Palm technology moves resident data recording into new dimension

To the Editor:

Palm technology has fostered the development of palm data acquisition systems. As the recording of procedures, surgeries, and patient interactions to document a resident’s training is a major requirement of the Resident Review Committee, as well as internship programs, the real-time logging and easy analysis of resident procedures possible with a Palm handheld logging system is ideal.

Besides ease of logging, a computer-based system has advantages that include simple backup and duplication of data; easy analysis of data; potential for legible, on-the-fly entries; a redistributed workload, as residents enter data; and portability. In addition, computer-based systems allow users the ability to synchronize and enter data into a desktop system fairly effortlessly. Ease of synchronization enables frequent backups of resident logs and frequent analysis of procedure rates based on any parameter.

Disadvantages of using a computer-based system include the need to learn to enter data, the need for a terminal or a personal computer to enter data, time required to enter data in a block-mode method, ease with which Palm handhelds can be broken, and the cost of the system.

In contrast, the only advantage inherent in paper logging is the ease of recording data. In fact, paper logging to track patient data and procedures is cumbersome and often incomplete. In addition, there is an inability to perform statistical analysis.

The advent of small computer systems in the 1970s brought with it online logging of resident procedure data, though the complexities of these systems were many. Data entry was cumbersome, as either a data entry person was needed or the resident would be required to enter their logs when time was available.

The development of Palm handhelds (eg, Palm Pilot, 3M Corporation, or Pocket PC), and the development of software allowing data entry into databases has moved the logging of resident data into a new dimension.

A Palm data logging system was developed to provide for potential online or real-time logging of resident procedures and resuscitations. The system is based on the PalmPilot computing platform, 3Com, Palm. Currently, the Palm IIx (4 megabytes) and Palm IIIxe (8 megabytes) are used. These are pen-based computing systems operating under Palm OS.

Each resident in the Saginaw Cooperative Hospitals emergency medicine residency is issued a Palm handheld at the beginning of the program, which becomes the resident’s responsibility. The Department of Emergency Medicine’s office computer system, Windows 98, has a Palm data receptacle for synchronizing the resident’s procedure log with the department’s database.

Data are entered using a software package (PenDragon Forms 2.0, PenDragon Software Corp., Libertyville, Ill.). This software package is designed to create a relational database using Microsoft Access 97 or Access 2000. The program forms generator designs a data entry form for the Palm computing platform. Data are entered on the data entry program by PenDragon and are transferred to the personal computer’s Access database by the Palm’s Access conduit directly loading the data into the defined database. Residents are encouraged to use the HotSync function to back up data with the residency coordinator’s computer on a weekly basis.

Following upload, the logged data are available for data processing or report generation using Microsoft Access or any report generation program that can load Access database files. For the program’s report generation, Crystal Reports generator program (Crystal Decisions, Edison, NJ) is used. This program can directly access MS Access’s database and provides an easier interface to generate detailed reports from the logged data.

The PenDragon Forms generator produces a data entry sheet and small database program for the PalmPilot. An advantage of this system is that the data entry form and most options are fixed by the form designer and cannot be modified by the resident. This simplifies data analysis and report generation.

Twenty-four residents have been issued Palm handhelds for logging procedure data. Besides the advantages and disadvantages previously noted, users are able to keep medical databases and programs on hand to provide ready reference to drug databases and clinical information.

Disadvantages are also apparent. All pen-based systems use a glass surfaced, liquid-crystal display, which is subject to damage in falls or rough handling. Several of the Palm handhelds used in our program have been dropped, necessitating replacement of the screens. Finally, there has been resistance to use of the Palm handhelds by several residents. Not all potential users will use such a system, even when required to do so.

A potential advance for this system or other handheld computing systems is the addition of Internet logging of procedures into the same database.

This was not a prospective study of the feasibility of using Palm handhelds for logging resident procedures, and data were not generated on the acceptance of the system. The intent was to demonstrate a potential logging system to improve data recording by residents in a way that makes the most of department resources and resident time.

