

Killer Smartphone Apps for On-the-Go Physicians

Cynthia Johnson, July 10, 2009

After Michelle Eads, MD diagnosed her pregnant patient with a bladder infection, she quickly reached for her Apple iPhone. The [Colorado primary care doctor](#) wasn't planning to call an urologist for a consult, however. She used the smartphone to research antibiotics that are safe for pregnant women using Epocrates, a comprehensive drug and disease reference application developed by San Mateo, CA-based Epocrates, Inc.

Eads doesn't have a list of antibiotics that are safe for pregnant women committed to memory. But, she does know that physicians need to be very careful about prescribing medications that may harm an unborn baby.

"With Epocrates, I'm able to research very quickly and figure out what the safest options are, review them with the patient, and make a decision," she says.

Eads is one of a growing number of physicians using smartphones—mobile phones that combine online access to information with PDA functionality. According to an April report by Manhattan Research, the number of physicians using smartphones more than doubled to 64% over the past year.

The results of the survey indicate that physicians like Eads are spending more time online using smartphones to access medical and pharmaceutical resources during the course of their busy day.

"It's rare for me to have an encounter—whether it's a phone visit, a virtual visit, or an office encounter—that I don't use Epocrates," says Eads. "If I'm getting ready to talk to a patient and I want to know what the different alternatives and side effects are, I do a little research before the appointment. I'm using it constantly."

Avoiding medication errors

Eads primarily uses the Epocrates application to look up drug interactions, side effect profiles, adverse reactions, and contraindications. Epocrates, Inc. launched the application in 1999 and offers users a free version of the tool as well as subscription-based versions with additional functionality. Michelle Snyder, Epocrates senior vice president of subscriptions, says over one in three doctors in the United States are actively using the application on a mobile device.

According to Eads, this use of her smartphone increases her productivity. If a patient is concerned about stomach upset, for example, Eads looks at antibiotics that are least likely to cause that.

It also allows her to look up drug interactions, including drug herbal interactions, which she says are somewhat popular with residents in Colorado. "There are a lot of people on some strange things out here," she says.

In a study of how examining if Epocrates helps doctors reduce medication errors, researchers at Brigham and Women's hospital found that 50% of Epocrates physicians surveyed reported averting one to two errors per week.

"It really helps them prescribe the right medication and avoid adverse drug events," says Snyder. She says when a drug is recalled, the company is able to update their drug database within the hour so physicians are constantly accessing the latest information.

Eads can view different types of medications in the same family or the same class. The application also tells her what the patient's copayment will be given their insurance plan (not all insurers pay Epocrates to include this information). Eads says this allows her to find lower copayment options for her patients. It also reduces the need for a callback from the patient's pharmacy if a particular drug isn't covered by the patient's insurance plan.

"My patients like that I can check and find out what medicine they can use given their insurance," she says. "It's nice to have that information to give them more choices."

According to Snyder, when the new Medicare part D program went into effect, Epocrates had all of the plans already loaded into their application. "That was a huge help to physicians. It's difficult for the physician to keep track of what's covered under which plan."

In general, the response that Eads has gotten from her patients regarding her use of the smartphone has been extremely positive. "My patients know that I'm very technology oriented and that it allows me to spend more time with them."

She says they don't view her reliance on the phone's reference applications as a weakness. "I don't know absolutely everything," she says. "I think they're glad to see that I'm double checking things and also making sure that there aren't interactions or problems."

For example, when she has a patient who isn't quite sure of the name of the medication he or she is taking but can describe what the pill looks like, Eads can use the search function in the application and show the patient a picture of it.

"So many times people say it's the little red pill that I need to have refills on. Finding the actual picture is very helpful."

The infectious disease information in the Epocrates application is also helpful, she says. If she is treating a patient who has sinusitis, it allows her to see what the current recommended antibiotic is.

"If you have an idea of what you're treating, then you can search for it by what part of the body is affected with the infection and you can find out what the recommendations are."

The end of test result phone tag

Sean Khozin, MD, MPH takes his prescribing to the next level using his iPhone. Like Eads, the [NY-based hellohealth](#) internal medicine physician consults Epocrates to select a medication for one of his patients, but then

submits the prescription electronically through his smartphone using an application called Care360 by Mason, OH-based MedPlus, Inc. (a Quest Diagnostics company).

"When I e-prescribe I can see an electronic record of the patient's medication history," he says. "If the patient forgot to tell me about an active medication, I could catch that right there on the spot because I'm looking at it on my iPhone as I'm prescribing the medication."

Khozin also uses Care360 to review laboratory and blood work results. Results are sent to his iPhone as soon as they are completed. He can examine them, mark them as being reviewed, and e-mail the patient the results.

"The patients don't have to wait," he says. "You don't have to play phone tag."

If the test results are abnormal, Khozin says he will e-mail the patient to provide further instructions regarding care. He may tell the patient to make an appointment in the office, but, most often, he says he can reach out using technology.

When reviewing results with patients in the office, Khozin is able to use his iPhone to graph data and display trends. "Patients find that very interesting," he says. "It's hard to do that with paperwork, but on the iPhone it's magnificent. With just a click of a button you have the patient's entire test history. When they're in the office, you can use that opportunity to educate them about what their numbers mean."

