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More Than a Pocketful of Knowledge

A family practice group uses integrated mobile technology at the point of care to improve decision-making and patient care.
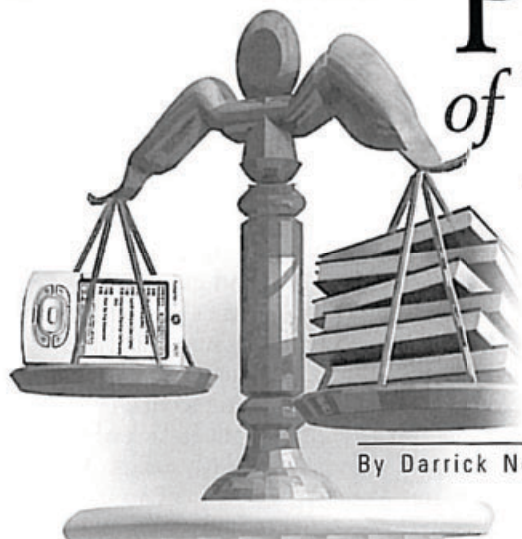
By Darrick Nelson, M.D.

Innovation is not a new term in healthcare. Physicians and researchers are continually making huge strides in the creation of new medicines and procedures. An illness that may have been terminal five years ago might now be treatable. Surgeons have minimally invasive options for performing what were once highly invasive operations. Innovation regularly improves the practice of medicine.

One area that has experienced marked advancement is the practice of medicine at the point of care. In part, this is attributable to a gadget many physicians already have—the personal digital assistant (PDA). Many people have a simple model that they use for personal organization applications such as calendars and phone books. With the right software, a PDA can be an extremely powerful tool for a physician, nurse and medical student.

I began using handheld devices as part of my medical practice about five years ago, while I was an intern, when my wife gave me a Palm Pilot as a gift. I purchased several medical reference titles, loaded them onto my PDA and quickly learned what a valuable resource it could be when used at the point of care.

Today I am in charge of medical information systems for the Corpus Christi Family Practice Residency Program, located in CHRISTUS Spohn Memorial Hospital, a 270-bed hospital serving a large indigent population. Our faculty and residents make approximately 560 bedside patient visits per week.

I knew my colleagues could benefit from a PDA loaded with trusted, integrated references, so I introduced handheld devices to the group of 50 residents and faculty members across our facility. We use our annual budget for electronic medical references from Skyscape Inc., because they are the same proven references that we would have purchased as actual books from some of the world's top medical authors and publishers.

When I first came to Corpus Christi as a resident, I was given a 2-foot-high, 50-pound stack of books. I put them on the shelf in my office and they haven't moved since. Textbooks are great, but they are not portable, and it is time-consuming to check something in one index, then open another book and flip through its index, and compare them side-by-side.

In contrast, by putting the information on a PDA, each physician in our practice can customize the library he carries on his own handheld, but some of the most popular titles among the group include *Griffith's 5-Minute Clinical Consult*, *The AHA Clinical Cardiac Consult*, *The Washington Manual Obstetrics and Gynecology Survival Guide* and ICD-9 codes.

The Power of Integrated Information

My colleagues and I find the mobile references particularly helpful and easy to use, due to a consistent user interface and what Skyscape calls smARTlink. Rather than flipping through book after book to find the information I need, I can use my PDA to locate and confirm the correct diagnosis and then immediately link to the exact treatment options for that illness, all with just the tap of a stylus. smARTlink enables me to jump between references to the exact information I need.

In my supervisory role I can more quickly review cases, and our residents and doctors have access to the information they need at the patient's bedside. This leads to fewer errors in diagnosis and prescription, and more time with patients.

For example, as a supervisor I frequently receive calls from emergency room physicians to review patients. I was recently presented with a case of myocardial infarction. Instead of going to my office, opening *Griffith's 5-Minute Clinical Consult* and checking the index, I just typed in "MYO" and was right at the correct place for information.

