

## Dietary Reference Intakes (DRIs): Recommended Dietary Allowances and Adequate Intakes, Vitamins

Food and Nutrition Board, Institute of Medicine, National Academies

Life Stage Group	Vitamin A (μg/d) <sup>a</sup>	Vitamin C (mg/d)	Vitamin D (μg/d) <sup>b,c</sup>	Vitamin E (mg/d) <sup>d</sup>	Vitamin K (μg/d)	Thiamin (mg/d)	Riboflavin (mg/d)	Niacin (mg/d) <sup>e</sup>	Vitamin B <sub>6</sub> (mg/d)	Folate (μg/d) <sup>f</sup>	Vitamin B <sub>12</sub> (μg/d)	Pantothenic Acid (mg/d)	Biotin (μg/d)	Choline (mg/d) <sup>g</sup>
Infants														
0 to 6 mo	400*	40*	10	4*	2.0*	0.2*	0.3*	2*	0.1*	65*	0.4*	1.7*	5*	125*
6 to 12 mo	500*	50*	10	5*	2.5*	0.3*	0.4*	4*	0.3*	80*	0.5*	1.8*	6*	150*
Children														
1–3 y	<b>300</b>	<b>15</b>	<b>15</b>	<b>6</b>	30*	<b>0.5</b>	<b>0.5</b>	<b>6</b>	<b>0.5</b>	<b>150</b>	<b>0.9</b>	2*	8*	200*
4–8 y	<b>400</b>	<b>25</b>	<b>15</b>	<b>7</b>	55*	<b>0.6</b>	<b>0.6</b>	<b>8</b>	<b>0.6</b>	<b>200</b>	<b>1.2</b>	3*	12*	250*
Males														
9–13 y	<b>600</b>	<b>45</b>	<b>15</b>	<b>11</b>	60*	<b>0.9</b>	<b>0.9</b>	<b>12</b>	<b>1.0</b>	<b>300</b>	<b>1.8</b>	4*	20*	375*
14–18 y	<b>900</b>	<b>75</b>	<b>15</b>	<b>15</b>	75*	<b>1.2</b>	<b>1.3</b>	<b>16</b>	<b>1.3</b>	<b>400</b>	<b>2.4</b>	5*	25*	550*
19–30 y	<b>900</b>	<b>90</b>	<b>15</b>	<b>15</b>	120*	<b>1.2</b>	<b>1.3</b>	<b>16</b>	<b>1.3</b>	<b>400</b>	<b>2.4</b>	5*	30*	550*
31–50 y	<b>900</b>	<b>90</b>	<b>15</b>	<b>15</b>	120*	<b>1.2</b>	<b>1.3</b>	<b>16</b>	<b>1.3</b>	<b>400</b>	<b>2.4</b>	5*	30*	550*
51–70 y	<b>900</b>	<b>90</b>	<b>15</b>	<b>15</b>	120*	<b>1.2</b>	<b>1.3</b>	<b>16</b>	<b>1.7</b>	<b>400</b>	<b>2.4<sup>h</sup></b>	5*	30*	550*
> 70 y	<b>900</b>	<b>90</b>	<b>20</b>	<b>15</b>	120*	<b>1.2</b>	<b>1.3</b>	<b>16</b>	<b>1.7</b>	<b>400</b>	<b>2.4<sup>h</sup></b>	5*	30*	550*
Females														
9–13 y	<b>600</b>	<b>45</b>	<b>15</b>	<b>11</b>	60*	<b>0.9</b>	<b>0.9</b>	<b>12</b>	<b>1.0</b>	<b>300</b>	<b>1.8</b>	4*	20*	375*
14–18 y	<b>700</b>	<b>65</b>	<b>15</b>	<b>15</b>	75*	<b>1.0</b>	<b>1.0</b>	<b>14</b>	<b>1.2</b>	<b>400<sup>i</sup></b>	<b>2.4</b>	5*	25*	400*
19–30 y	<b>700</b>	<b>75</b>	<b>15</b>	<b>15</b>	90*	<b>1.1</b>	<b>1.1</b>	<b>14</b>	<b>1.3</b>	<b>400<sup>i</sup></b>	<b>2.4</b>	5*	30*	425*
31–50 y	<b>700</b>	<b>75</b>	<b>15</b>	<b>15</b>	90*	<b>1.1</b>	<b>1.1</b>	<b>14</b>	<b>1.3</b>	<b>400<sup>i</sup></b>	<b>2.4</b>	5*	30*	425*
51–70 y	<b>700</b>	<b>75</b>	<b>15</b>	<b>15</b>	90*	<b>1.1</b>	<b>1.1</b>	<b>14</b>	<b>1.5</b>	<b>400</b>	<b>2.4<sup>h</sup></b>	5*	30*	425*
> 70 y	<b>700</b>	<b>75</b>	<b>20</b>	<b>15</b>	90*	<b>1.1</b>	<b>1.1</b>	<b>14</b>	<b>1.5</b>	<b>400</b>	<b>2.4<sup>h</sup></b>	5*	30*	425*
Pregnancy														
14–18 y	<b>750</b>	<b>80</b>	<b>15</b>	<b>15</b>	75*	<b>1.4</b>	<b>1.4</b>	<b>18</b>	<b>1.9</b>	<b>600<sup>j</sup></b>	<b>2.6</b>	6*	30*	450*
19–30 y	<b>770</b>	<b>85</b>	<b>15</b>	<b>15</b>	90*	<b>1.4</b>	<b>1.4</b>	<b>18</b>	<b>1.9</b>	<b>600<sup>j</sup></b>	<b>2.6</b>	6*	30*	450*
31–50 y	<b>770</b>	<b>85</b>	<b>15</b>	<b>15</b>	90*	<b>1.4</b>	<b>1.4</b>	<b>18</b>	<b>1.9</b>	<b>600<sup>j</sup></b>	<b>2.6</b>	6*	30*	450*
Lactation														
14–18 y	<b>1,200</b>	<b>115</b>	<b>15</b>	<b>19</b>	75*	<b>1.4</b>	<b>1.6</b>	<b>17</b>	<b>2.0</b>	<b>500</b>	<b>2.8</b>	7*	35*	550*
19–30 y	<b>1,300</b>	<b>120</b>	<b>15</b>	<b>19</b>	90*	<b>1.4</b>	<b>1.6</b>	<b>17</b>	<b>2.0</b>	<b>500</b>	<b>2.8</b>	7*	35*	550*
31–50 y	<b>1,300</b>	<b>120</b>	<b>15</b>	<b>19</b>	90*	<b>1.4</b>	<b>1.6</b>	<b>17</b>	<b>2.0</b>	<b>500</b>	<b>2.8</b>	7*	35*	550*

