

DIETARY STANDARDS -- USES AND LIMITATIONS

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The Recommended Dietary Allowances, defined as the levels of intake of essential nutrients considered in the judgment of the Food and Nutrition Board, on the basis of available scientific knowledge, to be adequate to meet the needs of practically all healthy persons, are the generally accepted dietary standards in the United States.

The original purpose of the RDA was to serve as standards for planning and procuring food supplies for population groups. The RDA were, therefore, set high enough to cover the nutritional needs of individuals with the highest requirements. The general approach in establishing the RDA, although it cannot be used for all nutrients because the amount of information available about requirements for some is limited, is: one, to select the best estimate of the average requirement; two, to increase the average by twice the coefficient of variation to take into account individual variability; and then, three, allow additionally for low biological availability or inefficiency of utilization of the nutrient in the food supply. RDA are established for different age-sex groups to take into consideration the changes in requirements during periods of growth. The standards established in this way should achieve the original purpose of the RDA, i.e. anyone who consumes a diet that provides nutrients in amounts equivalent to the RDA is unlikely to suffer a nutritional deficit.

The other major use of the RDA is as standards for evaluating, from knowledge of food consumption and food composition, the adequacy of nutrient intake of either population groups or individuals. RDA were not designed specifically for this purpose and a question arises immediately as to whether they are the most appropriate standards for it. The main problem is that neither the RDA nor, for that matter, any other dietary standards, provide a guideline for establishing the point at which nutrient intakes become inadequate. Nutrient requirements of individuals vary, to the best of our present knowledge, over about a two-fold range, and there is no way of distinguishing a person whose requirements may be 50% below the average from one whose requirements may be 50% above the average. The problem is thus a statistical one. It is not possible to establish a standard that applies to individuals. The problem will, therefore, require a statistical solution. Before that can be achieved, however, there is another confounding factor that must be dealt with.

The above discussion about RDA is based on the assumption that all of the individual allowances have been established with equal consistency and reliability and that the proportion of people whose requirement is, say, 25% below the average requirement will be roughly the same for each nutrient. This is not so. For ascorbic acid, for example, if the procedure outlined above for establishing the RDA applies, one would assume that the average requirement is 40 mg/day for adults with a range of requirements from 20 to 60 mg/day, and that most people would develop deficiency signs if intake fell below 20 mg/day. In actual fact, we know that few, if any, adults would be at risk if they consumed 20 mg of ascorbic acid daily. On the other hand, with the RDA for thiamin set at 0.5 mg/1000 kcal/day the anticipated range of requirements would be from 0.17 to 0.5

mg/1000 kcal/day. Evidence from both epidemiologic and experimental studies indicates that subjects with intakes at the lower end of this range develop signs of thiamin inadequacy and that, among groups with diets providing only this amount, beri-beri will develop. Thus, for a solution to the problem of establishing a standard for evaluating the adequacy of nutrient intakes, an important first step is to develop a more consistent standard than the RDA.

Lörstad (FAO Nutr. Newsletter 9: 18, 1971) and Beaton (Proc. West. Hemis. Nutr. Congr. III, pp. 356-363, 1972) have pointed out that if the average requirement for a nutrient and the range of requirements for a population have been established with reasonable accuracy, and the average intake and range of intakes are known, it then becomes possible to calculate, for a particular level of intake of that nutrient, the percent of people expected to be at risk of deficiency. This still does not permit identification of those at risk but it does permit quantification of the degree of risk within a population. Ideally, effects of interactions among nutrients and of other factors that influence efficiency of utilization on nutrient needs should also be taken into account in such quantification.

If one reviews the dietary standards of the various countries and international agencies, it is evident that there are discrepancies among them. The standards used for assessing the adequacy of intake of nutrients in food consumption surveys differ from one another and from the various national standards. With increasing emphasis on the importance of dietary surveys as a means of monitoring the nutritional adequacy of the food supply, it would seem important to work toward development of more consistent dietary standards and toward development of techniques, such as those proposed by Lörstad and Beaton, for quantification of risk of nutritional inadequacy.