To check on drug information I can simply link to another reference, RxDrugs (*AHFS Dosing Companion*), and am immediately taken to the appropriate drugs for acute myocardial infarction. By clicking on a drug (for example, Lovenox), I will get the proper dosage in a matter of seconds—1mg/kg, 2x day. At Corpus Christi, we have found this particularly helpful with residents, as they can call up the information and have it ready when they see a patient.

When dealing with medications, the ability to link from drug dictionary to a drug interaction guide is invaluable. There are thousands of drugs available today, and doctors are expected to remember all of them, their dosing guidelines and their interactions—an impossible task. For instance, there could be upward of 600 drugs related to kidney function. I can't remember all of them and their interactions, especially with the ever-increasing pace of FDA approvals. Having this information on my Palm means I do not have to rely on memory or wait until later to reference it in a book. I can double-check my decision at the point of care before I write out the prescription.

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Keeping Abreast: Who Has Time?

Most physicians have subscriptions to a plethora of medical journals, newsletters and other frequently updated news sources. Although we work very long hours, we somehow must find the time to read these publications to stay on top of breaking news. Oftentimes, magazines end up in a big stack on my desk. I just don't have the time to work through them all. But now I don't have to worry about it; I can click on my PDA.

Recently, Skyscape went beyond reference books to include and integrate the up-to-date news and information from medical journals, newsletters and FDA alerts with the other references for the PDA. The two free Skyscape ARTbeat channels that I review most frequently during my downtime at the hospital are MedWatch, which contains FDA drug alerts and recalls, and the CDC Spotlight, which highlights new information from the Centers for Disease Control. Recently, I was reading about Remicade, a rheumatoid arthritis medication, and it reminded me of one of my patients suffering from that disease. Thanks to the MedWatch channel on my PDA, I made a note to review his chart and consider this drug as an alternative to his current treatment.

Quicker Coding and Paperwork

In addition to reference titles and the mobile channels, it is beneficial to have coding tools on the PDA. It is impossible for a physician, especially a newer physician, to remember thousands of diagnosis and procedure codes. Coding is always a challenge, even for the more experienced physicians

For more information about clinical, drug database, alerts and medical reference products from Skyscape, www.skyscape.com

who may not always record every code. But having resources such as ICD-9 at hand makes it a little easier.

At Corpus Christi, residents must write down the ICD-9 code for all outpatients. Using the 5MCC reference, they can quickly look in the "Miscellaneous" section of the software for the proper code. For example, in less than five seconds, I could find the proper code for Ehlers-Danlos Syndrome (756.83) when I needed it for paperwork.

It is safe to say that using the PDA as a decision support tool leads to quicker, more accurate decisions and can actually help reduce medical errors. While experiences may vary, a study reported in *JAMA* indicated that about 30 percent of the prescribing errors in the study were due to lack of knowledge regarding drug therapy, 29 percent to lack of knowledge regarding patient interactions with drugs, 17 percent to arithmetic mistakes and 13 percent to using the wrong drug name. These types of mistakes could be avoided, or at least reduced, through the regular use of PDAs at the point of care.

Regular Use, Regular Benefits

The use of my PDA with integrated mobile software led to the following results on a per-task basis:

Instant access to detailed clinical information and drug databases saves between five minutes and 20 minutes. I can spend minutes flipping through a book or seconds punching information into the handheld. This is the same reasoning used by people who look up phone numbers and addresses on the Internet instead of thumbing through the yellow pages. When most residents see 10 or more patients a day and check their PDAs 30 times a day, this time savings really adds up.

Instant access to FDA updates linked to the drug being prescribed also saves time. By using MedWatch, I do not have to spend 20 minutes flipping through old FDA alerts if something jogs my memory; I can typically find the alert in less than one minute.

Improved pharmacy interaction benefits me, the pharmacy and the patient. While the PDA does not cure sloppy handwriting, it does streamline my interaction with our pharmacy by letting me confirm the drug dose, route, med frequency and possible drug-to-drug interactions before I send it.

I'm convinced that PDAs and the right software solutions help physicians provide better care.

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