### Dietary Reference Intakes: Vitamins

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Function</th>
<th>Life Stage Group</th>
<th>RDA/AI</th>
<th>UL</th>
<th>Selected Food Sources</th>
<th>Adverse effects of excessive consumption</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biotin</td>
<td>Coenzyme in synthesis of fat, glycan, and amino acids</td>
<td>Infants 0–6 mo</td>
<td>5*</td>
<td>ND</td>
<td>Liver and smaller amounts in fruits and meats</td>
<td>No adverse effects of biotin in humans or animals were found. This does not mean that there is no potential for adverse effects resulting from high intakes. Because data on the adverse effects of biotin are limited, caution may be warranted.</td>
<td>None</td>
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<td>Choline</td>
<td>Precursor for acetylcholine, phospholipids and betaine</td>
<td>Infants 0–6 mo</td>
<td>125*</td>
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<td>Milk, liver, eggs, peanuts</td>
<td>Fishy body odor, sweating, salivation, hypotension, hepatotoxicity</td>
<td>Individuals with trimethylaminuria, renal disease, liver disease, depression and Parkinson’s disease, may be at risk of adverse effects with choline intakes at the UL. Although AIs have been set for choline, there are few data to assess whether a dietary supply of choline is needed at all stages of the life cycle, and it may be that the choline requirement can be met by endogenous synthesis at some of these stages.</td>
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</table>

**NOTE:** The table is adapted from the DRI reports, see www.nap.edu. It represents Recommended Dietary Allowances (RDAs) in *bold type*, Adequate Intakes (AIs) in ordinary type followed by an asterisk (*), and Tolerable Upper Intake Levels (ULs)†. RDAs and AIs may both be used as goals for individual intake. RDAs are set to meet the needs of almost all (97 to 98 percent) individuals in a group. For healthy breastfed infants, the AI is the mean intake. The AI for other life stage and gender groups is believed to cover the needs of all individuals in the group, but lack of data prevent being able to specify with confidence the percentage of individuals covered by this intake.

*UL = The maximum level of daily nutrient intake that is likely to pose no risk of adverse effects. Unless otherwise specified, the UL represents total intake from food, water, and supplements. Due to lack of suitable data, ULs could not be established for vitamin K, thiamin, riboflavin, vitamin B₁₂, pantothenic acid, biotin, or carotenoids. In the absence of ULs, extra caution may be warranted in consuming levels above recommended intakes.

*ND = Not determinable due to lack of data of adverse effects in this age group and concern with regard of lack of ability to handle excess amounts. Source of intake should be from food only to prevent high levels of intake.

### Dietary Reference Intakes: Vitamins

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Function</th>
<th>Life Stage Group</th>
<th>RDA/AI</th>
<th>UL</th>
<th>Selected Food Sources</th>
<th>Adverse effects of excessive consumption</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Folate</strong></td>
<td>Coenzyme in the metabolism of nucleic and amino acids; prevents megaloblastic anemia</td>
<td>Infants 0–6 mo</td>
<td>(µg/d)</td>
<td>65*</td>
<td>80*</td>
<td>Enriched cereal grains, dark leafy vegetables, enriched and whole-grain breads and bread products, fortified ready-to-eat cereals</td>
<td>Masks neurological complication in people with vitamin B12 deficiency.</td>
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<td></td>
<td></td>
<td>Infants 7–12 mo</td>
<td>(µg/d)</td>
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<tr>
<td><strong>Niacin</strong></td>
<td>Includes nicotinic acid amide, nicotinic acid (pyridine-3-carboxylic acid), and derivatives that exhibit the biological activity of nicotinamide.</td>
<td>Infants 0–6 mo</td>
<td>(mg/d)</td>
<td>2*</td>
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<td>Meat, fish, poultry, enriched and whole-grain breads and bread products, fortified ready-to-eat cereals</td>
<td>There is no evidence of adverse effects from the consumption of naturally occurring niacin in foods.</td>
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</table>

**NOTE:** The table is adapted from the DRI reports, see [www.nap.edu](http://www.nap.edu). It represents Recommended Dietary Allowances (RDAs) in **bold type**. Adequate Intakes (AIs) in ordinary type followed by an asterisk (*), and Tolerable Upper Intake Levels (ULs) in **italics**. RDAs and AIs may both be used as goals for individual intake. RDAs are set to meet the needs of almost all (97 to 98 percent) individuals in a group. For healthy breastfeeding infants, the AI is the mean intake. The AI for other life stage and gender groups is believed to cover the needs of all individuals in the group, but lack of data prevent being able to specify with confidence the percentage of individuals covered by this intake.

