LARGE-SCALE DIETARY ANALYSIS AND EVALUATION

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INTRODUCTION

Thank you for the introduction, Dr. Samonds. It is a real pleasure to be able to speak today at this pre-conference program on the usage of a nutrient data bank for large-scale dietary analysis and evaluation.

Two excellent articles on the use of data banks are in the May, 1983, Journal of the American Dietetic Association by Dr. Loretta Hoover and Betty Perloff.

When Dr. Samonds asked me to make this presentation, he indicated that my comments should be geared toward the novice in data bank usage. This certainly makes me feel more comfortable since my presentation will not be highly technical. Rather, I will talk about Nutrition Services' commercial application of a computerized diet analysis program using a well documented nutrient data bank.

The best way to talk about our usage of a data bank for large-scale analysis and evaluation is to describe our business. I will try to be non-commercial, but it is difficult because I am so proud of our company and what we do.

Health Development Inc., the parent company of Nutrition Services, is involved in two of the most exciting fields in American business--computer products/services and health services. As pointed out in John Naisbitt's book Megatrends, our economy is changing from an industrial base to an information base. We at Health Development are working to assist health professionals to more effectively and economically utilize health-related information, including nutrient analysis data.

Our company became interested in the possibility of a nutritional assessment/dietary planning computer program in the latter part of 1979. We saw a large potential market for nutrition information. I could talk for hours about the reasons for the large and growing market, but today we will stay on the subject of large-scale dietary analysis and evaluation. However, you might be interested in what we see as some of the potential users of services and/or computer programs related to nutritional assessment and dietary planning.

Potential Users:

250,000	M.D. Physicians in private practice
40,000	Registered Dietitians
7,000	Hospitals
21,000	Nursing Homes
17,000	D.O. Physicians in private practice
18,000	Chiropractors
150,000	Dentists
5,000	Weight Loss Centers
500	Corporate Fitness Centers

When we began our search for some sort of nutrition analysis "thing," we were not sure exactly what we wanted. However, one thing was quite apparent at the time. There were only two basic ways of doing diet analysis calculations--manually or with a very large computer system.

Our search for a program led us to Dr. Sarah Short. Most of you know of Dr. Short because of her innovative teaching techniques at Syracuse University where she is Professor of Nutrition. She is also nationally recognized for her many years of work with computerized nutrition analysis programs for her research and student education. Some of her most interesting research work has been on nutrition and athletes.

I first became familiar with Dr. Short's work while watching the TODAY show on television. She had a computer terminal with her and was doing an analysis of Tom Brokaw's diet. The application was intriguing, so I contacted Dr. Short a few days later to discuss some commercial opportunities.

The SHORT REPORT® Computerized Diet and Energy Analysis was introduced in March, 1980. The SHORT REPORT® is a complete service package designed for use by health professionals in the evaluation of patient/client food consumption and physical activities. The applications of the analysis program range from those related to diagnosis/treatment to health promotion/wellness/ fitness applications. The analysis is most commonly used by health professionals who are working with non-hospitalized individuals. Our company currently has users of the service in 36 states and Canada. Thousands of nutrient analyses have been performed by our company, so I guess that qualifies me to be talking about today's subject.

When our company first became interested in computerized nutritional analysis, we set some criteria for the food and nutrient data bank that would be used. The criteria were fairly simple in concept, but have remained important to us. The following are the criteria:

1. The food and nutrient data bank must be well documented.
2. Must contain a large number of foods and serving sizes.
3. Should have the fewest nutrient "holes" as possible (for example, we do not feel that a data bank that includes trace minerals such as selenium has much application for us because of the small number of foods that have been analyzed for selenium).
4. Must be routinely updated.

Fortunately, Dr. Short's data bank met all of these criteria. The primary source of food and nutrient information in the data bank we use is the U.S.D.A. This information is augmented with published, well documented research, and numerous brand names and fast foods. Our data bank presently has over 5,000 foods and serving sizes entries.

While the data bank is extremely important, there are two other equally critical considerations in having an effective nutrient analysis package. A well written and well documented computer program is a must. The analysis process must also have an effective way of collecting food and beverage consultation information. The SHORT REPORT® Computerized Diet and Energy Analysis includes all three of these important aspects--sound data bank, well written programs, and effective data collection.

NUTRIENT ANALYSIS PROCESS

The complete nutrient analysis process utilizing The SHORT REPORT® begins with the health professional. This individual is most likely involved with patient/client evaluation and counselling. We prefer to deal with health professionals because they have a better understanding of both the analysis process and the final data developed through the analysis.

The individual whose diet is being analyzed is provided with a Patient Data Kit containing all necessary instructions and forms for recording dietary intake and, if appropriate, physical activities. Our standard package is a three day analysis, but we can handle up to a 14 day period.

