

Dietary Reference Intakes

Equations to estimate energy requirement

Infants and young children	
Estimated Energy Requirement (kcal/day) = Total Energy Expenditure + Energy Deposition	
0-3 months	$EER = (89 \times \text{weight [kg]} - 100) + 175$
4-6 months	$EER = (89 \times \text{weight [kg]} - 100) + 56$
7-12 months	$EER = (89 \times \text{weight [kg]} - 100) + 22$
13-35 months	$EER = (89 \times \text{weight [kg]} - 100) + 20$
Children and Adolescents 3-18 years	
Estimated Energy Requirement (kcal/day) = Total Energy Expenditure + Energy Deposition	
Boys	
3-8 years	$EER = 88.5 - (61.9 \times \text{age [y]}) + PA \times \{ (26.7 \times \text{weight [kg]}) + (903 \times \text{height [m]}) \} + 20$
9-18 years	$EER = 88.5 - (61.9 \times \text{age [y]}) + PA \times \{ (26.7 \times \text{weight [kg]}) + (903 \times \text{height [m]}) \} + 25$
Girls	
3-8 years	$EER = 135.3 - (30.8 \times \text{age [y]}) + PA \times \{ (10.0 \times \text{weight [kg]}) + (934 \times \text{height [m]}) \} + 20$
9-18 years	$EER = 135.3 - (30.8 \times \text{age [y]}) + PA \times \{ (10.0 \times \text{weight [kg]}) + (934 \times \text{height [m]}) \} + 25$
Adults 19 years and older	
Estimated Energy Requirement (kcal/day) = Total Energy Expenditure	
Men	$EER = 662 - (9.53 \times \text{age [y]}) + PA \times \{ (15.91 \times \text{weight [kg]}) + (539.6 \times \text{height [m]}) \}$
Women	$EER = 354 - (6.91 \times \text{age [y]}) + PA \times \{ (9.36 \times \text{weight [kg]}) + (726 \times \text{height [m]}) \}$
Pregnancy	
Estimated Energy Requirement (kcal/day) = Non-pregnant EER + Pregnancy Energy Deposition	
1 st trimester	$EER = \text{Non-pregnant EER} + 0$
2 nd trimester	$EER = \text{Non-pregnant EER} + 340$
3 rd trimester	$EER = \text{Non-pregnant EER} + 452$
Lactation	
Estimated Energy Requirement (kcal/day) = Non-pregnant EER + Milk Energy Output – Weight Loss	
0-6 months postpartum	$EER = \text{Non-pregnant EER} + 500 - 170$
7-12 months postpartum	$EER = \text{Non-pregnant EER} + 400 - 0$

These equations provide an estimate of energy requirement. Relative body weight (i.e. loss, stable, gain) is the preferred indicator of energy adequacy.

Physical Activity Coefficients (PA values) for use in EER equations

	Sedentary (PAL 1.0-1.39)	Low Active (PAL 1.4-1.59)	Active (PAL 1.6-1.89)	Very Active (PAL 1.9-2.5)
	Typical daily living activities (e.g., household tasks, walking to the bus)	Typical daily living activities PLUS 30 - 60 minutes of daily moderate activity (ex. walking at 5-7 km/h)	Typical daily living activities PLUS At least 60 minutes of daily moderate activity	Typical daily living activities PLUS At least 60 minutes of daily moderate activity PLUS An additional 60 minutes of vigorous activity or 120 minutes of moderate activity
Boys 3 - 18 y	1.00	1.13	1.26	1.42
Girls 3 - 18 y	1.00	1.16	1.31	1.56
Men 19 y +	1.00	1.11	1.25	1.48
Women 19 y +	1.00	1.12	1.27	1.45

