

FIRSTConsult: A useful point-of-care clinical reference

Gary N. Fox, MD, Nashat S. Moawad, MD, and R. E. Music, MD

Mercy Health Partners Family Practice Residency Program, Toledo, Ohio

Unquestionably, using electronic information sources at the bedside has the potential to improve the quality of clinical care. That potential is moving closer to realization with FIRSTConsult (formerly PDxMD)—a multifunction physician resource designed for point-of-care use. Its name reflects its connection with MDConsult, the well-known electronic collection of textbooks. Both are produced by Elsevier, whose imprints include Saunders, Mosby, and Churchill Livingstone, and whose publications include *Dorland's Medical Dictionary*, *Gray's Anatomy*, *Harriet Lane Handbook*, and *The Lancet*.

FIRSTConsult comes in 2 incarnations: a Web-based version and a handheld version. The latter is available both for the Palm and Pocket PC operating systems, with variants of about 2, 6, and 10 MB. We evaluated the Web version (hereafter "FC-Web") and the 10-MB Palm OS version ("FC-Palm"). Descriptions of the smaller versions are available on the FIRSTConsult web site.

As long as a user has access to a high-speed Internet connection, we give FC-Web a "thumbs up" as a rapid, real-time, point-of-care resource. FC-Palm is a portable mini-version of the Medical Conditions and Differential Diagnosis

sections of FC-Web. In this article, we detail the advantages and disadvantages of both products.

■ FC-WEB

FC-Web's opening screen (**Figure 1**) lists its 5 major components, along with a search box that scans all components simultaneously. Searching "tinea," for example, produces 529 retrievals (**Figure 2**). Users may modify search parameters with check boxes and drop-down lists.

Information retrieval with FC-Web

Clicking one of FC-Web's components opens a search function or an alphabetic list to locate the desired monograph (**Figure 3**).

Improved search function. The search function for FC-Web is profoundly improved from that of its predecessor, PDxMD. The search retrievals include section titles (eg, Summary, Background, Diagnosis; see **Figure 2**), allowing users to link directly to the subject of interest. There is extensive mapping by synonyms, such that "AAA" finds "abdominal aortic aneurysm" and "TIA" finds "transient ischemic attack." The search feature does not take wild cards or partial words and is intolerant to misspelling (eg, "vonWillebrand" vs "von Willebrand").

Useful hyperlinks. FC-Web has extensive hyperlinks within its monographs and sections and to other components of the program, and they are among the most useful and logical links these reviewers have seen. Additionally, the program contains hyperlinks to MDConsult (for MDConsult

Gary Fox is Reinventing Practice Section Editor of THE JOURNAL OF FAMILY PRACTICE. The authors have no financial interest in this product or other competing interests to declare. Corresponding author: Gary N. Fox, MD, Mercy Health Partners Family Practice Residency Program, 2200 Jefferson Ave, Toledo OH 43624-1117. E-mail: foxgary@yahoo.com.

subscribers only) and to excellent external resources, such as consensus statements. Where applicable, levels of evidence and references are cited.

Drawbacks. Regarding speed, we believe FC-Web requires high-speed access for true point-of-care use. FC-Web limits users to 1 open window—even hyperlinks to external sources cannot be opened in new windows.

Differential Diagnosis section

This section provides differential diagnoses—broken into categories by patient age—for about 350 symptoms and signs. The search feature maps to close entries. For example, clicking on Differential Diagnosis and entering the search term “burping,” FC-Web maps to flatulence, eructation, and gas pain. Interestingly, some of the more common causes we see for burping in practice—*anxiety/aerophagia*, ingestion of dissolved gas (carbonated beverages), and ingestion of bicarbonate—do not appear.

For any condition found on the Differential Diagnosis monograph summary screens, a click pulls up a mini-summary of the illness, nicely leveraging the electronic environment (**Figure 4**). Users can click through to corresponding FC-Web disease monographs (if available) or to the topic in MDConsult (separate subscription required).

Limitations. Unlike differential diagnosis engines such as DXplain (available at www.lcs.mgh.harvard.edu/dxplain.htm), the Differential Diagnosis section of FC-Web does *not* allow users to enter sets of data (eg, age; sex; findings) to produce a list of possible diagnoses. Surprisingly, FC-web’s Differential section does not include “hyponatremia” (or “SIADH”), although it contains such things as “hypernasality” and “hyposgeusia.”