*UL = The maximum level of daily nutrient intake that is likely to pose no risk of adverse effects. Unless otherwise specified, the UL represents total intake from food, water, and supplements. Due to lack of suitable data, ULs could not be established for vitamin K, thiamin, riboflavin, vitamin B₁₂, pantothenic acid, biotin, or carotenoids. In the absence of ULs, extra caution may be warranted in consuming levels above recommended intakes.

*ND = Not determinable due to lack of data of adverse effects in this age group and concern with regard to lack of ability to handle excess amounts. Source of intake should be from food only to prevent high levels of intake.

**SOURCES:** Dietary Reference Intakes for Calcium, Phosphorous, Magnesium, Vitamin D, and Fluoride (1997); Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B₆, Folate, Vitamin B₁₂, Pantothenic Acid, Biotin, and Choline (1998); Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids (2000); and Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc (2001). These reports may be accessed via [www.nap.edu](http://www.nap.edu).
**Dietary Reference Intakes: Vitamins**

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Function</th>
<th>Life Stage Group</th>
<th>RDA/AI* (mg/d)</th>
<th>UL* (mg/d)</th>
<th>Selected Food Sources</th>
<th>Adverse effects of excessive consumption</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panthenic Acid</td>
<td>Coenzyme in fatty acid metabolism</td>
<td>Infants 0-6 mo</td>
<td>1.7</td>
<td>ND</td>
<td>Chicken, beef, potatoes, oats, cereals, tomato products, liver, kidney, yeast, egg yolks, broccoli, whole grains</td>
<td>No adverse effects associated with pantothenic acid from food or supplements</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-12 mo</td>
<td>1.8*</td>
<td>ND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Children 1-3 y</td>
<td>2*</td>
<td>ND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>4-8 y</td>
<td>3*</td>
<td>ND</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Males 9-13 y</td>
<td>4*</td>
<td>ND</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>14-18 y</td>
<td>5*</td>
<td>ND</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>19-30 y</td>
<td>5*</td>
<td>ND</td>
<td></td>
<td></td>
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<td></td>
<td>31-50 y</td>
<td>5*</td>
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<td></td>
<td>50-70 y</td>
<td>5*</td>
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<td></td>
<td>&gt; 70 y</td>
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<td></td>
<td></td>
<td>Females 9-13 y</td>
<td>4*</td>
<td>ND</td>
<td></td>
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<td></td>
<td>19-30 y</td>
<td>5*</td>
<td>ND</td>
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</tr>
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<td></td>
<td></td>
<td>31-50 y</td>
<td>5*</td>
<td>ND</td>
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</tr>
<tr>
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<td>Pregnancy ≤ 18 y</td>
<td>6*</td>
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<td>19-30 y</td>
<td>6*</td>
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<tr>
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<td></td>
<td>Lactation ≤ 18 y</td>
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<td>ND</td>
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<td>19-30 y</td>
<td>7*</td>
<td>ND</td>
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<td>31-50 y</td>
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<tr>
<td>Riboflavin</td>
<td>Coenzyme in numerous redox reactions</td>
<td>Infants 0-6 mo</td>
<td>0.3*</td>
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<tr>
<td></td>
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<td>7-12 mo</td>
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<td></td>
<td>4-8 y</td>
<td>0.6</td>
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<tr>
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<td></td>
<td>Males 9-13 y</td>
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<td>19-30 y</td>
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<td>31-50 y</td>
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<td>50-70 y</td>
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<td>&gt; 70 y</td>
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<td>ND</td>
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<td>Females 9-13 y</td>
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<td></td>
<td></td>
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<td>1.1</td>
<td>ND</td>