Dietary Reference Intakes Reference Values for Vitamins

	Vitamin A ^{1,2}						Vitamin D ^{**}						Vitamin E ⁵			Vitamin K	
Unit	µg/day (RAE)			IU/day (RAE)			µg/day ⁴			IU/day ⁴			mg/day			µg/day	
	EAR	RDA/AI	UL ³	EAR	RDA/AI	UL ³	EAR	RDA/AI	UL	EAR	RDA/AI	UL	EAR	RDA/AI	UL ⁶	AI	UL ⁷
Infants																	
0-6 mo	ND	400*	600	ND	1333*	2000	ND	10*	25	ND	400*	1000	ND	4*	ND	2.0*	ND
7-12 mo	ND	500*	600	ND	1667*	2000	ND	10*	38	ND	400*	1500	ND	5*	ND	2.5*	ND
Children																	
1-3 y	210	300	600	700	1000	2000	10	15	63	400	600	2500	5	6	200	30*	ND
4-8 y	275	400	900	917	1333	3000	10	15	75	400	600	3000	6	7	300	55*	ND
Males																	
9-13 y	445	600	1700	1483	2000	5667	10	15	100	400	600	4000	9	11	600	60*	ND
14-18 y	630	900	2800	2100	3000	9333	10	15	100	400	600	4000	12	15	800	75*	ND
19-30 y	625	900	3000	2083	3000	10000	10	15	100	400	600	4000	12	15	1000	120*	ND
31-50 y	625	900	3000	2083	3000	10000	10	15	100	400	600	4000	12	15	1000	120*	ND
51-70 y	625	900	3000	2083	3000	10000	10	15	100	400	600	4000	12	15	1000	120*	ND
>70 y	625	900	3000	2083	3000	10000	10	20	100	400	800	4000	12	15	1000	120*	ND
Females																	
9-13 y	420	600	1700	1400	2000	5667	10	15	100	400	600	4000	9	11	600	60*	ND
14-18 y	485	700	2800	1617	2333	9333	10	15	100	400	600	4000	12	15	800	75*	ND
19-30 y	500	700	3000	1667	2333	10000	10	15	100	400	600	4000	12	15	1000	90*	ND
31-50 y	500	700	3000	1667	2333	10000	10	15	100	400	600	4000	12	15	1000	90*	ND
51-70 y	500	700	3000	1667	2333	10000	10	15	100	400	600	4000	12	15	1000	90*	ND
>70 y	500	700	3000	1667	2333	10000	10	20	100	400	800	4000	12	15	1000	90*	ND
Pregnancy																	
≤ 18 y	530	750	2800	1767	2500	9333	10	15	100	400	600	4000	12	15	800	75*	ND
19-30 y	550	770	3000	1833	2567	10000	10	15	100	400	600	4000	12	15	1000	90*	ND
31-50 y	550	770	3000	1833	2567	10000	10	15	100	400	600	4000	12	15	1000	90*	ND
Lactation																	
≤ 18 y	885	1200	2800	2950	4000	9333	10	15	100	400	600	4000	16	19	800	75*	ND
19-30 y	900	1300	3000	3000	4333	10000	10	15	100	400	600	4000	16	19	1000	90*	ND
31-50 y	900	1300	3000	3000	4333	10000	10	15	100	400	600	4000	16	19	1000	90*	ND

This table presents *Estimated Average Requirements (EARs)* in italics, **Recommended Dietary Allowances (RDAs)** in bold type and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

^{**} New 2010 values have replaced previous 1997 values.

¹ As Retinol Activity Equivalents (RAE). See conversion factors for more details.

² No DRIs are established for beta-carotene or other carotenoids. However, existing recommendations for consumption of carotenoid-rich fruits and vegetables are supported.

³ UL as preformed vitamin A only. Beta-carotene supplements are advised only to serve as a provitamin A source for individuals at risk of vitamin A deficiency.

⁴ These reference values assume minimal sun exposure.

⁵ EAR and RDA/AI as alpha-tocopherol (2R-stereoisomeric forms) only. See conversion factors for more details.

⁶ The UL for vitamin E applies only to synthetic vitamin E (all isomeric forms) obtained from supplements, fortified foods, or a combination of the two.

⁷ Due to lack of suitable data, a UL could not be established for vitamin K. This does not mean that there is no potential for adverse effects resulting from high intakes.