FIGURE 1 FIRSTConsult’s opening screen



FIRSTConsult’s opening screen, allowing one-click access to each of its 5 major sections, plus a global search feature (all on the left of the screen).

FIGURE 2 Typical FIRSTConsult search screen



A global search for “tinea” produces 529 retrievals (covered by drop-down list). Users modify searches using check boxes across the top or with the drop-down list. Major monograph retrievals are highlighted and users can click directly through to a section of interest (eg, Summary or Treatment).

Patient handouts

FC-Web contains more than 450 patient education monographs.

The monographs have 3 main tabs. The first 2—View English and View Spanish—have drop-down menus offering handout choices of

FIGURE 3 Medical Conditions

Opening screen of the Medical Conditions section. Users may jump to the desired section with the alphabetic listing across the top, or may choose to use the scroll bar, or may employ the search box at the top of the screen to search just the Medical Conditions section. (The search box at left still functions as a global search.)

“Diagnosed Patient” and “General Information.” The third tab, Actions, allows users to customize handouts (add physician’s name, patient’s name, personalized instructions, etc). Defaults can be saved. Printouts are about 3 “airy” pages with liberal use of white space, large type, and bullet points. They are very basic and easy to read.

Handout deficiencies. Inexplicably, hepatitis A and B are included, but not hepatitis C, which would be the most useful information for our practices.

Occasional minor discrepancies exist between handouts and disease monographs. For example, the Acute Upper Respiratory Tract Infection handout says nothing about echinacea or zinc. However, the related monograph states “Echinacea and zinc supplements may be effective in reducing the duration and severity of common cold symptoms.”

Procedure Files

Procedure Files contains 30 to 40 procedure monographs, including video clip illustrations of

key portions; users have a choice of viewing these with Windows Media Player, RealPlayer, or QuickTime. Reference Centers contains 3 monographs: “Bioterrorism,” “Contraception,” and “Pregnancy” (as of May 2004). Although few in number, these Reference Centers are valuable point-of-care tools.

Medical Conditions

We would expect Medical Conditions to be the workhorse section for most physicians. FC-Web advertises that it contains more than 450 conditions.

Rapid access to information. The best feature of this core section is its organization of information—eminently logical, extremely easy to navigate, bulleted, and extensively hyperlinked, taking full advantage of the e-medium.

To illustrate the outstanding layout and hyperlinking, if a user floats the cursor over a tab (eg, Diagnosis or Treatment) in a disease monograph, a menu of subsections drops down (**Figure 5**). Floating the cursor over some subsections produces a menu of additional options within that subsection. Furthermore, once selected, the resulting information is often extensively hyperlinked to related or more detailed information.

Generic drug names only. Throughout, FIRSTConsult sticks to generic drug names; if the user is uncertain what cefdinir or tamsulosin is, FIRSTConsult will offer no help.

Generous detail. In terms of content, Medical Conditions distills information into bullet points. FC-Web has more depth than, for example, Griffith’s 5-Minute Consult. Also, as a Web-based tool, FC-Web categorizes information multidimensionally with the horizontal main tabs plus drop-down, floating subcategories, allowing expeditious jumps to desired information. This organization facilitates rapid access to information.

Superb summary for point-of-care use. The Summary of Therapeutic Options subcategory of the Treatment section is particular noteworthy—

an outstanding feature for busy clinicians—and concrete evidence that FC-Web was truly designed with point-of-care in mind. In this subsection, options are listed by bullet points and *very briefly* described (1 or 2 lines), which allows easy visual scanning. Each option (eg, medication) is then hyperlinked to its more detailed description (eg, dosage, route, etc) in the section, Drugs and Other Therapies: Details.

Sometimes, FC-Web fails to provide “drug of choice” recommendations, listing interventions randomly, which hinders rapid, point-of-care decision-making.