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<td></td>
<td>50-70 y</td>
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<td>ND</td>
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<tr>
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<td></td>
<td>Pregnancy ≤ 18 y</td>
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<td>ND</td>
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<td>19-30 y</td>
<td>1.4</td>
<td>ND</td>
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<td></td>
<td></td>
<td>31-50 y</td>
<td>1.4</td>
<td>ND</td>
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</tr>
<tr>
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<td></td>
<td>Lactation ≤ 18 y</td>
<td>1.6</td>
<td>ND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>19-30 y</td>
<td>1.6</td>
<td>ND</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>31-50 y</td>
<td>1.6</td>
<td>ND</td>
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</tbody>
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<th>Life Stage Group</th>
<th>RDA/AI*</th>
<th>UL*</th>
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<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thiamin</strong>&lt;br&gt;Also known as: Vitamin B₁, Aneurin</td>
<td>Coenzyme in the metabolism of carbohydrates and branched-chain amino acids</td>
<td>Infants 0-6 mo&lt;br&gt;7-12 mo&lt;br&gt;Children 1-3 y&lt;br&gt;4-8 y&lt;br&gt;Males 9-13 y&lt;br&gt;14-18 y&lt;br&gt;19-30 y&lt;br&gt;31-50 y&lt;br&gt;50-70 y&lt;br&gt;70 y&lt;br&gt;Females 9-13 y&lt;br&gt;14-18 y&lt;br&gt;19-30 y&lt;br&gt;31-50 y&lt;br&gt;Pregnancy&lt;br&gt;Lactation</td>
<td>(mg/d)&lt;br&gt;0.2*&lt;br&gt;0.3*&lt;br&gt;0.5&lt;br&gt;0.6&lt;br&gt;0.9&lt;br&gt;1.2&lt;br&gt;1.2&lt;br&gt;1.2&lt;br&gt;1.2&lt;br&gt;1.2&lt;br&gt;0.9&lt;br&gt;1.0&lt;br&gt;1.1&lt;br&gt;1.1&lt;br&gt;1.4&lt;br&gt;1.4&lt;br&gt;1.4&lt;br&gt;1.4&lt;br&gt;1.4</td>
<td>ND&lt;sup&gt;a&lt;/sup&gt;&lt;br&gt;ND&lt;sup&gt;a&lt;/sup&gt;&lt;br&gt;ND&lt;sup&gt;a&lt;/sup&gt;&lt;br&gt;ND&lt;sup&gt;a&lt;/sup&gt;&lt;br&gt;ND&lt;sup&gt;a&lt;/sup&gt;&lt;br&gt;ND&lt;sup&gt;a&lt;/sup&gt;&lt;br&gt;ND&lt;sup&gt;a&lt;/sup&gt;&lt;br&gt;ND&lt;sup&gt;a&lt;/sup&gt;&lt;br&gt;ND&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Enriched, fortified, or whole-grain products; bread and bread products, mixed foods whose main ingredient is grain, and ready-to-eat cereals</td>
<td>No adverse effects associated with thiamin from food or supplements have been reported. This does not mean that there is no potential for adverse effects resulting from high intakes. Because data on the adverse effects of thiamin are limited, caution may be warranted.</td>
<td>Persons who may have increased needs for thiamin include those being treated with hemodialysis or peritoneal dialysis, or individuals with malabsorption syndrome.</td>
</tr>
<tr>
<td><strong>Vitamin A</strong>&lt;br&gt;Includes provitamin A carotenoids that are dietary precursors of retinol.&lt;br&gt;Note: Given as retinol activity equivalents (RAEs). 1 RAE = 1 µg retinol, 12 µg β-carotene, 24 µg α-carotene, or 24 µg β-cryptoxanthin. To calculate RAEs from REs of provitamin A carotenoids in foods, divide the REs by 2. For preformed vitamin A in foods or supplements and for provitamin A carotenoids in supplements, 1 RE = 1 RAE.</td>
<td>Required for normal vision, gene expression, reproduction, embryonic development and immune function</td>
<td>Infants 0-6 mo&lt;br&gt;7-12 mo&lt;br&gt;Children 1-3 y&lt;br&gt;4-8 y&lt;br&gt;Males 9-13 y&lt;br&gt;14-18 y&lt;br&gt;19-30 y&lt;br&gt;31-50 y&lt;br&gt;50-70 y&lt;br&gt;70 y&lt;br&gt;Females 9-13 y&lt;br&gt;14-18 y&lt;br&gt;19-30 y&lt;br&gt;31-50 y&lt;br&gt;Pregnancy&lt;br&gt;Lactation</td>
<td>(µg/d)&lt;br&gt;400*&lt;br&gt;500*&lt;br&gt;300&lt;br&gt;400&lt;br&gt;600&lt;br&gt;900&lt;br&gt;900&lt;br&gt;900&lt;br&gt;900&lt;br&gt;600&lt;br&gt;700&lt;br&gt;700&lt;br&gt;700&lt;br&gt;700&lt;br&gt;750&lt;br&gt;770&lt;br&gt;1,200&lt;br&gt;1,300&lt;br&gt;1,300&lt;br&gt;600&lt;br&gt;600&lt;br&gt;1,700&lt;br&gt;2,800&lt;br&gt;3,000&lt;br&gt;3,000&lt;br&gt;3,000&lt;br&gt;3,000&lt;br&gt;2,800&lt;br&gt;3,000&lt;br&gt;3,000&lt;br&gt;3,000&lt;br&gt;2,800&lt;br&gt;3,000&lt;br&gt;3,000</td>
<td>Liver, dairy products, fish&lt;br&gt;Teratological effects, liver toxicity&lt;br&gt;Note: From preformed Vitamin A only.</td>
<td>Individuals with high alcohol intake, pre-existing liver disease, hyperlipidemia or severe protein malnutrition may be distinctly susceptible to the adverse effects of excess preformed vitamin A intake.</td>
<td>β-carotene supplements are advised only to serve as a provitamin A source for individuals at risk of vitamin A deficiency.</td>
<td></td>
</tr>
</tbody>
</table>

