

PDA Interface

Evaluating Clinical Software for Your PDA

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Now at the midpoint of our series on PDA technology, we will focus on clinical software, including its role in practice, application categories, and evaluation considerations. The availability of evidence-based clinical software greatly enhances the utility of these devices as professional tools. Related topics are discussed in this article. Questions or comments should be directed to Bill G. Felkey (felkebg@auburn.edu) or Brent I. Fox (foxbren@auburn.edu). Use the same mailing address for both authors: Auburn University Harrison School of Pharmacy, Pharmacy Care Systems, 128 Miller Hall, Auburn University AL 36849.

BEYOND PERSONAL INFORMATION MANAGEMENT

Getting better organized is reason enough for most pharmacists to carry a PDA and integrate it into their personal and professional lives. This is, after all, the primary reason that the PDA explosion began in the first place. However, PDA hardware capability and health care software availability have now progressed to the point that the devices have become powerful clinical-decision support tools. This progress creates a strong argument for pharmacy department-wide adoption and diffusion of PDA technology.

Why do we need these tools? Many clinical decisions are arbitrary and highly variable — they may not be wrong, but they may not represent the best in patient care. We also suffer from interprovider variability. Two pharmacists looking at the exact same drug-related problem may disagree with each

other in a significant number of instances. We may experience suboptimal management of patients' pharmacotherapy needs. For example, despite strong evidence that beta-blockers reduce mortality in patients with myocardial infarction, only 50% received them in 1992 and 1993. According to the Institute of Medicine report, "Crossing the Quality Chasm: A New Health System for the 21st Century," we have continuing quality problems in all areas of health care.

Are you keeping up with the literature in your area? There were 6000 new articles published in the biomedical literature last week. There are limits to our human memory, and we humans have a limited ability to incorporate information into decision making. We have opinions, but these opinions may be based on conjecture. As David Eddy puts it, "The complexity of modern American medicine is exceeding the capacity of the unaided human mind."

BEST EVIDENCE

Sackett and his colleagues define

evidence-based medicine as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients." Clinically relevant evidence should ultimately take into account positive and negative health outcomes about which patients really care. Patient quality of life, values, preferences, and cost considerations should be part of every clinical decision. According to Davies, "Evidence-based health helps people make well-informed decisions about diagnosis, treatment and health care policy, by putting the best available evidence from research at the heart of decision-making."

The information provided by a PDA should reduce our uncertainty when making point-of-care decisions and should augment but not replace pharmacists' clinical experience and judgment. If we can identify, access, and link information sources to get the right information, to the right people, at the right time and place, in the right format, then patient outcomes should logically be more favorable. Also, pharmacists, so equipped, should become more efficient and effective in their appraisal, intervention, evaluation, and monitoring of patient care.

CATEGORIES OF CLINICAL APPLICATIONS

Choosing the best information resources depends on the information needs of practitioners, their knowledge and skills, and their workload and workflow. At just one Web site, Healthy PalmPilot (www.healthypalmpilot.com),

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more than 750 clinical applications are listed for pharmacist review. We are in the process of evaluating resources in each category but the results are not yet ready. Stay tuned. What we have here, however, is a listing of core clinical application categories that we think every pharmacist's PDA should be loaded with:

- **Drug references:** These are tertiary references that, in the hands of competent pharmacists, allow the quick access of information at the point of care. Over a dozen options for drug references are available; the various applications may be formulary-specific, customizable, updated daily, linked to other applications, or broad in coverage.
- **Interaction analysis:** Drug–drug, OTC, drug–test, natural products, and food analysis are desirable options in this category. Infectious disease applications that connect disease, pathogen, and drugs for consideration are also available.
- **Disease references:** Medical contexts for drug-related decision making and nondrug treatment considerations are offered in this category. General, specialty applications, abbreviations, and dictionaries are variously covered.
- **Laboratory references:** The best products offer help in interpreting the clinical implications of non-normal results.
- **Pharmacotherapy calculators:** Medical calculations, pharmacokinetics, and conversion applications are available.
- **Record tracking:** These applications enable you to store patient-specific information in a format that is ideally delivered by a real-time or near real-time interface.
- **Intervention documentation:** These programs are helpful in collecting clinical activity, impact, and outcomes data, thus documenting interventions, medication errors,

and adverse drug events.

- **Patient education resources:** This category includes both still and motion visuals, sounds, and printable documents that can facilitate a patient-focused approach.
- **Clinical pearls, algorithms, and guidelines:** Content includes applications, documents, decision-support tools, review articles, and protocols.
- **PDA efficiency utilities:** Word completers, groupware, document readers, sketch pads, database applications, and telecommunication tools make up this category.

ATTRIBUTES OF VALID AND RELIABLE CLINICAL TOOLS

Pharmacists have a professional responsibility to identify and use only those clinical applications that are valid and reliable tools. According to Stair (2001), trustworthy clinical information resources should possess all of the following attributes:

- **Currency:** available when needed and updated frequently
- **Completeness:** provides all information facts
- **Flexibility:** can be applied to multiple purposes and specialties
- **Cost-effectiveness:** the price of the resource does not negate the benefits derived from its use
- **Accuracy:** free of errors
- **Evidence-based nature:** validity and reliability can be depended upon
- **Relevance:** provides information fields that the user feels are important
- **Simplicity:** easily understood; does not provide excessive information
- **Verifiability:** other sources support the information

DISPLAYING CLINICAL CONTENT FROM DOCUMENTS

Not every clinical tool is ready for

download from the Internet as a stand-alone application. Much needed data is found in the literature in review articles or guidelines published and updated by academies focused on that specialty. For these situations, we recommend that clinicians get a document manager that can handle converted documents held on a PDA. There are read/write options (PDA word processors) and read-only options. Text is easy for these readers to handle, but tables, illustrations, charts, algorithms, and graphics can sometimes be problematic.

Before decision-support content can be converted, it must be located. We usually turn to our favorite search engine, Google (www.google.com), and locate resources with ease. However, each resource must be evaluated for applicability and level of supporting evidence. We will devote a complete article to search process techniques in a future issue.

STRATEGIES FOR CLINICAL IMPLEMENTATION OF THE PDA

- Identify the best materials for clinicians
- Gain clinical and administrative leadership support
- Seek system integration opportunities and administrative changes
- Disseminate information and perform training
- Measure impact of investment

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- Provide feedback for continual improvement

CONCLUSION

There is no longer any question about whether the PDA is a useful clinical information tool; however, we must now judge whether the available applications are appropriate for adoption into

our clinical practices. A PDA that is configured with the latest features is much more than an electronic day planner. Properly loaded with evidence-based tools, it is a powerful clinical asset. We are already seeing a strong movement within health system pharmacy departments to supply all pharmacists with this device. We strongly recommend that you consider this action as well. When you begin, you will find a rich array of clinical practice-enhancing

options.

Note: Evidence-based medicine quotes, perspectives, and strategies were compiled from presentations made at the Evidence-based Health Care Program presented at the University of California, San Diego, June 2002. [n](#)