. It provides a listing of pesticides found on or in most foods and compares the foods to their organic counterparts. It is fascinating and frightening; an app you and your patients will want to have.

In the category of botanical medicine, there are not many worthy apps for advanced practitioners. As with the nutritional apps, Medscape offers better free information on herbal medicines than most of the paid herbal apps. Until a more professional herbal medicine app is available, there is nothing I can recommend either free or paid. However, under the category of herbal medicine in the iTunes store you will find a little gem of an app. **TCM Clinic Aid** (\$5.99) combines the information from texts by Bensky, Deadman, Maccioca and more, into a searchable and customizable database for TCM diagnosis, acupuncture and herbal treatments. Point location and graphics are very accurate and listed by individual points and channels, including auricular points. The materia medica is arranged by herb categories, individual herbs, formula categories and individual formulas. I don't want to say it too loudly, but I can't believe this app is only six dollars as the information and functionality of this app make it worth at least ten times as much. You can also buy add-ons such as Master Tung Point Reference, Wrist/Ankle Acupuncture, and a self-testing app. Look no further for your smartphone pocket reference to Asian Medicine.

Homeopathy is another category that is, surprisingly, poorly developed with regards to apps. I have looked at most of the homeopathy apps currently available and none has the depth necessary for clinical reportorizing, even on a basic level. Most of the homeopathy apps are for the layman, so if you want a quick reference to major remedies for common conditions you can download **iHomeopathy** (\$3.99) or **iHomeopath**

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(\$7.99). In the category of physical medicine there is one app that stands out and little else to recommend. **Muscle Trigger Points** (\$2.99) is just the handy kind of app that makes the iPhone fun and functional. Its centerpiece is a 3D model of a human figure detailing the musculature alone. The figure can be rotated to view mapped trigger points, which, when pressed, take you to a more detailed illustration of the trigger point and its radiation patterns. This app can also be mapped by muscle zones and searched by individual muscle. For the price of a cup of tea you get an extremely practical resource for discerning tension patterns of pain in your patients.

### Diagnostic Apps

If you are budgeting your resources and do not want to shell out a yearly fee for one of the all-in-one-apps (though, if you've purchased an iPhone, you're hardly on a budget), there are a few handy diagnostic apps and medical tools you should have in your medical folder. **Diagnosaurus DDx** (\$9.99) is a fairly basic differential diagnosis database, but right for the price. One can search by symptom, disease or organ system for the most likely diagnoses and their descriptions. This app lacks a multi-symptom check feature, which is helpful when trying to figure out a more complex presentation. At ten-times the price, **Differential Diagnosis i-pocket** (\$9.99) does not possess many more features than *Diagnosaurus*, especially the all-important multi-symptom check. **Medical Lab Tests** (\$5.99) is a pocket reference for lab values alone. It provides a list of tests by category and a search function. The description of each test provides a general overview, reference values, clinical information and interpretation of abnormal results. As a stand-alone laboratory reference **Medical Lab Tests** is, as the name implies, just about lab tests and overlooks non-lab based diagnostic tests. Also, it is deficient in a number of important tests, making this app hard to recommend. **Lab Dx** (\$9.99) is a more robust lab reference, with a place for notes, reference values in both SI and conventional units and links to website information.

Medical calculator tools are a feature of most medical app suites, like the ones mentioned in this article. And, although as naturopathic doctors we have less use for a good number of the featured tools (Ranson's Criteria anyone?), there are a surprising number of tools one would find useful on a regular basis. I would recommend downloading a free medical calculator tool, even if you have an all-in-one app, as they have a surprising range of applications beyond what is found in the medical suite medical tools. Two of the best, free medical calculator apps are **QxCalculate** and **MedCalc**. *QxCalculate* is a medical algorithm calculator stuffed with scores, scales and classifications. Some of the more useful calculators include Framingham Risk Score, Due Date by LMP, BMI, Metabolic Syndrome, and dermatome maps. *MedCalc* is a slightly fuller package, with a few more useful (to the ND) calculators, illustrations and charts than *QxCalculate*, like a Snellen eye chart. *MedCalc* can also be upgraded (\$7.99) to a "Pro" version that allows one to build

a patient database and provides formula list captions to help identify what the formula is about.

Resources for medical information abound in the app store and downloading too many will leave you looking at none. A couple of my favourites are **PLoS Medicine**, an open access medical journal and **MedPage Today**, a customizable medical news portal. For PubMed access, there are a few portals, and one generally has to pay for the service if you want a fully functional search app. App prices range from \$2.99 to \$9.99 and you may find that the least expensive (**PubMed on Tap**) is better suited to your needs than the most expensive (**PubMed Library**).

With all of these information and diagnostic apps one might think that the iPhone could take your place as the doctor. Of course that is not true, but solid diagnostic skills are the key to successful treatment. The iPhone can help you keep up those skills with apps that include anatomy quizzes, ECG interpretation guides, auscultation aids and physical exam resources. Most are inexpensive and provide a convenient way to brush up on and improve your abilities. In addition, most app developers respond to consumer reviews and update their apps to fix problematic issues, so the app you originally purchase will improve over time.

I find the handy resource of my iPhone medical apps indispensable in my daily practice. If you are not using medical apps on your smartphone, you are not using it to its full potential. I hope this article helps you get on your way, or helps more experienced users clear out the app clutter. And if you haven't got a smartphone, I've provided you with some great reasons to consider the investment.

### About the Author

Mitchell Zeifman, ND is a graduate of the Canadian College of Naturopathic Medicine and has been practicing in Toronto since 2003. In addition to running a private practice in midtown Toronto, Dr. Zeifman is also a supervising naturopath at the Robert Schad Naturopathic Clinic, the teaching clinic at the Canadian College of Naturopathic Medicine, and an instructor/co-ordinator for the second year botanical medicine course at CCNM.

Dr. Zeifman treats a wide range of health concerns in his practice and has a specific interest in environmental medicine. He is also passionate about herbal medicine and uses herbs as one of his main treatment modalities.

He is also passionate about his iPhone, so if you see him walking down the street with his eyes focused on its screen, please make sure he doesn't bump into any objects while you tell him about your favourite apps.

***Please note that app prices were accurate at the time of press.***