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References
Thomas Breithaupt, PhD (left), and Howard S. Teitelbaum, DO, PhD, MPH, admire the plaque that Dr. Breithaupt received for being the lead author of the paper that won the 2001 George W. Northup, DO, Medical Writing Award.

Dr. Teitelbaum is dean of the Des Moines University, College of Osteopathic Medicine and Surgery in Iowa. (Photo by Michael Fitzgerald)

Acknowledging coauthors’ efforts

To the Editor:

During the opening session of the 107th Annual American Osteopathic Association Convention and Scientific Seminar in Las Vegas, Nevada, I accepted the George W. Northup, DO, Medical Writing Award on behalf of myself and coauthors Kirk K. Harris, DO, John Ellis, DO, Edwin S. Purcell, PhD, Joseph Weir, PhD, Maureen Ann Clothier, DO, and David R. Boesler, DO, for the best article published in JAOA—The Journal of the American Osteopathic Association in 2001. The award-winning article was titled “Thoracic lymphatic pumping and the efficacy of influenza vaccination in healthy young and elderly populations.”

As there was not an opportunity at the presentation to describe the contributions of the other authors, I would like to describe these contributions so that my coauthors receive the acknowledgment they deserve and so that I may use their efforts to illustrate the complexities involved in conducting a study that merges human participants with basic clinical science.

Maureen Ann Clothier, DO, the principal investigator of the AOA grant that funded this study, recruited more than 100 young and elderly participants for the experimental protocol. She developed screening questionnaires, supervised physical examinations, selected control and treatment groups, and scheduled flu vaccinations, blood drawings and thoracic lymphatic pumping treatments. In short, Dr Clothier was the clinical supervisor of the treatment phase of the study.

Edwin S. Purcell, PhD, was an early motivating force in the execution of this study. He was an author and coinvestigator of the AOA grant that funded this project. It was Dr Purcell who insisted that we resubmit our research protocol to the AOA after two rejections. The third submission was approved, and funded; the result is the awarded article.

David R. Boesler, DO, contributed expert osteopathic manipulative treatment skills to the treatment phase of the study. He thoroughly trained his osteopathic manipulative medicine fellows in thoracic lymphatic pumping, and these fellows along with Dr Boesler performed more than 1200 minutes of treatments.

Kirk K. Harris, DO, and John Ellis, DO, performed most of the laboratory analyses. They were second-year osteopathic students when these studies began. Our analytical protocol required that two distinct methods—hemagglutination inhibition assays and enzyme-linked immunosorbent assays—be used to determine serum levels of antiflu antibodies. Harris and Ellis developed both of these methods, then assayed prevaccination and postvaccination serum samples from study participants. Each sample was assayed a minimum of six times by each method. Harris and Ellis generated more than 3000 data points of remarkable reproducibility. It should be noted that we were blinded as to the origin of these serum samples until the assays were completed.

Joseph Weir, PhD, contributed critical thinking and statistical expertise to analyzing the experimental data. In addition, Drs Weir and Purcell were active in editing and proofreading the manuscript.
In summary, it is important to recognize the individual efforts of coauthors as well as to recognize the teamwork that occurred during this protocol. I thank the journal of the American Osteopathic Association for this opportunity.

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Red Secrets

My heart races
I am holding back a breast
Handling tubes
Hemoglobin comes back five
Still working to get a line in
Physicians debating
One wants the line in
One wants to move
We need blood
Get OR ready
Back to surgery
Big incisions
Belly full of blood
Med student spattered
Where is the fountain
For all this life?
Surgery site is clean
Run the bowel
There, the tiny seeping spot!
One stitch
Nurse on her knees counting
Blood filled sponges stretched out
Over the floor
I step off my stool and land on one
It feels odd beneath my foot
Soft like mud between my toes.
I am back in the barn
Watching this woman
Feed whiskey to a calf
I cut out of a dying cow
Years ago
When even then I sheltered my secret
Only to realize it here
With my red hands and racing heart.
I am a part of her life story now
As she was a part of mine.

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