Putting FC-Web to the test

FC-Web answered all *general* questions for which a monograph existed:

- What is the preferred therapy for head lice? (“Permethrin: ... Treatment of choice for uncomplicated pediculosis.”)
- At what aneurysm diameter should a patient with an abdominal aortic aneurysm be referred? (“In general, patients with aneurysms larger than 5 cm in diameter, symptomatic aneurysms, or rapidly enlarging aneurysms should be considered for repair. Treatment for aneurysms between 4 and 5 cm is controversial.”)
- What is the basic workup for kidney stones?
- What are the indications for and monitoring of hydroxyurea for adults with sickle cell anemia?
- What are the therapeutic options for mycobacterium avium complex in an HIV-positive patient?
- How should one follow pulmonary sarcoid when tapering steroids? (A link to an external guideline was especially informative.)

Surprising shortcomings. FC-Web’s Medical Conditions section includes some less common entities—restless legs syndrome, Osgood-

FIGURE 4 Summary of a Differential Diagnosis



Illustration of a Summary page in the Differential Diagnosis section. Differential diagnoses are listed in approximate order of frequency by age. Adult (18–45), Middle Age (45–65), and Senior Adult (65+) columns are covered by the diagnosis summary for “Irritable bowel syndrome,” produced by clicking that diagnosis in any of the lists for ages 18 and older.

FIGURE 5 Typical FIRSTConsult monograph



Main subsections of a monograph appear across the top. Floating the cursor over each section produces a drop-down menu that, in turn, produces submenus as the cursor is floated over choices. In this case, the cursor was sequentially floated over Treatment, then Drugs and other Therapies, and the highlighted item selected.

Schlatter’s disease, for example—but no monographs are devoted to conditions such as SIADH, paroxysmal supraventricular tachycardia, or portal or pulmonary hypertension.

Product Information

Contact Information

FIRSTConsult, Customer Services, open Monday to Friday, 7:30 am to 7:00 pm Central Time; 1-800-401-9962. Web site: www.FIRSTConsult.com; e-mail contact available through web site, including subscription information.

Pricing

Physicians: \$149; \$109 if MDConsult subscription also purchased separately.

Residents/Students: \$89

Price includes 1 year of Web access and hand-held updates; components are not available separately. After 1 year, hand-held content continues to function (not "time-bombed") but renewal necessary for updates. Discount pricing available for groups of as few as 2 individuals.

30-day free trial of Web content with registration at www.FIRSTConsult.com. Free trial of partially functional handheld content through handheld link.

Minimum Requirements

Desktop: Windows PC with Windows 95; Macintosh PC with OS 9; Internet connection; Internet Explorer version 5.0 or Netscape version 6.2.

Palm-OS handheld devices: PalmOS version 3.5.3 with 4 MB of RAM, Palm Desktop 4.0. Additional memory or memory expansion card necessary to run larger products.

Pocket PC handheld devices: Pocket PC with ActiveSync (installed on the desktop computer); 32MB RAM; StrongARM processor.

Despite the evidence and reference citations, there were times we took issue with FC-Web. For example, FC-Web indicates the dosage of amoxicillin for otitis media in children older than 3 months is "25–45 mg/kg/day orally in divided doses (maximum dose 80 mg/kg/day)." In response to the rapid dissemination of drug-resistant *Streptococcus pneumoniae*, the Centers for Disease Control has recommended, in general, that "the initial dose of amoxicillin should be increased from 40 to 45 mg/kg/day to 80 to 90

mg/kg/day." Also, there are occasional disconnects within monographs. Under "Tinea Infections" in both the Summary and Diagnosis sections is a "Key! Don't Miss Points" that says: "Patients with HIV infection may have severe onychomycosis and *Malassezia* folliculitis (pustular hair follicle infection)." However, no mention is made of how to treat *Malassezia* folliculitis.

Head-to-head with UpToDate. Compared with UpToDate [see "UpToDate: A comprehensive clinical database," *J Fam Pract* 2003; 52(9):706–710], FC-Web obviously has been designed from a point-of-care focus. With UpToDate it is often laborious to cull key clinical information at the point-of-care. FC-Web is much less encyclopedic, has a superb layout, and whiz-click access to such amenities as the "Summary of therapeutic options"—with hyperlinking to details if needed.