The recording logs are designed for ease of use by the individual. Each log contains a listing of 370 of the more commonly eaten foods and common serving sizes. The log is designed to be carried with the individual so that food consumption can be recorded as it occurs. When someone consumes a food that is not preprinted on the list, the food description and serving size are written in a special "additional foods" space on each daily log.

When the recording is completed, the daily logs are mailed by the patient (or sometimes the health professional) to Nutrition Services in a prepaid, self addressed envelope that is included in the Patient Data Kit. Each log is reviewed and coded for computer processing under the direction of a Registered Dietitian.

Patient demographic data, food consumption data, and physical activity information is entered into the computer and a multipage report is printed which includes the following information:

1. A listing of the foods, serving sizes, and numbers of servings recorded by the patient.
2. A detailed breakdown of food/beverage nutrient information for each day of the analysis period, including suggested intake levels, actual intake, percentage comparison of actual to suggested, and intake from supplement sources.
3. A nutrient summary with a graphic representation for the entire reporting period.
4. A detailed energy summary for each day of the analysis period, including total energy requirement, actual intake, and the excess or deficit of actual to the suggested levels.
5. The text of summary notes that relate to specific excesses or deficits of actual nutrient intake to suggested values. The text includes dietary suggestions, sources of nutrients and energy, and potential effects of continued excesses or deficiencies.

Two copies of the completed report are returned to the health professional in a confidential envelope. As stated earlier, we prefer to deal with health professionals because they best understand the information included in the final report and the limitations of a nutritional analysis itself.

One important feature of our program that I didn't previously mention is the ability to handle non-data base foods in any individual analysis. A person will sometimes consume a food that is not in our large data base, but we will have information on the nutrient content of that particular food. For example, we may have a package label. The nutrient information for this food can be entered into the computer along with the data base foods to result in a more accurate total analysis.

I mentioned earlier that our company has performed thousands of analyses in the manner just described. However, the entire process is time consuming primarily because of the delays created by the mail service. The patient or health professional must mail forms to our office, we must process the information, and then return completed reports to the health professional. Our in-house processing time is one day, but the entire turnaround time can often be as much as seven days because of the mail.

Because of the turnaround time delays, we started looking at alternatives to our standard service package about three years ago. The most appropriate alternatives were some sort of time sharing system and the use of microcomputers. We did not really like the time sharing idea because of the perception of potential users of the difficulties of working with a large remote computer site. The most attractive idea was to develop a comprehensive analysis program for use on popular microcomputers. This is what we decided to do.

NUTRIENT ANALYSIS EVOLUTION

We began a project to convert our program and data base from a large computer to a microcomputer. At that time we had versions of our programs running on both an IBM 370 and a DEC PDP-1170. The biggest problem in the conversion process was getting our large data base on a single floppy diskette that could be used with something like the Apple II microcomputer. We felt strongly then and feel equally strongly now, that a data base of only a few hundred foods was not sufficient to provide a meaningful analysis.

A two year development program resulted in The SHORT REPORT © MICRO, a microcomputer software program for diet, menu, and energy (caloric) analysis. The new program is truly remarkable in that it has actually more analysis options than we had on the big computers. The following are some of the features of the microcomputer version:

1. Eight analysis options including a food analysis which shows the nutrient composition of each food item.
2. Over five thousand foods and serving sizes in the data base on a single floppy diskette.
3. Analysis of thirty-three nutrient and energy components.
4. The ability to add up to 700 additional user defined foods to the permanent data base on the IBM PC version of the program.
5. Versions for the Apple II+, Apple IIe, Apple III, and IBM PC (a new IBM PC/XT version has just been released).

The health professional can now do a comprehensive nutrient analysis in his/her own office. The program is fast, easy to use, economical, and accurate. The most positive feature is the rapid availability of detailed nutritional analysis information for use by the health professional.

SUMMARY

I have given you a brief overview today of an example of the use of a nutrient data bank for large-scale dietary analysis and evaluation. There is a large and growing market for detailed nutritional information if such information can be provided in an efficient, accurate, economical, and rapid manner.

Nutrient analysis has evolved from manual systems, to large computer systems, and now to microcomputers. Regardless of the method of analysis, the choice of a data bank is an important consideration. Other considerations should be the method of food/beverage consumption data collection and the software programs themselves when a computer is being used.

Thank you very much for allowing me to speak with you today. Our microcomputer version of the analysis program, The SHORT REPORT © MICRO, can be seen in the exhibit area through tomorrow. If you have any questions about our nutrient analysis service or software programs, please feel free to call us at 1-800-222-4630.

Thank you again.