

## Review

## Commentary: Lessons learned from the development of Dietary Reference Intakes and Dietary Guidelines among different countries

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The compilations of papers derived from the presentations at the 2<sup>nd</sup> Asian Network Symposium that are published concurrently in this issue offer an opportunity for the reader to gain a better understanding of the processes used for the development of country-specific nutrient reference intake recommendations and national dietary guidelines. This commentary offers a perspective of lessons learned from both the similarities and differences of approaches used among the Asian countries. Additionally, selected comparisons are made to actions and considerations related to nutrient requirements and national guidelines within the United States. It is hoped that continued dialogue among different countries on these topics should further harmonization of nutritional recommendations and provide an understanding for differences when they may occur.

**Key Words:** nutrient requirements, dietary guidelines, nutritional monitoring

### INTRODUCTION

Many countries have established a process for the development of Dietary Reference Intakes for nutrients and energy and Dietary Guidelines message materials for the respective populations of their individual countries. The general public health applications of these recommendations in various countries have remarkable similarities. However, there have been some distinctive differences in the processes used, the assumptions made, and the specificity of the recommendations.

As Dr. Barba outlines in one of the papers included in this issue, there was the First Regional Forum and Workshop entitled "RDAs: Scientific Basis and Future Directions" held in Singapore in March 1997.<sup>1</sup> The papers within this current issue provide the nature of the presentations and discussions that occurred during the 2<sup>nd</sup> Asian Network Symposium entitled "Nutrition Reference and Dietary recommendations in Asian Countries" held in Tokyo in March 2006. It should be noted that although the Symposium was held in March 2006, there has been continued actions in some of the Asian countries relevant to this topic and such actions or further developments have been included within the manuscripts included in this issue as appropriate.

The Symposium was held on the occasion of the 85<sup>th</sup> Anniversary of the establishment of what is now known as the National Institute of Health and Nutrition in Japan. The contributions from this organization should be well recognized, since this entity is referred to as the oldest national nutritional research institute. The contributions of Dr. Sasaki from the early days of this institute towards the establishment of dietary reference intakes as indicated in the paper by Dr Watanabe and colleagues<sup>2</sup> should be considered seminal. However, as other developed coun-

tries in the world have formulated their respective recommendations in these areas, there has been much more of an international influence to the processes used for both the development of dietary recommendations and various country specific dietary guidelines. As such, it is notable that many of the Asian countries are now transitioning to the change from Recommended Dietary Allowances to the use of the terminology of Recommended Dietary Intakes as has occurred in the United States. The rapidity of the influence of this transition which occurred in the 1990's in the United States to actually being incorporated in many of the newer recommendations from the Asian countries is remarkable.

Although the principles serving as the foundation for the development of recommended levels of intake of various nutrients and energy are similar, the fact that there are some differences among the various countries in the final recommendations should be recognized and used to reassess the methods, assumptions, and translation to practical applications. At first, one would potentially believe that requirements for one population should closely approximate other populations around the world. However, the bioavailability of some micronutrients may have significant differences when consumed as part of distinct, culturally specific diets. The quality of available protein may also differ significantly when comparing diets from different countries. Thus, there is sufficient rationale for

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quantitative differences in recommendations for nutrients from different countries.

The average energy expenditure also varies among countries and within countries. In most countries, the average estimated energy expenditure has essentially been based on observed levels of energy expenditure of relatively healthy individuals. As the need to expend energy has decreased due to the increasing use of technology, there does not appear to be a systematic re-evaluation of our recommendations for energy intake. This issue may require the design of some complex studies assessing the value of varying levels of energy expenditure on health promotion. Paradoxically, some of the decrease in energy expenditure has been greater in rural areas compared to urban areas. The reduction in levels of occupational energy expenditure, which have not been adequately compensated by voluntary increase in physical activity, along with the generalized increased availability of food at all hours of the day and at a relatively low cost has potentially contributed to the increasing prevalence of overweight and obesity throughout the world.