**NOTE:** This table (taken from the DRI reports, see [www.nap.edu](http://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 (97-98 percent) healthy individuals in a group. It is calculated from an Estimated Average Requirement (EAR). If sufficient scientific evidence is not available to establish an EAR, and thus calculate an RDA, an AI is usually developed. For healthy breastfed infants, an AI is the mean intake. The AI for other life stage and gender groups is believed to cover the needs of all healthy individuals in the groups, but lack of data or uncertainty in the data prevent being able to specify with confidence the percentage of individuals covered by this intake.

<sup>a</sup> As retinol activity equivalents (RAEs). 1 RAE = 1 μg retinol, 12 μg β-carotene, 24 μg α-carotene, or 24 μg β-cryptoxanthin. The RAE for dietary provitamin A carotenoids is two-fold greater than retinol equivalents (RE), whereas the RAE for preformed vitamin A is the same as RE.

<sup>b</sup> As cholecalciferol. 1 μg cholecalciferol = 40 IU vitamin D.

<sup>c</sup> Under the assumption of minimal sunlight.

<sup>d</sup> As α-tocopherol. α-Tocopherol includes *RRR*-α-tocopherol, the only form of α-tocopherol that occurs naturally in foods, and the *2R*-stereoisomeric forms of α-tocopherol (*RRR*-, *RSR*-, *RRS*-, and *RSS*-α-tocopherol) that occur in fortified foods and supplements. It does not include the *2S*-stereoisomeric forms of α-tocopherol (*SRR*-, *SSR*-, *SRS*-, and *SSS*-α-tocopherol), also found in fortified foods and supplements.