NOTE: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

Dietary Reference Intakes Reference Values for Vitamins

Unit	Vitamin C ⁸			Thiamin			Riboflavin			Niacin ¹⁰			Vitamin B6		
	mg/day			mg/day			mg/day			mg/day (NE)			mg/day		
	EAR	RDA/AI	UL	EAR	RDA/AI	UL ⁹	EAR	RDA/AI	UL ⁹	EAR	RDA/AI	UL ¹¹	EAR	RDA/AI	UL
Infants															
0-6 mo	<i>ND</i>	40*	ND	<i>ND</i>	0.2*	ND	<i>ND</i>	0.3*	ND	<i>ND</i>	2* ^a	ND	<i>ND</i>	0.1*	ND
7-12 mo	<i>ND</i>	50*	ND	<i>ND</i>	0.3*	ND	<i>ND</i>	0.4*	ND	<i>ND</i>	4*	ND	<i>ND</i>	0.3*	ND
Children															
1-3 y	<i>13</i>	15	400	<i>0.4</i>	0.5	ND	<i>0.4</i>	0.5	ND	<i>5</i>	6	10	<i>0.4</i>	0.5	30
4-8 y	<i>22</i>	25	650	<i>0.5</i>	0.6	ND	<i>0.5</i>	0.6	ND	<i>6</i>	8	15	<i>0.5</i>	0.6	40
Males															
9-13 y	<i>39</i>	45	1200	<i>0.7</i>	0.9	ND	<i>0.8</i>	0.9	ND	<i>9</i>	12	20	<i>0.8</i>	1.0	60
14-18 y	<i>63</i>	75	1800	<i>1.0</i>	1.2	ND	<i>1.1</i>	1.3	ND	<i>12</i>	16	30	<i>1.1</i>	1.3	80
19-30 y	<i>75</i>	90	2000	<i>1.0</i>	1.2	ND	<i>1.1</i>	1.3	ND	<i>12</i>	16	35	<i>1.1</i>	1.3	100
31-50 y	<i>75</i>	90	2000	<i>1.0</i>	1.2	ND	<i>1.1</i>	1.3	ND	<i>12</i>	16	35	<i>1.1</i>	1.3	100
51-70 y	<i>75</i>	90	2000	<i>1.0</i>	1.2	ND	<i>1.1</i>	1.3	ND	<i>12</i>	16	35	<i>1.4</i>	1.7	100
>70 y	<i>75</i>	90	2000	<i>1.0</i>	1.2	ND	<i>1.1</i>	1.3	ND	<i>12</i>	16	35	<i>1.4</i>	1.7	100
Females															
9-13 y	<i>39</i>	45	1200	<i>0.7</i>	0.9	ND	<i>0.8</i>	0.9	ND	<i>9</i>	12	20	<i>0.8</i>	1.0	60
14-18 y	<i>56</i>	65	1800	<i>0.9</i>	1.0	ND	<i>0.9</i>	1.0	ND	<i>11</i>	14	30	<i>1.0</i>	1.2	80
19-30 y	<i>60</i>	75	2000	<i>0.9</i>	1.1	ND	<i>0.9</i>	1.1	ND	<i>11</i>	14	35	<i>1.1</i>	1.3	100
31-50 y	<i>60</i>	75	2000	<i>0.9</i>	1.1	ND	<i>0.9</i>	1.1	ND	<i>11</i>	14	35	<i>1.1</i>	1.3	100
51-70 y	<i>60</i>	75	2000	<i>0.9</i>	1.1	ND	<i>0.9</i>	1.1	ND	<i>11</i>	14	35	<i>1.3</i>	1.5	100
>70 y	<i>60</i>	75	2000	<i>0.9</i>	1.1	ND	<i>0.9</i>	1.1	ND	<i>11</i>	14	35	<i>1.3</i>	1.5	100
Pregnancy															
≤ 18 y	<i>66</i>	80	1800	<i>1.2</i>	1.4	ND	<i>1.2</i>	1.4	ND	<i>14</i>	18	30	<i>1.6</i>	1.9	80
19-30 y	<i>70</i>	85	2000	<i>1.2</i>	1.4	ND	<i>1.2</i>	1.4	ND	<i>14</i>	18	35	<i>1.6</i>	1.9	100
31-50 y	<i>70</i>	85	2000	<i>1.2</i>	1.4	ND	<i>1.2</i>	1.4	ND	<i>14</i>	18	35	<i>1.6</i>	1.9	100
Lactation															
≤ 18 y	<i>96</i>	115	1800	<i>1.2</i>	1.4	ND	<i>1.3</i>	1.6	ND	<i>13</i>	17	30	<i>1.7</i>	2.0	80
19-30 y	<i>100</i>	120	2000	<i>1.2</i>	1.4	ND	<i>1.3</i>	1.6	ND	<i>13</i>	17	35	<i>1.7</i>	2.0	100
31-50 y	<i>100</i>	120	2000	<i>1.2</i>	1.4	ND	<i>1.3</i>	1.6	ND	<i>13</i>	17	35	<i>1.7</i>	2.0	100

This table presents *Estimated Average Requirements (EARs)* in *italics*, **Recommended Dietary Allowances (RDAs)** in **bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

⁸ Because smoking increases oxidative stress and metabolic turnover of vitamin C, the requirement for smokers is increased by 35 mg/day.

⁹ Due to lack of suitable data, ULs could not be established for thiamin and riboflavin. This does not mean that there is no potential for adverse effects resulting from high intakes.

¹⁰ As Niacin Equivalents (NE). See conversion factors for more details.

¹¹ The UL for niacin applies only to synthetic forms obtained from supplements, fortified foods, or a combination of the two.

^a As preformed niacin, not NE, for this age group.