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<tr>
<th>Nutrient</th>
<th>Function</th>
<th>Life Stage Group</th>
<th>RDA/AI*</th>
<th>UL*</th>
<th>Selected Food Sources</th>
<th>Adverse effects of excessive consumption</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin B₆</td>
<td>Coenzyme in the metabolism of amino acids, glycojen and sphingoid bases</td>
<td>Infants 0-6 mo</td>
<td>1.0</td>
<td>ND</td>
<td>None</td>
<td>No adverse effects associated with Vitamin B₆ from food have been reported. This does not mean that there is no potential for adverse effects resulting from high intakes. Because data on the adverse effects of Vitamin B₆ are limited, caution may be warranted.</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-12 mo</td>
<td>0.3</td>
<td>ND</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Children 1-3 y</td>
<td>0.5</td>
<td>30</td>
<td>Fortified cereals, organ meats, fortified soy-based meat substitutes</td>
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<td></td>
<td></td>
<td>4-8 y</td>
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<td>40</td>
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<td>&gt; 70 y</td>
<td>1.7</td>
<td>100</td>
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<td>Females 9-13 y</td>
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<td>&gt; 70 y</td>
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<td></td>
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<td>Pregnancy ≤ 18 y</td>
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<td>80</td>
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<td>Sensory neuropathy has occurred from high intakes of supplemental forms.</td>
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</tr>
<tr>
<td>Vitamin B₁₂</td>
<td>Coenzyme in nucleic acid metabolism; prevents megaloblastic anemia</td>
<td>Infants 0-6 mo</td>
<td>0.4</td>
<td>ND</td>
<td>None</td>
<td>No adverse effects have been associated with the consumption of the amounts of vitamin B₁₂ normally found in foods or supplements. This does not mean that there is no potential for adverse effects resulting from high intakes. Because data on the adverse effects of vitamin B₁₂ are limited, caution may be warranted.</td>
<td>Because 10 to 30 percent of older people may malabsorb food-bound vitamin B₁₂, it is advisable for those older than 50 years to meet their RDA mainly by consuming foods fortified with vitamin B₁₂ or a supplement containing vitamin B₁₂.</td>
</tr>
<tr>
<td>Also known as:</td>
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<td>Cobalamin</td>
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<td>Pregnancy ≤ 18 y</td>
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<td>2.6</td>
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**NOTE:** The table is adapted from the DRI reports, see [www.nap.edu](http://www.nap.edu). It represents Recommended Dietary Allowances (RDAs) in **bold type**. Adequate Intakes (AIs) in ordinary type followed by an asterisk (*), and Tolerable Upper Intake Levels (ULs) are set to meet the needs of all (97 to 98 percent) individuals in a group. For healthy breastfed infants, the AI is the mean intake. The AI for other life stage and gender groups is believed to cover the needs of all individuals in the group, but lack of data prevent being able to specify with confidence the percentage of individuals covered by this intake.

*UL = The maximum level of daily nutrient intake that is likely to pose no risk of adverse effects. Unless otherwise specified, the UL represents total intake from food, water, and supplements. Due to lack of suitable data, ULs could not be established for vitamin K, thiamin, riboflavin, vitamin B₁₂, pantothenic acid, biotin, or carotenoids. In the absence of ULs, extra caution may be warranted in consuming levels above recommended intakes.

