

Lesson 2: Understanding Dietary Reference Intakes

Instructions

To complete this lesson follow these steps:

Step 1: Read the purpose of the lesson and consider the learning outcomes for the lesson. The learning outcomes specify what you should know and be able to do when you have completed the lesson.

Step 2: Read the rest of the information in this lesson. This page does contain links to important course content. Be sure to come back to this page after reading any linked content to continue the lesson.

Step 3: Complete the review at the end of the lesson. Answering these questions will assist you in preparing for the exam.

Step 4: If you need clarification of any information in the lesson, post your questions on the Discussion Board for Lesson 2 or contact the instructor for assistance.

Purpose of Lesson

This lesson will explore the Dietary Reference Intakes.

Learning Outcomes:

1. Define, interpret, and apply the Estimated Average Requirement; Recommended Dietary Allowance; Adequate Intake; and Tolerable Upper Intake Level.
2. State the agency responsible for developing the Dietary Reference Intakes.
3. Explain why the Dietary Reference Intakes vary for people in different life stages and between males and females.
4. Explain the primary use of the Dietary Reference Intakes.
5. Explain why dietary assessment alone is insufficient to determine if someone is deficient in a particular nutrient.
6. State the goal of the Recommended Dietary Allowance.

Introduction to the Dietary Reference Intakes

Dietary Reference Intakes are a set of nutrient intake standards in use in the United States and Canada. These standards are developed and published by the Institute of Medicine and are intended to be used in academic and research settings. They are primarily for professional use because they deal with quantities of nutrients rather than amounts of food. Each reference value is an average daily intake over a specified period, at least one week for most nutrients.

The Dietary Reference Intakes apply to *healthy people*. They are generalized because the exact nutrient needs of an individual cannot be known. The Dietary Reference Intakes differ for people of different ages and sex because people have different nutrient needs at different stages of their lives. For example, the needs of a female 19 year old college student are different from those of a 35 year old pregnant female.

Dietary Reference Intakes are based on available scientific evidence and are revised as necessary in response to advances in scientific research. There are six categories of Dietary Reference Intakes. In this module we are concerned with Estimated Average Requirement; Recommended Dietary Allowance; Adequate Intake; and Tolerable Upper Limit. The module does not include information about Acceptable Macronutrient Distribution Ranges and Estimated Energy Expenditure.

The nutrient needs of a particular age and sex group of people occur on a continuum. This means that individuals within an age and sex group do not have the same needs. The Dietary Reference Intakes are set with this in mind.

Estimated Average Requirement

The Estimated Average Requirement is a nutrient intake value estimated to meet the requirement of half the healthy individuals in an age and sex group.

Recommended Dietary Allowance

The daily dietary intake level sufficient to meet the nutrient requirement of nearly all (97 to 98 percent) healthy individuals in an age/sex group. Statistical methods are used to determine the Recommended Dietary Allowance which set at a uniform level above the Estimated Average Requirement.

Adequate Intake

Sometimes there is not enough scientific evidence to set the Estimated Average Requirement and Recommended Dietary Allowance for a nutrient. In these cases, the available evidence is used to make the best scientific estimate of target intake for healthy people. This estimate is referred to as the Adequate Intake level.

Tolerable Upper Intake Level

The Tolerable Upper Intake Level is the highest level of daily nutrient intake likely to pose no risk of adverse health effects to almost all individuals in the general population. As intake increases above the Tolerable Upper Intake Level, the risk of adverse effects increases.

Using the Dietary Reference Intakes

In diet planning for an individual, the Recommended Dietary Allowance and Adequate Intake level are used as a target for average nutrient intake. It is important to remember the needs of half the population are met at the Estimated Average Requirement and the needs of more and more people as intake approaches the Recommended Dietary Allowance. The goal of the Recommended Dietary Allowance is to set target intake to avoid nutritional deficiencies in groups of healthy people. Thus, we cannot determine nutrient deficiencies based solely on recorded intake of a nutrient. Laboratory tests are needed to diagnose nutrient deficiencies.

The Tolerable Upper Intake levels are limits that can be observed to avoid the risk of over consuming particular nutrients. As with deficiencies, biochemical assessment is required to diagnose 'overdose' of a nutrient. It is unlikely that a healthy person would over consume most nutrients through diet alone.

(sodium is one exception to this). However, supplements can push intake above the Tolerable Upper Intake Level

Would You Like More Information?

If you would like more information about the Dietary Reference Intakes, refer to the National Academies Press publication [Dietary Reference Intakes: the essential guide to nutrient requirements](https://www.nap.edu/catalog/11537/dietary-reference-intakes-the-essential-guide-to-nutrient-requirements?gclid=Cj0KCQjwwLHLBRDEARIsAN1A1Q7jg3F_7cz_BAXCyeE11vtv2sw_VB3kQ82vUHZd7P2QyqIFHf2fd0aAjnIEALw_wcB).

https://www.nap.edu/catalog/11537/dietary-reference-intakes-the-essential-guide-to-nutrient-requirements?gclid=Cj0KCQjwwLHLBRDEARIsAN1A1Q7jg3F_7cz_BAXCyeE11vtv2sw_VB3kQ82vUHZd7P2QyqIFHf2fd0aAjnIEALw_wcB This book may be browsed free online and you may download a free pdf. You do not have to purchase the publication to access it.

Sources

Information on this page is adapted from this source: Institute of Medicine (US) Food and Nutrition Board. Dietary Reference Intakes: A Risk Assessment Model for Establishing Upper Intake Levels for Nutrients. Washington (DC): National Academies Press (US); 1998. What are Dietary Reference Intakes? Available from: [the National Center for Biotechnology Information \(US\)](https://www.ncbi.nlm.nih.gov/books/NBK45182/) (<https://www.ncbi.nlm.nih.gov/books/NBK45182/>).

Review Questions

1. The Dietary Reference Intakes are primarily intended for professional use. Given this, how could you use the information to help plan a healthful diet?
2. Why can't assessment of dietary intake tell us if someone is deficient in a particular nutrient?
3. Define Estimated Average Requirement, Recommended Dietary Allowance, Adequate Intake Level and Tolerable Upper Intake Level.
4. Explain the relationship between the Estimated Average Requirement, Recommended Dietary Allowance, and Adequate Intake Level. How is each set?
5. The Dietary Reference Intakes apply to healthy people and those who do not have special dietary needs. What are some groups of healthy people who might have increased or decreased needs for particular nutrients?
6. Why do the Dietary Reference Intakes vary by the age and sex?