

Report of Task Force 4
Uses and Application of Nutrient Data Bases

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The topic of Task Force 4 was the uses and applications of nutrient data bases. The areas of discussion were:

- 1) Nutrient Data Bases,
- 2) Data Input
- 3) The RDAs as a standard,
- 4) Data Output, and
- 5) The role of the USDA.

I can summarize much of our discussion with the statement that the uses and applications of nutrient data bases must be defined by the specific situations in which one wishes to use them. Accordingly, one must select an appropriate method for each specific use, then be careful to use the results in that same context.

Regarding Nutrient Data Bases, discussion touched upon the real-life variability of food nutrient composition, the "strength or firmness" of the nutrient values which are used for calculations, consideration of nutrient losses from factors such as cooking and storage, and what to do about unknown nutrient values for foods. When using a computerized diet analysis system, one typically assumes that there is one set of values for one particular food, when in fact, we know that there is variation in say, carrots, or other foods. One approach to the hardness of the data is to establish a nutrient reliability code such as the Army has done. This essentially is a way of judging, on a relative scale, how accurate or how firm you consider the information to be. The question of nutrient losses during processing, cooking and holding of foods was brought up. If both the input data and the nutrient composition data permit, these factors can be incorporated into the calculations. Nonetheless, by the very nature of the method, one has an estimate at best. Another problem encountered is what to do with a food item when its nutrient composition is not known. Various options are to estimate its composition based on judgement of its similarity to another food item of known composition, to omit the food item from the calculations, and to indicate in the output which of the above procedures was followed.

We then turned to the question of the nutrient data base

size. Here again, it's going to be determined by your specific situation. There are many kinds of applications, such as surveys, screening of populations, nutrition counselling, calculation of menu cycles and individual therapeutic diets and research to establish correlations between diet and health. One's particular applications, then, will be a factor in determining what kind of nutrient data base should be used. We discussed the advantages of mini-bases, namely, the ease of coding, the lesser amount of data storage required and the fact that only clerical help need be used to implement these programs. These factors combine to help keep the costs low. However, there is a greater amount of error inherent in these simplified procedures.

Data input format will be defined in large part by the capabilities of one's system and the purposes for which it is being used. The accuracy of the input data will be influenced by the particular format of collection, as well as by the respondent's abilities and use of them to provide a complete and accurate accounting of the diets involved. Exactness of amounts and clarity of description are the major variables.

We then talked about the RDA and how it is used in the context of these efforts. The question was brought up whether or not this is in fact a proper use of the RDAs. This point is addressed in the RDA report itself, where we are warned not to use the RDAs for purposes beyond the scope of their validity. There are a number of problems which one must consider in using them. It was pointed out that the RDAs are established for normal healthy individuals. How are we to deal with different situations, such as the hospital setting, where people are very likely not healthy? The longitudinal nature of studies raises the question of truncating excess nutrient values. Should a high intake of a nutrient be ignored or in some way carried over to the next day? And what about the time of ingestion, and also food combinations? How might these influence the validity of our results? Another point brought up is that the RDAs change over time.

It was suggested that when studies based on these methods are reported, the reports should include actual nutrient amounts as well as the percent of RDA. This will serve to facilitate comparison with other studies done using different RDA values. Nonetheless, we do feel that this is the most useable standard we have.

Data Output was our next topic of discussion. Output formats will be determined by the particular application. We did feel, though, that efforts should be made to keep the output readily understandable; that is, we don't want to create our own language just to foster ourselves as specialists. Secondly, it was noted that output should always be used along with the diet history input; we should not take the output and abstract it from the actual foods ingested. Thirdly, it was suggested that perhaps a group such as the one gathered here today could

establish a library of teaching output formats. There is a great deal of interest in using this kind of output for patients and individual instruction. A group such as this might serve as a focal point for collection and exchange of experiences and materials.

The USDA is clearly a focal point of data base formulation and maintenance. We would like to see more work done along the lines of accounting for nutrient losses such as those previously mentioned. Another topic which recieved a great deal of interest was the interim provision of new data. An idea was brought up that perhaps a newsletter format could be used, whereby USDA would send out new data as it becomes available. This would be in contrast to the present situation in which an individual must write to USDA and request specific information.

In conclusion, we felt that the uses of nutrient data bases for various applications can be very effective and reliable. It was noted that several studies have appeared in the literature which support this conclusion.