

NEW PERSPECTIVES

There's an App for That: Mobile Software for Clinicians

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Whether on the wards or in the clinic, doctors increasingly use mobile computing to reference information or communicate. We find ourselves in a revolution of mobile computing, with many doctors moving to smart phones or tablets as their primary work computers. "Apps," or programs specifically made for a smaller touchscreen, deliver information in an easy to navigate and read package for mobile devices. Internet connectivity on these devices makes them (and you) always up to date.

As an early adopter of technology, I'm often asked which apps I use. Like most, I use a range of medical software to find information in clinic or while attending on the wards—and to keep my life organized. I also have programs to stay connected with my social networks and for personal productivity, including my secure e-mail and dictation software for clinic documentation. In this article, I will outline some of the different medical applications available for mobile devices, concluding with a few tips on both etiquette and security.

Finding Apps

Like any other software, apps must be installed on the device. Apple users will be accustomed to the App Store, while other device users can download programs from their equivalents or third-party websites. While Apple's App Store is relatively closed and safe, the Android "ecosystem" is much more open—I suggest only downloading programs from reputable sources (i.e. Google Play or Amazon Appstore) to avoid potentially malicious software. Though many medical apps are free, the ones for sale should not be overlooked. As many apps replace

pocket books or even printed textbooks, some of the more robust reference sources will command a fair market price.

Many mobile websites have evolved from text-based screens to "web apps," which are webpages that look and act like software built specifically for one's device. In fact, one can often bookmark these to appear on the home screen along with other "native" apps. Visiting <http://m.nejm.org>, for example, one will find the website looks and feels like an app but is run through your device's web browser.

Medical Reference

The first reference category to gain traction was prescribing and drug information. Of these, ePocrates has been one of the most successful programs, launching in 1999. It includes manufacturer information and also allows a user to check for interactions among different drugs. Micromedex is another popular program in this category.

The next most popular category is the medical calculator. Many of these tools are either free or of low cost and provide a way for the clinician to quickly make calculations using formulas that are hard to keep in one's head all of the time, such as the MDRD equation for estimated glomerular filtration rate. Some (e.g. MedCalc) include scoring systems to predict severity of different illnesses, such as the Blatchford Score for upper GI bleeding. Clinicians may also find tools to look up ICD-9 or CPT codes for billing purposes.

Many organizations have invested in creating smartphone apps to host their specific information or guidelines. For example, the Agency for Healthcare Research and Qual-

ity's ePSS allows clinicians to input age, sex, and behavior information to generate a list of recommended services. Specialty societies such as the American College of Cardiology also have apps to host their guidelines. The National Library of Medicine publishes an app called LactMed containing information about drug risk during pregnancy and lactation.

Lastly, reference books are appearing on more smartphones. Many books that were once crammed into white coat pockets such as the *Sanford Guide* are now easily called up on a mobile device. Texts such as the *Merck Manual* and *Harrison's Principles of Internal Medicine* are also mobile ready. While these do cost a fair price, they are professionally published and offer good information in a nice design.

Medical Literature

Many medical journals now either have a "native" app or a web app to access their content. Some, like the *New England Journal of Medicine*, have both. For the iPad, one can download issues in full each week. This is handy when traveling without an Internet connection. If accessing from my mobile phone, I view the *NEJM* web-app, which is also optimized. Other journals such as the *Annals* offer additional functionality through their apps, like videos and podcasts.

Sites such as the ACP Journal-Wise (formerly ACP Journal Club) WebApp lets me browse through reviews of recent articles on the go. With JournalWise, I can easily file an article of interest to read later (or share with my social network). The app Medicine Toolkit (disclosure, cre-

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ated by one of my departmental colleagues) nicely provides a pocket guide for the medical literature and offers a “Bayes at the Bedside” calculator, providing likelihood ratios based on the medical literature to help teams apply evidence to decisions in real time. Lastly, the National Library of Medicine offers a web app for PubMed to make searching for articles at the point of care or discussion effortless.

Professional Considerations

Personal productivity apps are common on many smartphones, and many of these have a connection to “the cloud,” which is comprised of remote servers that store data. These apps allow people to have access to most of their files and notes on the go, with examples being Dropbox and Evernote. These services are great for keeping teaching handouts, slide sets, and educational notes handy and in sync. However, protected health information, such as sign-outs, patient rosters, or identifiable images, should not be stored with these cloud-based companies.

Additionally, mobile devices now offer crisp and clear digital photography, making it very easy to docu-

ment a rash or e-mail a lesion to one’s dermatology colleague. However, all digital images are also forms of protected health information and require the same degree of protection. I suggest that clinicians obtain informed consent for all digital photographs that explains the purpose of the image, who will see it, how it will be stored, and how long it will be kept.

Etiquette

For all of the utility that technology offers, these gadgets often are (in fairness) being blamed for eroding our social skills. Common examples include the inpatient team rounding where members are busily looking up labs or other information on their devices instead of participating in the discussion or where the outpatient clinician is interacting more with the computer than the patient. How do we balance being present in conversations with our needs to interact with technology? In most circumstances, acknowledging the usefulness of the device/app and voicing aloud what one is doing will help others realize that it is a legitimate use. For example, stating “I’m going to run those drugs through this app to look for interactions” can make both

patients and team members aware of what you are doing on the device. All learners may have a tendency to look up something on a device when they hear a diagnosis or term with which they are unfamiliar. It is better to do independent reading later and remain engaged and ask questions instead; many teachable moments for all can arise from this. Furthermore, apps may provide solid reference material, but they won’t teach clinical reasoning. For that, keeping the phone in the pocket and eyes on the patient will be invaluable.

Conclusion

I see our little pocket-sized computers being with us for a while. We will continue to search for information in a “just-in-time” fashion. We must remain cognizant of how others perceive our use of technology, and how dependent we can become on it. Importantly, apps and mobile technology will not (or should not) tell us how to think. Furthermore, many of the clinical questions that our patients generate will not be answered simply by an app but will require a thoughtful search of the literature. Having PubMed mobile, though, is a start.

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