<sup>e</sup> As niacin equivalents (NE). 1 mg of niacin = 60 mg of tryptophan; 0–6 months = preformed niacin (not NE).

<sup>f</sup> As dietary folate equivalents (DFE). 1 DFE = 1 μg food folate = 0.6 μg of folic acid from fortified food or as a supplement consumed with food = 0.5 μg of a supplement taken on an empty stomach.

<sup>g</sup> 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.

<sup>h</sup> Because 10 to 30 percent of older people may malabsorb food-bound B<sub>12</sub>, it is advisable for those older than 50 years to meet their RDA mainly by consuming foods fortified with B<sub>12</sub> or a supplement containing B<sub>12</sub>.

<sup>i</sup> In view of evidence linking folate intake with neural tube defects in the fetus, it is recommended that all women capable of becoming pregnant consume 400 μg from supplements or fortified foods in addition to intake of food folate from a varied diet.

<sup>j</sup>It is assumed that women will continue consuming 400  $\mu\text{g}$  from supplements or fortified food until their pregnancy is confirmed and they enter prenatal care, which ordinarily occurs after the end of the periconceptual period—the critical time for formation of the neural tube.

**SOURCES:** *Dietary Reference Intakes for Calcium, Phosphorous, Magnesium, Vitamin D, and Fluoride* (1997); *Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B<sub>6</sub>, Folate, Vitamin B<sub>12</sub>, Pantothenic Acid, Biotin, and Choline* (1998); *Dietary Reference Intakes for Vitamin C, Vitamin E, Selenium, and Carotenoids* (2000); *Dietary Reference Intakes for Vitamin A, Vitamin K, Arsenic, Boron, Chromium, Copper, Iodine, Iron, Manganese, Molybdenum, Nickel, Silicon, Vanadium, and Zinc* (2001); *Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate* (2005); and *Dietary Reference Intakes for Calcium and Vitamin D* (2011). These reports may be accessed via [www.nap.edu](http://www.nap.edu).