Khozin also prints or e-mails the patient educational materials through his iPhone. He says he would rather provide his patients with trusted content than have them scour the Web for it on their own.

"If there isn't enough time during an office visit to go through everything, it's very important for the physician to give the patient something to take home," he says. "There's tons of information online—too much information. I think the job of the physician is to use technology to direct patients to the right sources."

Making the call

Given all the tasks that smartphones can perform, it can be easy for users to forget that they can actually make phone calls with them, too. Eads can read basic e-mails from her patients on her smartphone, but she says she prefers to hear a patient's voice, because the tone of their voice provides her with information that can't be conveyed in words, such as a patient's frustration level.

Eads has programmed all of her patients (she has a small, but growing technology-based, solo practice) into her smartphone as contacts. When they call her, she is able to identify them and has their pharmacy information if she needs to call in a prescription.

"I know exactly who it is and I'm ready to work with them when they call," she says.

Physician adoption

Eads doesn't think all doctors actually use their smartphones for their medical practice. She says many of them just use them because "they're fun." She chose her smartphone because she wanted to eliminate the number of gadgets that she was carrying around, specifically her mobile phone and her PDA. Having the smartphone helps her consolidate the tasks she needs to complete into one gadget.

Doctors will probably begin to adopt smartphones well before they adopt EMRs, Eads predicts. She says that it might even be the entry point into the technology arena for some physicians.

"I think they will be used more and more, especially by younger generation docs," she says. "I think even older physicians are going to start using it as they see their kids and grandkids playing with them and are exposed to the medical applications that are available."

According to the Snyder, the average age of an Epocrates user is approximately 45 years old. "It isn't just the younger clinician anymore who is using the smartphone."

In order for physicians to adopt new tools and technologies, Khozin says that they need incentives. They are currently overwhelmed completing the paperwork and performing administrative tasks required to satisfy the needs of third parties and insurance companies.

"Insurance companies don't pay for email and video chat," he says. "We have to change our payment mechanism, be more responsive to delivery methods that are more efficient, and reward physicians for using those methods. If a doctor wants to video chat with patients, the insurance company should pay for that."

Bright future for tiny gadgets

Khozin believes that smartphones show a lot of promise given that healthcare delivery is becoming increasingly mobile. While office visits will never go away, they may not always be necessary. He says that if doctors reduce the number of unnecessary office visits and give patients the flexibility to communicate with their healthcare provider on the phone and computer, then everyone wins.

"There's a tremendous amount of potential," he says. "This is going to evolve and become more integrated into the process of delivering care."

He says mobile applications could be used to provide access to care in underserved, rural areas in the United States and in remote parts of the world. "Even in the most remote parts of the world, they have cell phone coverage. They may not have hospitals or clinics, but they have cell phone coverage."

As one might imagine, smartphone devotees are eager for more apps that can increase their productivity. Eads predicts that future apps will be more interactive. Rather than being a source of information, they may one day be able to aid physicians in diagnosis. For example, perhaps a physician would one day be able to take a picture of a patient's rash and have an application analyze it.

Snyder predicts that there will be more smartphone reference applications and decision support tools that fit into a physician's workflow in the future.

"The myth has always been that doctors are technophobic," she says. "They really aren't technophobic; you just need to have a technology that fits the way a doctor practices. That's why mobile technology is perfect. A doctor is moving around. They're going between the hospital, the office, and their home. The mobile device fits into the physician's workflow."

Top Medical Apps (per iTunes as of 7/9/2009)

There are numerous medical applications available for smartphones. While some of the applications fit perfectly into her practice, Eads says that others are more specialty-driven. "There are some that are specifically for ER docs or urologists," she says. "A lot of the primary care docs could use those, but I don't know how useful they would be."

Eads says that she tries to minimize the number of applications that she uses so that she doesn't have too many options from which to choose. "I try to whittle it down to things that I use day in and day out."

The top ten medical applications available for in the iTunes App Store are:

- 1. Epocrates:** A fee drug reference containing information on more than 3,300 drugs, including dosing, adverse reactions, pricing, and pictures. Also includes drug interaction information and performs medical calculations.
 - 2. Skyscape Medical Resources:** A collection of free medical information and decision support resources for healthcare professionals.
 - 3. Speed Bones Lite:** An app that lets you test your knowledge of bones.
 - 4. MedCalc:** A medical calculator that contains a wide array of medical formulas and scores.
 - 5. EyeChart:** A mobile Snellen eye chart that can provide useful screens for rough visual acuity.
 - 6. Eponyms (for students):** Short descriptions of medical eponyms, such as Rovsing's sign and Virchow's node.
 - 7. Relax with Andrew Johnson Lite:** A stress reducer that teaches relaxation techniques that can help with pain control, insomnia, post traumatic stress disorder, and other stress symptoms.
 - 8. uHear:** A mobile hearing loss screening test that lets you test hearing to determine if it is in normal range.
 - 9. Skyscape Rx Drugs:** Provides dosing guidelines on brand and generic drugs and includes weight-based drug dosing calculators.
- Police Scanner:** For healthcare professionals who like listening to police scanner frequencies. The app is the 10th most popular in the medical category.

Cynthia Johnson is the editor of [Medicine On The 'Net](#), a monthly newsletter from HealthLeaders Media.

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