*ND = Not determinable due to lack of data of adverse effects in this age group and concern with regard to lack of ability to handle excess amounts. Source of intake should be from food only to prevent high levels of intake.

**SOURCES:** Dietary Reference Intakes for Calcium, Phosphorous, Magnesium, Vitamin D, and Fluoride (1997); Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B₆, Folate, Vitamin B₁₂, Pantothenic Acid, Biotin, and Choline (1998); Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids (2000); and Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc (2001). These reports may be accessed via [www.nap.edu](http://www.nap.edu).
### Dietary Reference Intakes: Vitamins

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Function</th>
<th>Life Stage Group</th>
<th>RDA/Al</th>
<th>UL*</th>
<th>Selected Food Sources</th>
<th>Adverse effects of excessive consumption</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vitamin C</strong></td>
<td>Cofactor for reactions requiring reduced copper or iron metalloenzyme and as a protective antioxidant</td>
<td>Infants 0-6 mo: 40*</td>
<td>(mg/d)</td>
<td>ND</td>
<td>Citrus fruits, tomatoes, tomato juice, potatoes, brussel sprouts, cauliflower, broccoli, strawberries, cabbage and spinach</td>
<td>Gastrointestinal disturbances, kidney stones, excess iron absorption</td>
<td>Individuals who smoke require an additional 35 mg/d of vitamin C over that needed by nonsmokers.</td>
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<td></td>
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<td>7-12 mo: 50*</td>
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<td>Nonsmokers regularly exposed to tobacco smoke are encouraged to ensure they meet the RDA for vitamin C.</td>
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<td></td>
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<td>1-3 y: 15</td>
<td>(mg/d)</td>
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<td>Males 9-13 y: 45</td>
<td>(mg/d)</td>
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<td>Pregnancy ≤ 18 y: 80</td>
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<td>31-50 y: 85</td>
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<td>Lactation ≤ 18 y: 115</td>
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<td>31-50 y: 120</td>
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<tr>
<td><strong>Vitamin D</strong></td>
<td>Maintain serum calcium and phosphorus concentrations.</td>
<td>Infants 0-6 mo: 5*</td>
<td>(ug/d)</td>
<td></td>
<td>Fish liver oils, flesh of fatty fish, liver and fat from seals and polar bears, eggs from hens that have been fed vitamin D, fortified milk products and fortified cereals</td>
<td>Elevated plasma 25 (OH) D concentration causing hypercalcemia</td>
<td>Patients on glucocorticoid therapy may require additional vitamin D.</td>
</tr>
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<td></td>
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<td>7-12 mo: 5*</td>
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<td>Children 1-3 y: 5*</td>
<td>(ug/d)</td>
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<td>4-8 y: 5*</td>
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<td>Males 9-13 y: 5*</td>
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<td>14-18 y: 5*</td>
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<td>19-30 y: 5*</td>
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<td>31-50 y: 5*</td>
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<td>50-70 y: 10*</td>
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<td>Females 9-13 y: 5*</td>
<td>(ug/d)</td>
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<td>19-30 y: 5*</td>
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<td>31-50 y: 5*</td>
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<td>50-70 y: 10*</td>
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<td>Pregnancy ≤ 18 y: 5*</td>
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<td>(ug/d)</td>
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<td>31-50 y: 5*</td>
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</table>

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**Dietary Reference Intakes: Vitamins**

