

TABLE 95e-3 DIETARY REFERENCE INTAKES (DRIs): RECOMMENDED DIETARY ALLOWANCES AND ADEQUATE INTAKES FOR TOTAL WATER AND MACRONUTRIENTS

Life-Stage Group	Total Water ^a (L/d)	Carbohydrate (g/d)	Total Fiber (g/d)	Fat (g/d)	Linoleic Acid (g/d)	α-Linolenic Acid (g/d)	Protein ^b (g/d)
Infants							
Birth to 6 mo	0.7*	60*	ND ^c	31*	4.4*	0.5*	9.1*
6–12 mo	0.8*	95*	ND	30*	4.6*	0.5*	11.0
Children							
1–3 y	1.3*	130	19*	ND	7*	0.7*	13
4–8 y	1.7*	130	25*	ND	10*	0.9*	19
Males							
9–13 y	2.4*	130	31*	ND	12*	1.2*	34
14–18 y	3.3*	130	38*	ND	16*	1.6*	52
19–30 y	3.7*	130	38*	ND	17*	1.6*	56
31–50 y	3.7*	130	38*	ND	17*	1.6*	56
51–70 y	3.7*	130	30*	ND	14*	1.6*	56
>70 y	3.7*	130	30*	ND	14*	1.6*	56
Females							
9–13 y	2.1*	130	26*	ND	10*	1.0*	34
14–18 y	2.3*	130	26*	ND	11*	1.1*	46
19–30 y	2.7*	130	25*	ND	12*	1.1*	46
31–50 y	2.7*	130	25*	ND	12*	1.1*	46
51–70 y	2.7*	130	21*	ND	11*	1.1*	46
>70 y	2.7*	130	21*	ND	11*	1.1*	46
Pregnant women							
14–18 y	3.0*	175	28*	ND	13*	1.4*	71
19–30 y	3.0*	175	28*	ND	13*	1.4*	71
31–50 y	3.0*	175	28*	ND	13*	1.4*	71
Lactating women							
14–18	3.8*	210	29*	ND	13*	1.3*	71
19–30 y	3.8*	210	29*	ND	13*	1.3*	71
31–50 y	3.8*	210	29*	ND	13*	1.3*	71

Note: This table (taken from the DRI reports; see www.nap.edu) presents recommended dietary allowances (RDAs) in **bold type** and adequate intakes (AIs) in ordinary type followed by an asterisk (*). An RDA is the average daily dietary intake level sufficient to meet the nutrient requirements of nearly all healthy individuals (97–98%) in a group. The RDA is calculated from an estimated average requirement (EAR). If sufficient scientific evidence is not available to establish an EAR and thus to calculate an RDA, an AI is usually developed. For healthy breast-fed infants, an AI is the mean intake. The AI for other life-stage and sex-specific groups is believed to cover the needs of all healthy individuals in those groups, but lack of data or uncertainty in the data make it impossible to specify with confidence the percentage of individuals covered by this intake.

^aTotal water includes all water contained in food, beverages, and drinking water. ^bBased on grams of protein per kilogram of body weight for the reference body weight (e.g., for adults: 0.8 g/kg body weight for the reference body weight). ^cNot determined.

Source: Food and Nutrition Board, Institute of Medicine, National Academies (<http://www.iom.edu/Activities/Nutrition/SummaryDRIs/DRI-Tables.aspx>), based on: *Dietary Reference Intakes for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids* (2002/2005) and *Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate* (2005). These reports can be accessed via www.nap.edu.

and over-the-counter medications (e.g., antacids), should not exceed RDA levels.

Acceptable Macronutrient Distribution Ranges The AMDRs are not experimentally determined but are rough ranges for energy-providing macronutrient intakes (protein, carbohydrate, and fat) that the Institute of Medicine's Food and Nutrition Board considers to be healthful. These ranges are 10–35% of calories for protein, 20–35% of calories for fat, and 45–65% of calories for carbohydrate. Alcohol, which also provides energy, is not a nutrient; therefore, no recommendations are not provided.

FACTORS ALTERING NUTRIENT NEEDS

The DRIs are affected by age, sex, rate of growth, pregnancy, lactation, physical activity level, concomitant diseases, drugs, and dietary composition. If requirements for nutrient sufficiency are close to levels indicating excess of a nutrient, dietary planning is difficult.

Physiologic Factors Growth, strenuous physical activity, pregnancy, and lactation all increase needs for energy and several essential nutrients. Energy needs rise during pregnancy due to the demands of fetal growth and during lactation because of the increased energy required for milk production. Energy needs decrease with loss of lean body mass, the major determinant of REE. Because lean tissue, physical activity,

and health often decline with age, energy needs of older persons, especially those over 70, tend to be lower than those of younger persons.

Dietary Composition Dietary composition affects the biologic availability and use of nutrients. For example, the absorption of iron may be impaired by large amounts of calcium or lead; likewise, non-heme iron uptake may be impaired by a lack of ascorbic acid and amino acids in the meal. Protein use by the body may be decreased when essential amino acids are not present in sufficient amounts—a rare scenario in U.S. diets. Animal foods, such as milk, eggs, and meat, have high biologic values, with most of the needed amino acids present in adequate amounts. Plant proteins in corn (maize), soy, rice, and wheat have lower biologic values and must be combined with other plant or animal proteins or fortified with the amino acids that are deficient to achieve optimal use by the body.

Route of Intake The RDAs apply only to oral intakes. When nutrients are administered parenterally, similar values can sometimes be used for amino acids, glucose (carbohydrate), fats, sodium, chloride, potassium, and most vitamins because their intestinal absorption rate is nearly 100%. However, the oral bioavailability of most mineral elements may be only half that obtained by parenteral administration. For some nutrients that are not readily stored in the body or that cannot be stored in large amounts, timing of administration may also