Although FC-Web has no "history" or "favorites" functions, it is seldom a problem relocating information because of the simplicity of its design (unlike the complex paths one often follows in UpToDate to locate information).

FC-Web's patient education monographs are more accessible, shorter, and at the opposite literacy extreme from UpToDate's.

■ FC-PALM

FIRSTConsult versions for handhelds are available for download with purchase. On the Palm, users must first download and install FC's EReader, a 90K application. Both EReader and FC-Palm easily load to memory cards and function briskly on recommended versions of Palm OS devices. However, "crashes" are common (and, in some instances, fully reproducible), requiring soft resets of the handheld device.

Shortcomings of the FC-Palm

FC-Palm's opening screen lists its 2 components, Differential Diagnosis and Medical Conditions. (The other sections are not included in the handheld versions).

One noteworthy peculiarity with EReader is

that, if the user presses the Palm's off button, it exits the application but *does not turn off the Palm*. The user must press the button a second time to turn off the Palm. Similarly, at the user's set "time out" (eg, after 2 minutes of inactivity), first FC-Palm/EReader times out, and only then does the countdown begin for the Palm to time out and turn off. Once users are forewarned, this is unlikely to be a problem, but we are not familiar with any other Palm application that exhibits this behavior.

Another curiosity: when FC-Palm times out, it does not resume where it exited. Users must retrace their steps to continue.

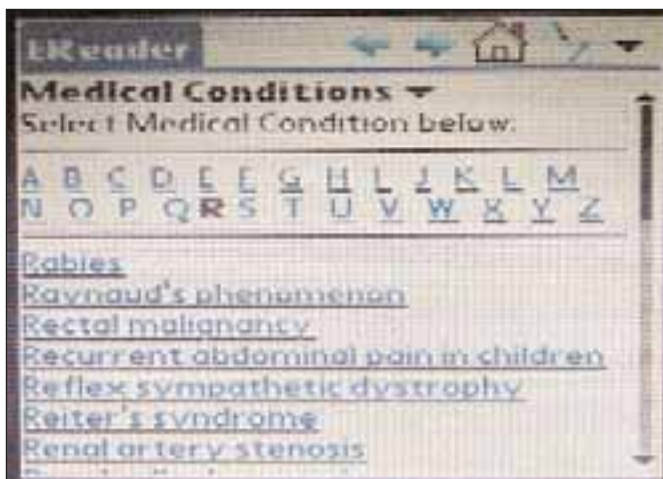
Levels of evidence are not included in FC-Palm. Elsevier indicates FC-Palm is updated approximately weekly. Unfortunately, there is no auto-update feature. Updating the 10MB version is time-consuming, particularly hot-syncing to a Palm card (and, if using dial-up connection, downloading), making it unlikely users would update frequently.

FC-Palm has no search function, and, interestingly, Palm's search feature appears nonfunctional with this program.

Many medical handheld applications, ePocrates for example, employ lists that scroll alphabetically as users enter successive letters, such that entering "c," "o," and "l" would automatically scroll to the first listing under "c," then under "co," then under "col," and so on. FC-Palm does not have this feature. Instead, it must be navigated by selecting a letter of the alphabet from the top of the screen (eg, R for Restless Legs), and then scrolling to the entry (via slide bar or Palm buttons) (**Figure 6**).

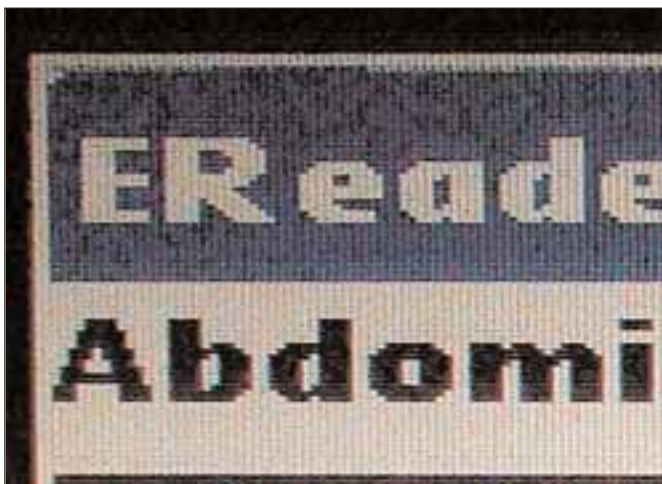
There are no icons or shortcuts to frequently used features (eg, "T" to jump to Therapy). Once

FIGURE 6 Navigating the Palm version



To navigate in the Palm OS application, users tap the first letter of the selection on the top of the screen (eg, R for Restless Legs), and then use the scroll bar on the left to find the selection. Unfortunately, navigation is not available by scrolling sequential letter recognition (eg, "r.e.s" to jump to that section).