## Dietary Reference Intakes (DRIs): Recommended Dietary Allowances and Adequate Intakes, Elements

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Life Stage Group	Calcium (mg/d)	Chromium ( $\mu\text{g/d}$ )	Copper ( $\mu\text{g/d}$ )	Fluoride (mg/d)	Iodine ( $\mu\text{g/d}$ )	Iron (mg/d)	Magnesium (mg/d)	Manganese (mg/d)	Molybdenum ( $\mu\text{g/d}$ )	Phosphorus (mg/d)	Selenium ( $\mu\text{g/d}$ )	Zinc (mg/d)	Potassium (g/d)	Sodium (g/d)	Chloride (g/d)
Infants															
0 to 6 mo	200*	0.2*	200*	0.01*	110*	0.27*	30*	0.003*	2*	100*	15*	2*	0.4*	0.12*	0.18*
6 to 12 mo	260*	5.5*	220*	0.5*	130*	11	75*	0.6*	3*	275*	20*	3	0.7*	0.37*	0.57*
Children															
1–3 y	<b>700</b>	11*	<b>340</b>	0.7*	<b>90</b>	7	<b>80</b>	1.2*	<b>17</b>	<b>460</b>	<b>20</b>	<b>3</b>	3.0*	1.0*	1.5*
4–8 y	<b>1,000</b>	15*	<b>440</b>	1*	<b>90</b>	<b>10</b>	<b>130</b>	1.5*	<b>22</b>	<b>500</b>	<b>30</b>	<b>5</b>	3.8*	1.2*	1.9*
Males															
9–13 y	<b>1,300</b>	25*	<b>700</b>	2*	<b>120</b>	<b>8</b>	<b>240</b>	1.9*	<b>34</b>	<b>1,250</b>	<b>40</b>	<b>8</b>	4.5*	1.5*	2.3*
14–18 y	<b>1,300</b>	35*	<b>890</b>	3*	<b>150</b>	<b>11</b>	<b>410</b>	2.2*	<b>43</b>	<b>1,250</b>	<b>55</b>	<b>11</b>	4.7*	1.5*	2.3*
19–30 y	<b>1,000</b>	35*	<b>900</b>	4*	<b>150</b>	<b>8</b>	<b>400</b>	2.3*	<b>45</b>	<b>700</b>	<b>55</b>	<b>11</b>	4.7*	1.5*	2.3*
31–50 y	<b>1,000</b>	35*	<b>900</b>	4*	<b>150</b>	<b>8</b>	<b>420</b>	2.3*	<b>45</b>	<b>700</b>	<b>55</b>	<b>11</b>	4.7*	1.5*	2.3*
51–70 y	<b>1,000</b>	30*	<b>900</b>	4*	<b>150</b>	<b>8</b>	<b>420</b>	2.3*	<b>45</b>	<b>700</b>	<b>55</b>	<b>11</b>	4.7*	1.3*	2.0*
> 70 y	<b>1,200</b>	30*	<b>900</b>	4*	<b>150</b>	<b>8</b>	<b>420</b>	2.3*	<b>45</b>	<b>700</b>	<b>55</b>	<b>11</b>	4.7*	1.2*	1.8*
Females															
9–13 y	<b>1,300</b>	21*	<b>700</b>	2*	<b>120</b>	<b>8</b>	<b>240</b>	1.6*	<b>34</b>	<b>1,250</b>	<b>40</b>	<b>8</b>	4.5*	1.5*	2.3*
14–18 y	<b>1,300</b>	24*	<b>890</b>	3*	<b>150</b>	<b>15</b>	<b>360</b>	1.6*	<b>43</b>	<b>1,250</b>	<b>55</b>	<b>9</b>	4.7*	1.5*	2.3*
19–30 y	<b>1,000</b>	25*	<b>900</b>	3*	<b>150</b>	<b>18</b>	<b>310</b>	1.8*	<b>45</b>	<b>700</b>	<b>55</b>	<b>8</b>	4.7*	1.5*	2.3*
31–50 y	<b>1,000</b>	25*	<b>900</b>	3*	<b>150</b>	<b>18</b>	<b>320</b>	1.8*	<b>45</b>	<b>700</b>	<b>55</b>	<b>8</b>	4.7*	1.5*	2.3*
51–70 y	<b>1,200</b>	20*	<b>900</b>	3*	<b>150</b>	<b>8</b>	<b>320</b>	1.8*	<b>45</b>	<b>700</b>	<b>55</b>	<b>8</b>	4.7*	1.3*	2.0*
> 70 y	<b>1,200</b>	20*	<b>900</b>	3*	<b>150</b>	<b>8</b>	<b>320</b>	1.8*	<b>45</b>	<b>700</b>	<b>55</b>	<b>8</b>	4.7*	1.2*	1.8*
Pregnancy															
14–18 y	<b>1,300</b>	29*	<b>1,000</b>	3*	<b>220</b>	<b>27</b>	<b>400</b>	2.0*	<b>50</b>	<b>1,250</b>	<b>60</b>	<b>12</b>	4.7*	1.5*	2.3*
19–30 y	<b>1,000</b>	30*	<b>1,000</b>	3*	<b>220</b>	<b>27</b>	<b>350</b>	2.0*	<b>50</b>	<b>700</b>	<b>60</b>	<b>11</b>	4.7*	1.5*	2.3*
31–50 y	<b>1,000</b>	30*	<b>1,000</b>	3*	<b>220</b>	<b>27</b>	<b>360</b>	2.0*	<b>50</b>	<b>700</b>	<b>60</b>	<b>11</b>	4.7*	1.5*	2.3*
Lactation															
14–18 y	<b>1,300</b>	44*	<b>1,300</b>	3*	<b>290</b>	<b>10</b>	<b>360</b>	2.6*	<b>50</b>	<b>1,250</b>	<b>70</b>	<b>13</b>	5.1*	1.5*	2.3*
19–30 y	<b>1,000</b>	45*	<b>1,300</b>	3*	<b>290</b>	<b>9</b>	<b>310</b>	2.6*	<b>50</b>	<b>700</b>	<b>70</b>	<b>12</b>	5.1*	1.5*	2.3*
31–50 y	<b>1,000</b>	45*	<b>1,300</b>	3*	<b>290</b>	<b>9</b>	<b>320</b>	2.6*	<b>50</b>	<b>700</b>	<b>70</b>	<b>12</b>	5.1*	1.5*	2.3*

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