

## Confessions of a Wilderness Fellow: I Can't Live Without My Smartphone, Can You?

Anil Menon, MD

My fellowship in wilderness medicine challenges me to teach and practice medicine without the tools afforded by a modern Emergency Department. Strangely, one of my most valuable instruments is a smartphone—arguably as important as a stethoscope, a SAM (structural aluminum malleable) splint, or even flint and steel. Smartphones are devices that do more than handle phone calls and provide applications that integrated personal digital assistants into medicine in the 1990s. Not only are smartphones set up so that you can download and install an increasing number of applications for them but they also add many modern nuances, making them compelling products today—something I came to appreciate more than ever during my relief work in Haiti.

Popular smartphone models, such as those sold under the brand names iPhone, Nexus One, BlackBerry, and Palm and those running Android or Windows operating systems, all offer the basic substrate to aid your medical practice with a few core applications.<sup>1</sup> At its most useful, the smartphone provides a place to store pharmacologic and diagnostic references, the capacity to take notes, and a medical calculator. These core functions are fulfilled by applications such as the Epocrates products (Epocrates, Inc; San Mateo, CA; [www.epocrates.com](http://www.epocrates.com)) and Lexi-COMplete (Lexi-Comp; Hudson, OH; [www.lexi.com](http://www.lexi.com)), allowing users to look up medications and differential diagnoses, and are available for all platforms; thus, any smartphone will fit your medical needs.

My recent experiences in Haiti revealed the indispensable nature of my smartphone. On entering Port-au-Prince and starting work at the Hôpital de l'Université d'État d'Haiti (University Hospital) four days after the earthquake in January 2010, I found that there were no guarantees of food or water, let alone electricity to charge my smartphone. A small, low-cost, portable solar panel (Better Energy Systems; Berkeley, CA; [www.solio.com](http://www.solio.com)) afforded enough daily energy to allow me to use my core medical programs, which

were especially important in the fast-moving, low-infrastructure environment after the earthquake. Most solar-powered chargers can store ten hours of sunlight and can be used to fully charge a depleted smartphone.

In the absence of any uniform communications standard, I could not effectively communicate with other physicians or transfer patients to the USNS Comfort without text messaging. An unexpected Wi-Fi connection allowed me to refresh my knowledge of nerve blocks before a sufficient supply of morphine sulfate arrived.<sup>2,3</sup> Similarly, a free Creole phrase book (Transparent Language, Nashua, NH; [www.byki.com](http://www.byki.com)), downloaded to my smartphone, eased my transition through my first few days in Haiti before I had access to translators. Although I did not use a pediatric reference, unit converter, Snellen chart, or an antibiotic guide as much as I would have in a nondisaster setting, I felt more comfortable having electronic versions (QxMD Software; Vancouver, BC, Canada; [www.qxmd.com](http://www.qxmd.com); ABx Guide, Emergency Medicine Residents' Association; Irving, TX; [www.emra.org](http://www.emra.org)) of them at my disposal. During my return trip, while I began processing my experiences, I listened to audiobooks, but I could have just as easily listened to medical lectures such as those in the EM:RAP.TV (*Emergency Medicine: Reviews and Perspectives*) series (The Center for Medical Education; Creamery, PA; [www.emrap.tv](http://www.emrap.tv)), educational videos, or one of the many available medical podcasts (PodcastDirectory.com; Chesapeake Bay, MD; [www.podcastdirectory.com](http://www.podcastdirectory.com)).

I plan to bring my smartphone with me when I work at the Pheriche clinic of the Himalayan Rescue Association of Nepal in the Spring of 2011. I believe it will be even more helpful when used in a more traditional hospital setting. For instance, a smartphone can store and organize thousands of PDF references for immediate use or teaching purposes, which is quite helpful in view of the current emphasis on evidence-based practices. A specific example is the Macintosh-based

**Anil Menon, MD**, is a Fellow in Aerospace Medicine at UTMB/NASA and has trained in Emergency Medicine and Wilderness Medicine at Stanford University and Kaiser Foundation Hospitals in CA. E-mail: [anilsamoilenko@gmail.com](mailto:anilsamoilenko@gmail.com).

application named Papers (Mekentosj BV; Aalsmeer, The Netherlands; <http://mekentosj.com>), which can efficiently search and store journal articles that are easily synchronized and viewed with an iPhone. The Air Sharing application (Avatron Software; Portland, OR; <http://avatron.com>) also allows users to transfer PDF files, Word documents, Excel phone trees, pictures, and presentations between a smartphone and a computer. In a similar fashion, Evernote (Evernote; Mountain View, CA; [www.evernote.com](http://www.evernote.com)) can store notes, pictures, and screen shots of items that once resided in the margins of a medical textbook or in a personal notebook. This information resides online until it is retrieved by a smartphone or by any computer. Many of my residency notes are backed up online through Evernote.

As more material moves online, it is becoming easier and more important to store pictures of physical examination findings. Some electronic health records (EHRs) such as the Epic System (Epic Systems Corporation; Verona, WI; [www.epic.com](http://www.epic.com)) can integrate pictures taken from a smartphone, which is usually more accessible than a camera (though care must be taken to avoid violating the Health Insurance Portability and Accountability Act by inadvertently storing and sharing these photos). With an eye toward the future, some EHRs are accessible from a smartphone. Epic has partnered with Apple to launch Haiku,<sup>4</sup> an application that provides smartphone access to EHRs to facilitate bedside documentation and document portability.

Apple took 600,000 preorders for fourth-generation iPhone on the first day that they were offered for sale, and Epic has a broad market share; both companies

are in a position to define the direction and use of smartphone medical technology. There is not enough space for this article to discuss all of the applications that might enhance a clinical practice, but you can discover these through an Internet search using the proper search terms from any medical specialty. If you already use a smartphone, you may have encountered a new use or application for it in this article. But if you do not have a smartphone, then ask yourself this: Can I practice medicine without it? ❖

#### Acknowledgments

*I thank Gus M Garmel, MD, for his significant contribution to the idea for this article, its organization, and its editing. I could not have completed it—or my residency—without his help.*

*Katharine O'Moore-Klopf, ELS, of KOK Edit provided editorial assistance.*

#### References

1. CNET [homepage on the Internet]. San Francisco, CA: CBS Interactive. © 2010. Smartphone reviews. CNET [about 50 screens]. Available from: <http://reviews.cnet.com/smartphone-reviews/>.
2. eHow, Inc. [homepage on the Internet]. Bellevue, WA: eHow, Inc. © 1999–2010. Perform nerve block [search terms; more than 7 pages of results]. Available from: [www.ehow.com/search.aspx?s=perform+nerve+block&Options=0](http://www.ehow.com/search.aspx?s=perform+nerve+block&Options=0).
3. Shibata Y, Harato M. Ultrasound-guided femoral nerve block [video]. Available from: [www.youtube.com/watch?v=Bxj0LyQdy\\_M](http://www.youtube.com/watch?v=Bxj0LyQdy_M).
4. Epic Systems launches iPhone EHR app, Haiku [press release on the Internet]. MobiHealthNews. 2010 Jan 13. Available from: <http://mobihealthnews.com/6030/epic-systems-launches-iphone-ehr-app-haiku/>.

**I could not effectively communicate with other physicians or transfer patients ... without text messaging.**

## The Take-Home Message

The take home message is that we need to think of the smartphone as a medical device.

The capability is there and it's how we choose to use it.

— Ivor Kovic, MD, b 1980, Head of the Pazin Ambulance Service in Croatia and international presenter on smartphone healthcare technologies