

Drug databases for users of hand-held computers

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The leading clinical programs for hand-held computers are drug references. The ability to look up pharmaceutical data almost instantly just about anywhere is a very attractive feature.

I have examined three programs currently available for modest cost: ePocrates, DrDrugs, and LexiDrugs. These programs have several features in common. They all list agents by both trade and generic names. They provide indications, adult and pediatric doses, contraindications, interactions, adverse reactions, packaging information, pharmacokinetics, mechanism of action, pregnancy risk factors, and status according to the US Drug Enforcement Administration (whether it is a controlled substance). You can add personal notes to the monographs if you wish. Many programs also provide links to companion sources, such as medical texts or infectious disease guides.

The programs, however, have important differences. When trying out the various programs, I found it instructive to look for information on an older generic drug (ephedrine), a drug that was recently implicated in having serious side effects (cisapride), one with a unique Canadian name (Reactine), and a drug that has a common and potentially serious interaction (atorvastatin interacts with grapefruit juice).

ePocrates

The ePocrates Corporation, which makes the most popular PDA drug program, estimates it has a quarter of a million users, more than 100 000 of whom are physicians. The ePocrates program is popular primarily because it is "free" from www.epocrates.com. It claims to include monographs on about 1500 agents.

You navigate around ePocrates with a pop-up menu that sits at the bottom of the screen. In addition to listing drugs by name, it also cites them by class. Several features are useful and innovative. Drug interactions, for instance, are listed by class, so you can quickly scan through types of interacting drugs rather than long lists of specifics. The nature of the reaction appears in a pop-up window with a tap of the stylus, and tapping a little icon beside the drug class provides examples of drugs in that class.

The ePocrates program provides therapeutic tables for such conditions as cardiac arrest protocols, endocarditis prophylaxis, and recommended treatment regimens. You can also use a "find" feature to look up which drugs could have caused a certain side effect in your patient.

Another popular feature of this software is a built-in interaction checker. You simply enter the names of medications, and the program quickly presents potential interaction issues, from serious on down.

Alerts sent by ePocrates also pop up on the screen of your PDA after syncing (with your main computer). If you want more information on these news and feature items, a simple tap of the stylus will ensure that the details will be in your e-mail box shortly after you sync again.

The ePocrates program provides price information and cites the manufacturer of many drugs. It lists ephedrine and cisapride and warns that the latter is restricted access, providing a toll-free phone number to the manufacturer for further information on eligibility. It did not, however, cite the interaction between atorvastatin and grapefruit juice. Another problem with ePocrates is the lack of Canadian trade names. A search for Reactine yielded nothing. However, there is a monograph on cetirizine and its American brand name Zyrtec. The ePocrates program is also very small, taking just over 1 MB of space. This could be a consideration for those running low on memory.

The ePocrates program's "Autoupdate" feature automatically adds new information to the database each time you sync. Unfortunately, it is unavailable to users with a Macintosh, who must reload the entire program to get updates.

Why is such a well designed and apparently valuable resource free? This program tracks and reports on how you use it. Data aggregated from individual users is collected by the company and can be sold to outside interests. Some physicians are horrified to think that their use is being monitored and analyzed; others do not have a problem with it. Some physicians have expressed concern about the potential influence of industry on the content of ePocrates, but I have seen no bias to date. The ePocrates program runs only on Palm OS devices.

DrDrugs

DrDrugs (Davis' Drug Guide for Physicians) is marketed by Skyscape (www.skyscape.com). Its interactions section describes potential interaction by class and specific drug. Helpfully, the nature of the interaction is often cited. A navigation bar on the right allows you to hop to one of eight common areas in the monograph. The navigation bar takes up a small but not insubstantial portion of the screen. This means more scrolling when the information will not fit on one screen. Seven other subsections can be obtained with the scroll buttons. These include prices, Canadian drug names, and availability (which were mostly blank on the version I tested, 4.1.9). The program claims to hold 1500 monographs and more than 400 combination drugs. Herbal products were included as of October 2001. Unfortunately, the monographs are not as extensive as those in other programs. The version I used had

no monographs on ephedrine or cisapride, and failed to mention potential problems with grapefruit juice and atorvastatin.

DrDrugs sells on the Web for \$50 (US). Updates (about three or four yearly according to the company) are free for a year after purchase, but the process is not automatic. This means backing up some files, deleting the old program, and downloading and re-installing a new one. This is a time waster. Yet this is the only product of the three that currently runs on Palm and Windows CE devices.

LexiDrugs

LexiDrugs is a much bigger package. It requires more than 3 MB of memory (ie, double the space required for ePocrates). It also costs \$75 (US). It appears to me to cover more drugs than either of the previous programs, and each monograph is more detailed. LexiDrugs includes Patient Education Points, Test Interactions, Storage and Stability, Nursing/Anesthesia/Critical Care Implications, Monitoring Parameters, and Managing Overdoses. It even cites Ethanol/Herbal/Nutritional Interactions: the LexiDrugs monograph on ephedrine warns about use of ephedra when taking this agent. LexiDrugs cited the potential interaction of atorvastatin and grapefruit juice, which neither of the other two did. It also has Canadian trade names and listed Reactine, unlike the other two programs. LexiDrugs did not give drug pricing and manufacturer information, which is odd given the otherwise comprehensive information.

Some other features needed improving. With LexiDrugs, you cannot scroll past the end of the monograph. It also does not show the drug name as you scroll down through the monograph. (Both ePocrates and DrDrugs keep the name at the top of each screen, and

they also take you back to the top of the monograph if you keep scrolling.) LexiDrugs will list products by name or by class, like ePocrates.

LexiDrugs lists drug interactions by class too, but also cites examples from each class, making for a longer section with more scrolling than ePocrates with its pop-up windows. LexiDrugs does not come with a drug interaction checker, but an add-on is available for another \$40 (US). You can get a free copy of LexiDrugs to try out for 25 uses from www.lexi.com. The company claims the program is updated many times per week. Updates (free to subscribers for a year) must be downloaded manually from their website, a process that requires logging in with a password. Current Lexi products do not run on Windows CE devices, only Palm devices.

Conclusion

For price and modest memory requirements, you cannot beat ePocrates, as long as being monitored does not bother you. The drug interaction checker is useful, too. If you want more complete drug coverage and Canadian trade names, LexiDrugs might suit you better, but you will need lots of memory space and the money to buy it.

It must be noted that these products are under constant development. New releases could improve the software considerably. Trying before you buy would be a good strategy. ♦

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