FIGURE 7 Selecting a topic in FC-Palm



Selecting a Medical topic in FC-Palm opens the diagnosis Description section. Users then open a drop down list to navigate to other desired information. The navigation tools in EReaders top section are forward and back browser arrows; home, which ports the user out to the EReader application; alphabetic listing, the main screen for the section the user is in (Differential Diagnosis or Medical Conditions); and the drop-down selector.

in an entry, FC-Palm users navigate with a drop-down list to the section of interest. Each section is separate and can be entered only with the drop-down list (**Figure 7**).

FC-Web is well laid out and functional for point-of-care use, with detailed and hyperlinked monographs

No user-defined preferences are available to select FC-Palm's monographs' opening section (eg, Therapeutics).

Conveniently, FC-Palm has forward and back browser-type navigation controls.

Generic drug names are used throughout.

Comparing handheld versions, FIRSTConsult weighs in at 10 MB as opposed to UpToDate's 800 MB—which may reflect upon the ease and speed of finding information at the point-of-care.

Differential Diagnosis

In content, FC-Palm's Differential Diagnosis section is similar to that of FC-Web, except index listings appear only once (eg, "increased tearing, abnormal") as opposed to appearing under all permutations in FC-Web's index (eg, under "abnormal," "increased," and "tearing"). FC-Palm also employs extensive hyperlinking. Selecting "Incontinence, urinary" produces its differential; tapping "benign prostatic hypertrophy" in the resultant list produces a disease summary, with a link to the corresponding monograph in the Medical Conditions section.

The Differential Diagnosis section does not contain "hyponatremia," but the Medical Conditions section does. Under the subheading Drugs and Other Therapies, only 2 therapies are listed—demeclocycline and fludrocortisone. There is no mention of water restriction (SIADH) or volume replacement (hypovolemia) per se—just drugs. In contrast, FC-Web's comparable monograph incorporates volume replacement and free water restriction but only includes the issue of "urgent" volume replacement in the Immediate Action section, not in the important Summary of Therapeutic Options section.

Similarly, FC-Web's monograph nicely summarizes drug options for pelvic inflammatory disease, but FC-Palm simply provides a listing of individual drugs without any hints about the appropriate combinations—significantly compromising users' ability to quickly select therapy at point of care.

FC-Palm falls short of the mark for gonorrhea in the same way. The therapeutics screen simply lists 10 drugs (all hyperlinked to further information) without any hints as to recommended or preferred choices. In fact, hyperlinking to further information on ceftriaxone, the Centers for Disease Control's recommended therapy in pregnancy, one finds the oxymoronic "Use caution in pregnancy (category B)," which might lead a neophyte on a search for the Holy Grail (ie, the nonexistent "better" drug for use in pregnancy).

■ FINAL WORD ON FIRSTCONSULT

FC-Web is well laid out and, using a high-speed connection, functional for point-of-care use, offering sufficiently detailed and extensively hyperlinked disease monographs. For the most common diseases, key questions are generally answered efficiently and in a manner consistent with current evidence or thought. As a bonus, FC-Web provides basic patient education handouts in English and Spanish.

FC-Palm lacks state-of-the-art navigation and search capabilities. FC-Web's outstanding Summary of Therapeutic Options sections have been gutted in FC-Palm to be substantially less helpful—and potentially misleading—lists of non-prioritized therapies (primarily drugs).

Before we can recommend it as a prime-time handheld application, FC-Palm needs to upgrade its Therapeutics section to be equivalent to FC-Web's Summary of Therapeutic Options; it should also remedy the nonstandard behaviors, improve navigation, add search options and some user preferences, and incorporate an auto-update feature.