<table>
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<tr>
<th>Nutrient</th>
<th>Function</th>
<th>Life Stage Group</th>
<th>RDA/AI*</th>
<th>UL*</th>
<th>Selected Food Sources</th>
<th>Adverse effects of excessive consumption</th>
<th>Special Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin E</td>
<td>A metabolic function has not yet been identified. Vitamin E’s major function appears to be as a non-specific chain-breaking antioxidant.</td>
<td>Infants 0-6 mo</td>
<td>4*</td>
<td>ND</td>
<td>Vegetable oils, unprocessed cereal grains, nuts, fruits, vegetables, meats</td>
<td>There is no evidence of adverse effects from the consumption of vitamin E naturally occurring in foods.</td>
<td>Patients on anticoagulant therapy should be monitored when taking vitamin E supplements.</td>
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<tr>
<td></td>
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<td>7-12 mo</td>
<td>5*</td>
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<tr>
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<td>Children 1-3 y</td>
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<td></td>
<td>Pregnancy ≤ 18 y</td>
<td>15</td>
<td>800</td>
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<tr>
<td></td>
<td></td>
<td>19-30 y</td>
<td>15</td>
<td>1,000</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Lactation ≤ 18 y</td>
<td>19</td>
<td>800</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>19-30 y</td>
<td>19</td>
<td>1,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-50 y</td>
<td>19</td>
<td>1,000</td>
<td></td>
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</tr>
<tr>
<td>Vitamin K</td>
<td>Coenzyme during the synthesis of many proteins involved in blood clotting and bone metabolism</td>
<td>Infants 0-6 mo</td>
<td>2.0*</td>
<td>ND</td>
<td>Green vegetables (collards, spinach, salad greens, broccoli), brussel sprouts, cabbage, plant oils and margarine</td>
<td>No adverse effects associated with vitamin K consumption from food or supplements have been reported in humans or animals. This does not mean that there is no potential for adverse effects resulting from high intakes. Because data on the adverse effects of vitamin K are limited, caution may be warranted.</td>
<td>Patients on anticoagulant therapy should monitor vitamin K intake.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7-12 mo</td>
<td>2.5*</td>
<td>ND</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Children 1-3 y</td>
<td>30*</td>
<td>ND</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>4-8 y</td>
<td>55*</td>
<td>ND</td>
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<tr>
<td></td>
<td></td>
<td>Males 9-13 y</td>
<td>60*</td>
<td>ND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>14-18 y</td>
<td>75*</td>
<td>ND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>19-30 y</td>
<td>120*</td>
<td>ND</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>31-50 y</td>
<td>120*</td>
<td>ND</td>
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<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>50-70 y</td>
<td>120*</td>
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<tr>
<td></td>
<td></td>
<td>&gt; 70 y</td>
<td>120*</td>
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<tr>
<td></td>
<td></td>
<td>Females 9-13 y</td>
<td>60*</td>
<td>ND</td>
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<td></td>
<td>14-18 y</td>
<td>75*</td>
<td>ND</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>19-30 y</td>
<td>90*</td>
<td>ND</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>31-50 y</td>
<td>90*</td>
<td>ND</td>
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<tr>
<td></td>
<td></td>
<td>Pregnancy ≤ 18 y</td>
<td>75*</td>
<td>ND</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>19-30 y</td>
<td>90*</td>
<td>ND</td>
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<tr>
<td></td>
<td></td>
<td>Lactation ≤ 18 y</td>
<td>75*</td>
<td>ND</td>
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<tr>
<td></td>
<td></td>
<td>19-30 y</td>
<td>90*</td>
<td>ND</td>
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<tr>
<td></td>
<td></td>
<td>31-50 y</td>
<td>90*</td>
<td>ND</td>
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</tr>
</tbody>
</table>

**NOTE:** The table is adapted from the DRI reports, see [www.nap.edu](http://www.nap.edu). It represents Recommended Dietary Allowances (RDAs) in **bold type**. Adequate Intakes (AIs) in ordinary type followed by an asterisk (*), and Tolerable Upper Intake Levels (ULs). RDAs and AIs may both be used as goals for individual intake. RDAs are set to meet the needs of almost all (97 to 98 percent) individuals in a group. For healthy breastfed infants, the Al is the mean intake. The AI for other life stage and gender groups is believed to cover the needs of all individuals in the group, but lack of data prevent being able to specify with confidence the percentage of individuals covered by this intake.

*UL = The maximum level of daily nutrient intake that is likely to pose no risk of adverse effects. Unless otherwise specified, the UL represents total intake from food, water, and supplements. Due to lack of suitable data, ULs could not be established for vitamin K, thiamin, riboflavin, vitamin B₁₂, pantothenic acid, biotin, or carotenoids. In the absence of ULs, extra caution may be warranted in consuming levels above recommended intakes.

*ND = Not determinable due to lack of data of adverse effects in this age group and concern with regard to lack of ability to handle excess amounts. Source of intake should be from food only to prevent high levels of intake.

**SOURCES:** Dietary Reference Intakes for Calcium, Phosphorous, Magnesium, Vitamin D, and Fluoride (1997); Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B₆, Folate, Vitamin B₁₂, Pantothenic Acid, Biotin, and Choline (1998); Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids (2000); and Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc (2001). These reports may be accessed via [www.nap.edu](http://www.nap.edu).