EVALUATING NUTRIENT DATA BANKS

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As computers become more affordable, professionals are realizing the benefits of computerization for tasks that formerly consumed much valuable time. With computational tasks relegated to a computer, expertise can be focused on professional activities that require judgement and interpersonal skills. Selecting a suitable nutrient data base system and associated software can seem like an overwhelming task to an uninitiated user. However, with an orientation to some of the issues and an understanding of how the computer can serve as a professional tool, one can more easily proceed to evaluate the numerous options.

Two trends in computer technology should be kept in mind when considering hardware and software. These trends are (1) increased use of communications technology and (2) the increase in networking of computing devices. Transferring data from one system to another and sharing peripheral devices is becoming common in many settings. Microcomputers are being structured into local area networks to facilitate data sharing, to provide greater computing capability at an economical price, and to overcome the limitations of some single-user software and hardware devices.

Assessing the professional need for a computer is the first stage of the evaluation process. As a starting point, the potential user should enumerate tasks that could be accomplished with computer assistance. Current and future needs should be considered. In some situations, a nutrient data base may be the principle data collection, while in another case, a nutrient data base may be part of an integrated network of data bases. The broad range of activities that might be undertaken should be considered. The user who can forecast future applications for the nutrient analysis system will be better able to make a suitable selection. An inventory of potential uses for an analysis system is also helpful in determining the type of hardware required to support the range of activities. In addition, one should consider the resources that may already exist in the work setting. The existence of hardware capability and support personnel may influence one's strategy and software choices. The background work done at this stage can assist in making sound decisions.

Nutrient data bases vary widely with respect to size, contents, and source of data. The major portion of data should come from a reliable source that compiles data generated by sound analytical methods and routinely updates

the data base to reflect changes in the food supply. The option to update a data base or to receive frequent updates including user-specified foods permits tailoring the data base to specific needs. Users frequently add data to nutrient data bases to incorporate more recent data, to add other foods, to add other nutrients, to reflect regulatory changes, to supply missing values for nutrients, to add data for brand name foods, and to add nutritional profiles for mixed dishes. Maintenance of a data base is time consuming and expensive. The availability and cost of updated data bases should be determined before a final decision is made.

Estimating nutrients for recipes involves several considerations. The calculation methodology should be examined to assure that the weights of ingredients are adjusted to reflect the loses or gains in yield occurring in preparation and that the nutrient values are adjusted to reflect retention after preparation. Recalculation of the nutrient values by computer when new data become available facilitates keeping the mixed dish portion of a nutrient data base up-to-date.

The size of the nutrient data base chosen is influenced by its intended use. While computational efficiency may be gained by using a smaller data base, the absence of foods appearing frequently on some dietary records may result in numerous substitutions which distort the results of the analysis. A large data base may include many foods occurring on most dietary records but require excessive time and effort for coding and entering data.

When evaluating a software package, the users should consider how well it will meet their needs, the quality of the documentation, and it's compatibility with existing hardware and software. The features of the software should be appraised to identify computational options, comparisons of nutritional profiles with standard values, the technique for handling missing values, and the process for data entry.

The operational requirements of the software should be ascertained. Incompatibilities may arise out of differences in hardware, operating systems, programming languages, and teleprocessing systems. Sometimes different versions of the same product may require different computing environments.

The design of a system affects the reliability and flexibility of that system. The theoretical basis and assumptions in a software package should be reviewed. Also, the options for interfacing to other systems or adding other modules at a later time should be explored. The capability for real-time processing is determined by the system design. The competence level required of the end user is another important consideration.

Establishing a set of specifications facilitates the software selection process. Some additional aspects to consider are response time, functions, data files, interfacing requirements, and the contents of reports and screen displays. Comparable information about various products is useful

in identifying those likely to fulfill one's needs. The Nutrient Data Bank Directory (1) is one source of comparative information.

The performance of a nutrient analysis system may be difficult to determine without some actual experience using the system. The accuracy of several functions can be appraised in a systematic fashion. For example, the accuracy of updating functions and recipe calculations can be examined. The vintage of the data can be identified by retrieval of data for several different types of foods. The accuracy of portion adjustment and dietary record computations can be determined with desk checks. A sample methodology for this type of assessment is presented in the Model for Review of Nutrient Data Base System Capabilities (2).

Ongoing maintenance and management is required to assure the integrity of any nutrient analysis system. Updating policies and procedures should be stipulated. The data base represents a considerable investment in effort and dollars. Back-up procedures are needed to protect against its inadvertent loss. Quality control procedures are needed to verify accurate data entry. Effective communication with programming staff is necessary to overcome software limitations and to enhance system capabilities.

After careful evaluation, a suitable nutrient analysis system can be acquired to function as a professional tool. The more experience one has using a system, the more ideas one can generate for the use of a system. Thus, flexibility and the availability of new features should be considered.

References

1. Hoover, L.W., ed.: Nutrient Data Bank Directory. 4th Edition and Supplement. Columbia, MO: University of Missouri-Columbia Printing Services, 1984, 1985.

2. Hoover, L.W. and Perloff, B.P.: Model for Review of Nutrient Data Base System Capabilities. 2nd Edition. Columbia, MO: University of Missouri-Columbia Printing Services, 1984.