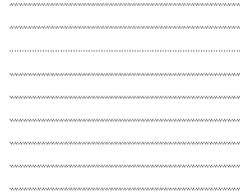


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DIETARY REFERENCE INTAKES

Applications

in

Dietary

Assessment

A Report of the
Subcommittee on Interpretation and
Uses of Dietary Reference Intakes and
the Standing Committee on the Scientific Evaluation of
Dietary Reference Intakes

Food and Nutrition Board

INSTITUTE OF MEDICINE

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Willing is not enough; we must do.”*
—Goethe

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Preface

This report is one of a series that relates to the development of Dietary Reference Intakes. This report focuses on applications of Dietary Reference Intakes (DRIs) in dietary assessment from the Subcommittee on Interpretation and Uses of Dietary Reference Intakes (Uses Subcommittee) of the Standing Committee on the Scientific Evaluation of Dietary Reference Intakes (DRI Committee). A forthcoming report from this Subcommittee will address applications of DRIs in dietary planning.

The Food and Nutrition Board anticipated that considerable guidance would be needed to assist American and Canadian health professionals in the transition from using the former Recommended Dietary Allowances (RDAs) for the United States and Recommended Nutrient Intakes (RNIs) for Canada to using the new DRIs, and thus charged the DRI Committee and the Uses Subcommittee to develop advice on the appropriate uses of these new references.

In the past, RDAs and RNIs were the primary values that were available to health professionals for planning and assessing the diets of individuals and groups. However, the former RDAs and RNIs were not ideally suited for many of these applications. The new DRIs represent a more complete set of values that were developed anticipating diverse uses for planning and/or assessment and thus allow more robust approaches. To assist health professionals in their use of the new DRIs, the Uses Subcommittee divided its work into two parts: the current report examines the appropriate use of each of the available DRI values in *assessing* nutrient intakes of groups and of individuals and a second report will present informa-

tion on the appropriate use of specific DRI values in the *planning* of diets for groups and for individuals. Each report will present the statistical underpinnings for the various uses of the DRI values, present sample applications, and provide guidelines to help professionals determine when specific uses are inappropriate.

A probability approach to assessing prevalence of nutrient inadequacy in groups was developed and presented—with extensive statistical validation and identification of sources of error—in the National Research Council Report, *Nutrient Adequacy* (NRC, 1986). The availability of Estimated Average Requirements (EARs), one of the categories of DRIs, makes the use of the probability approach possible. A modified approach, using the Estimated Average Requirement (EAR) as a cutpoint for assessing the prevalence of nutrient inadequacy in groups, is presented in this report. The cut-point method, however, is not a new independent approach; it is a modification of the probability approach. The statistical validation of the EAR cut-point method to assess prevalence of inadequacy in groups is presented in this report.

When the initial plan to revise the former RDAs was published (IOM, 1994), the Food and Nutrition Board envisioned the simultaneous establishment of the DRI Committee and two standing subcommittees, the Subcommittee on Upper Reference Intake Levels of Nutrients and the Uses Subcommittee. However, circumstances precluded the early convening of the Uses Subcommittee. It was not established until early 1998, after the release of the first two nutrient reports (IOM, 1997, 1998b).

The Uses Subcommittee, with expertise in nutrition, dietetics, statistics, nutritional epidemiology, public health, economics, and consumer perspectives, was charged to review the scientific literature regarding the uses of dietary reference standards and their applications, and to provide guidance for (1) the appropriate application of DRIs for specific purposes and identification of inappropriate applications, (2) appropriate assumptions regarding intake and requirement distributions, (3) adjustments needed to minimize potential errors in dietary intake data, and (4) appropriate use of DRI values of specific nutrients. Starting with the report of the Panel on Dietary Antioxidants and Related Compounds, this specific guidance will be found in the nutrient reports.

This report reflects the work of the Food and Nutrition Board's DRI Committee, the Uses Subcommittee, and the Subcommittee on Upper Reference Levels of Nutrients. The support of the government of Canada and Canadian scientists in establishing the Uses Subcommittee represents a pioneering first step in the standardiza-

tion of nutrient reference intakes in North America. A brief description of the overall DRI project is given in Appendix A.

This report has been reviewed by individuals chosen for their diverse perspectives and technical expertise, in accordance with procedures approved by the National Research Council's Report Review Committee. The purpose of this independent review was to provide candid and critical comments to assist the authors and the Institute of Medicine in making the published report as sound as possible and to ensure that the report meets institutional standards for objectivity, evidence, and responsiveness to the study charge. The contents of the review comments and draft manuscript remain confidential to protect the integrity of the deliberative process.

We wish to thank the following individuals for their participation in the review of this report: Cynthia M. Beall, Ph.D., Case Western Reserve University; William H. Danforth, M.D., Washington University; Mary J. Kretsch, Ph.D., RD, U.S. Department of Agriculture; George P. McCabe, Ph.D., Purdue University; Grace L. Ostenson, Ph.D., Washington, D.C.; Eric B. Rimm, Sc.D., Harvard School of Public Health; Christopher P. Sempos, Ph.D., State University of New York; Helen Smiciklas-Wright, Ph.D., RD, Pennsylvania State University; Paul D. Stolley, M.D., MPH, University of Maryland at Baltimore; and Valeric Tarasuk, Ph.D., University of Toronto.

Although the individuals listed above provided many constructive comments and suggestions, responsibility for the final content of this report rests solely with the authoring committee and the Institute of Medicine.

The DRI Committee wishes to acknowledge, in particular, the commitment and dedication shown by Suzanne P. Murphy, chair of the Uses Subcommittee. Dr. Murphy's expertise and direction were key to the resolution of controversial issues and to the presentation of technically complex information and its statistical basis in a clear and readily understandable manner. Sincere thanks are also extended to George H. Beaton for his willingness to participate as a technical consultant to the Uses Subcommittee. His provocative comments and assistance provided an important impetus to move the conceptual framework, while still in development and far from complete, forward. Not all issues have been resolved, but the foundation has been initiated. We also extend special thanks to the staff of the Food and Nutrition Board and especially to Mary Poos, study director for the Uses Subcommittee, for her many contributions to the synthesis of the report. We recognize the significant efforts of the Subcommittee and the Food and Nutrition Board staff that were required to achieve the completion of this report. It is, of course,

the Food and Nutrition Board staff who get much of the work completed, so on behalf of the DRI Committee and the Board, we wish to thank Allison Yates, Director of the Food and Nutrition Board and study director for the DRI activity, for her continued oversight, and also recognize, with appreciation, the contributions of Michele Ramsey, Alice Vorosmarti, Karah Nazor, Sandra Schlicker, and Gail Spears. We wish also to thank Carol Sutor for scientific and organizational review, Judith Dickson for editing the manuscript, and Mike Edington and Claudia Carl for assistance with its publication.

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