It has been accepted that recommendations for the intake of macronutrients should be expressed as ranges. Advances in nutrigenomics have resulted in greater acceptance of individual variation of nutrient requirements and consequently some recommendations for intake of micronutrients are transitioning to ranges as well. Although perceived as potentially problematic for nutritional labeling and other regulatory matters, ranges may help convey to the public the fact that there is variability in the needed levels of intake from one individual to another. Additionally, this variation may help explain some of the different (and sometimes apparently conflicting) results being reported as scientific studies are reported in the literature and communicated by the media.

Since people eat foods rather than a specific selection of nutrients, the nutritional leadership of each country translated the information from the nutrient-based requirements into food-based guidelines. The described inter-relationship between the groups that develop these two end-products for the Asian countries reported in this issue is one of the striking differences compared to what occurs in the United States. In general, it appears that both efforts are led by the same organizations within these Asian countries. In the United States the two efforts are conducted under the auspices of quite distinct organizations, with the Dietary Reference Intakes being developed by a committee within the Institute of Medicine of the National Academies (independent of the Federal Government) and the *Dietary Guidelines for Americans* being developed by federal staff and based upon a report of an advisory committee serving the US Department of Health and Human Services and Department of Agriculture. One process offers greater opportunities of integration and the other provides an opportunity for broadening the perspective and it is not clear if one approach might be better than the other one.

Whether to place the primary focus on healthy populations or to have the focus placed on reducing the risk of non-communicable chronic disease is currently being debated in most countries that have developed nutrient intake recommendations or dietary guidance for their

populations. Initially, most efforts focused attention on populations described as healthy (although a clear definition of what comprised healthy was not always provided). With the expansion of health promotion to include chronic disease prevention and the fact that large percentages of populations, especially adults, are receiving medication or other intervention for a lifestyle-related chronic disease, there is current enthusiasm to attempt to make both the nutrient requirements and dietary guidelines processes to be more broadly applicable. Again constructive considerations may be gained by dialogue across countries to be sure broad perspectives are being heard and understood. Some of the issues for consideration include the following: individuals with chronic conditions may have different requirements; dietary guidance for individuals with chronic conditions are considered to describe therapeutic diets and not diets for the general population; and endpoints for the assessment of nutrient requirements and outcomes of dietary interventions often do not have the same specificity.

In September, 2007, the Institute of Medicine of the National Academies held a workshop entitled "The Development of DRIs 1994-2004: Lessons Learned and New Challenges" during which the relative merits of many of the above mentioned considerations were discussed.<sup>3</sup> The dialogue that is captured in the published report of this workshop benefited from the participation, experience and perspectives of many of the professionals who contributed to the derivation of the Dietary Reference Intakes and the previous editions of the Recommended Dietary Allowances in the United States.

A more recent benefit or application of the development of nutrient requirements and national dietary guidelines has been the use of such recommendations to establish and then monitor progress towards national health objectives or goals. Dr. Yoshiike and colleagues report progress towards national goals formulated as part of the Nutrition and Diet Focus Area of *Health Japan 21* in a paper in this issue.<sup>4</sup> Although there was not always success in achieving such goals, just having the ability to formulate these objectives and goals offers a means to assess the success of public health efforts and to develop new strategies and actions to improve the health of the nation. In the US, many of the objectives of the Nutrition and Overweight Focus Area of *Healthy People 2010* are defined to determine how well the US population is following our nutritional recommendations. As observed in Japan, there has not been major success in moving towards our targeted goals,<sup>5</sup> necessitating new strategies and actions to achieve improvement.

Ultimately, the major challenge in all nations is validating our scientific discoveries and then translating this science so it can help appropriately influence governmental policies, be applicable to the public, and understood by the individual. As we have more opportunities to objectively dialogue about the similarities and differences of the processes involved in establishing nutrient requirements and dietary guidelines within different countries, listen to the different perspectives surrounding translation of these efforts to improving public health, and share the recognition of barriers and strategies to achieve success, the lessons learned in one country or culture are likely to

bring an increased return on our investment of time and effort.

#### **AUTHOR DISCLOSURES**

Van S Hubbard, no conflicts of interest.

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