SOFTWARE REVIEWS

QMR: Quick Medical Reference, Version 3.7 (1995). First Databank/Camdat Corp, 1111 Bayhill Drive, Suite 465, San Bruno, CA 94066. $495.

DOCUMENTATION: Well-documented, 229-page manual, with numerous screen shots and exercises.
HOW SUPPLIED: Three 1.44MB diskettes. Also available in a CD-ROM version.
HARDWARE REQUIREMENTS: IBM-compatible 486 processor, 5MB of hard drive space (1.5MB for the CD-ROM version), 3MB RAM, VGA monitor, Microsoft Windows 3.1 or greater and mouse.
CUSTOMER SUPPORT: Customer service: 1-800-633-3453, technical support: (415) 624-8840.
GUARANTEE: 30-day money-back guarantee.
RATING: Marginal to good.

QMR (Quick Medical Reference) is described by its distributors as a comprehensive knowledge base of over 600 diseases and over 4500 clinical findings that acts as a decision support tool. The program allows the user to generate extensive differential diagnoses, identify the best test to rule-in or rule-out a diagnosis, build and manage patient cases, and test personal medical knowledge on randomly constructed case simulations. The development of "expert systems" such as *QMR* are likely to be increasingly common and hold promise to improve medical care by allowing physicians to manage information more effectively. How would *QMR* perform in the real world environment of a family physician's office?

The performance of the program itself is quite good. It installs easily and is relatively simple to use. The physician usually starts by entering a disease or clinical finding, a step facilitated by an excellent search engine. Only rarely did an error message occur indicating that the term entered was not present in the database. Once this step is accomplished, characteristics of either the disease or the clinical findings can be examined. For example, after "infectious mononucleosis" is entered, the program lists all the clinical findings associated with the disease as well as the sensitivity (designated "frequency" by the program developers) and positive predictive value (designated "evoking strength") of each finding for mononucleosis.

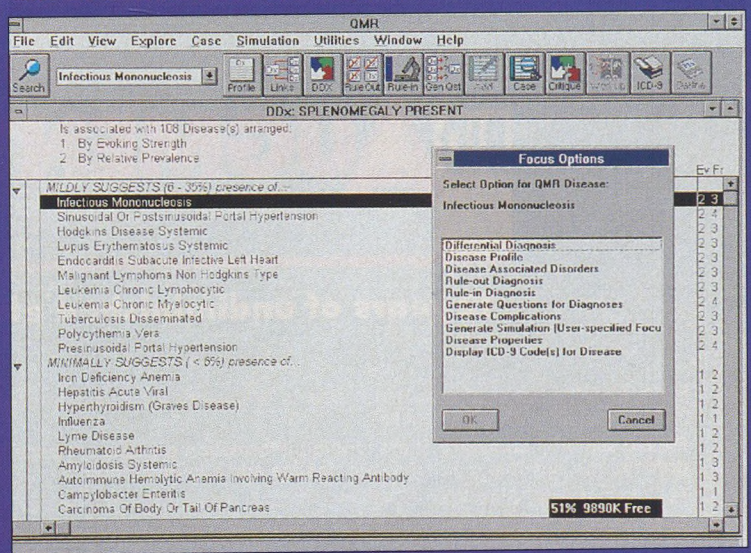
The program also indicates whether and to what degree clinical findings mandate diagnostic evaluation, provides a list of other associated conditions, and offers possible complications of the disease. Interestingly, the program does not mention splenic rupture as a possible complication of infectious mononucleosis.

QMR's chief function is as a diagnostic tool. It allows the user to generate diagnostic hypotheses based on clinical findings using one or two methods. First, the user can enter up to six clinical findings, then click on the differential diagnosis button to generate a list of possible diagnoses. The second method of generating a differential diagnosis is the case building method. The user can enter between 6 and 200 positive or negative findings and, in response, the program poses diagnostic hypotheses. You can either use a drop-down window to search for each finding or view the entire list of clinical findings and mark relevant ones, either positive or negative.

Once a list of diagnoses is generated, the user can apply many program features to a proposed hypothesis to refine the diagnosis further. For example the finding "splenomegaly present" generates a list of diagnoses that includes infectious mononucleosis. Double-clicking on this line opens a dialogue box that allows you to find

FIGURE

QMR lists possible diagnoses based on the clinical findings, and even finds the associated ICD-9 code for the identified disease.



complications, other associated findings, and disorders associated with mononucleosis, along with tests that can help rule-in or rule-out the disease. The program also suggests questions to ask the patient, and even finds the associated ICD-9 code (Figure).

While the program is well-designed, it is questionable whether a family physician would benefit from it. I found few opportunities to use the program in the several weeks that I tested it. This program was developed using an internal medicine database at the University of Pittsburgh, which may explain why this program may lend itself better to the realm of internal medicine than to family medicine. When diagnoses are generated, most of the diseases listed are quite esoteric; the vast majority I have never seen in 14 years of practice. The database deals only with an adult population and does not include some common gynecologic, dermatologic, and musculoskeletal diagnoses.

Few significant errors were identified in the use of this program. One was noted when looking up the ICD-9 code for gout. The program displayed the code for carcinoma of the tail of the pancreas. One other minor complaint relates to an inconsistency in the numbering scheme of findings and disease characteristics. For instance, an "importance" of 1 is used when it is *most* important to find the diagnostic reason for a finding. On the other hand, a "utility" of 1 indicates that making an etiologic diagnosis is *not* important in changing the natural history of the disease.

While comprehensive and well-designed, this program appears to be less useful to family physicians than what might be expected. The main attraction of this program would appear to be the extensive list of diagnostic test results related to the 400 diseases in this database. Considering the cost of this program, family physicians may not feel that they are getting their money's worth.

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