NOTE: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

Dietary Reference Intakes Reference Values for Vitamins

	Folate ¹²			Vitamin B12			Pantothenic Acid		Biotin		Choline ¹⁵	
Unit	µg/day (DFE)			µg/day			mg/day		µg/day		mg/day	
	EAR	RDA/AI	UL ¹³	EAR	RDA/AI	UL ¹⁴	AI	UL ¹⁴	AI	UL ¹⁴	AI	UL
Infants												
0-6 mo	<i>ND</i>	65*	ND	<i>ND</i>	0.4*	ND	1.7*	ND	5*	ND	125*	ND
7-12 mo	<i>ND</i>	80*	ND	<i>ND</i>	0.5*	ND	1.8*	ND	6*	ND	150*	ND
Children												
1-3 y	120	150	300	0.7	0.9	ND	2*	ND	8*	ND	200*	1000
4-8 y	160	200	400	1.0	1.2	ND	3*	ND	12*	ND	250*	1000
Males												
9-13 y	250	300	600	1.5	1.8	ND	4*	ND	20*	ND	375*	2000
14-18 y	330	400	800	2.0	2.4	ND	5*	ND	25*	ND	550*	3000
19-30 y	320	400	1000	2.0	2.4	ND	5*	ND	30*	ND	550*	3500
31-50 y	320	400	1000	2.0	2.4	ND	5*	ND	30*	ND	550*	3500
51-70 y	320	400	1000	2.0	2.4^d	ND	5*	ND	30*	ND	550*	3500
>70 y	320	400	1000	2.0	2.4^d	ND	5*	ND	30*	ND	550*	3500
Females												
9-13 y	250	300	600	1.5	1.8	ND	4*	ND	20*	ND	375*	2000
14-18 y	330	400^b	800	2.0	2.4	ND	5*	ND	25*	ND	400*	3000
19-30 y	320	400^b	1000	2.0	2.4	ND	5*	ND	30*	ND	425*	3500
31-50 y	320	400^b	1000	2.0	2.4	ND	5*	ND	30*	ND	425*	3500
51-70 y	320	400	1000	2.0	2.4^d	ND	5*	ND	30*	ND	425*	3500
>70 y	320	400	1000	2.0	2.4^d	ND	5*	ND	30*	ND	425*	3500
Pregnancy												
≤ 18 y	520	600^c	800	2.2	2.6	ND	6*	ND	30*	ND	450*	3000
19-30 y	520	600^c	1000	2.2	2.6	ND	6*	ND	30*	ND	450*	3500
31-50 y	520	600^c	1000	2.2	2.6	ND	6*	ND	30*	ND	450*	3500
Lactation												
≤ 18 y	450	500	800	2.4	2.8	ND	7*	ND	35*	ND	550*	3000
19-30 y	450	500	1000	2.4	2.8	ND	7*	ND	35*	ND	550*	3500
31-50 y	450	500	1000	2.4	2.8	ND	7*	ND	35*	ND	550*	3500

This table presents *Estimated Average Requirements (EARs)* in italics, **Recommended Dietary Allowances (RDAs)** in bold type and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

¹² As Dietary Folate Equivalents (DFE). See conversion factors for more details.

¹³ The UL for folate applies only to synthetic forms obtained from supplements, fortified foods, or a combination of the two.

¹⁴ Due to lack of suitable data, ULs could not be established for vitamin B12, pantothenic acid or biotin. This does not mean that there is no potential for adverse effects resulting from high intakes.

¹⁵ 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.

^b In view of evidence linking the use of supplements containing folic acid before conception and during early pregnancy with reduced risk of neural tube defects in the fetus, it is recommended that all women capable of becoming pregnant take a supplement containing 400µg of folic acid every day, in addition to the amount of folate found in a healthy diet.

^c It is assumed that women will continue consuming 400 µg folic acid from supplements until their pregnancy is confirmed and they enter prenatal care. The critical time for formation of the neural tube is shortly after conception.

^d 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 the RDA mainly by consuming foods fortified with vitamin B12 or a supplement containing vitamin B12.

NOTE: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

Dietary Reference Intakes Reference Values for Elements

	Arsenic ¹⁶		Boron		Calcium **			Chromium		Copper			Fluoride		Iodine		
Unit	N/A		mg/day		mg/day			µg/day		µg/day			mg/day		µg/day		
	AI	UL ¹⁷	AI	UL	EAR	RDA/AI	UL	AI	UL ¹⁷	EAR	RDA/AI	UL	AI	UL	EAR	RDA/AI	UL
Infants																	
0-6 mo	ND	ND	ND	ND	ND	200*	1000	0.2*	ND	ND	200*	ND	0.01*	0.7	ND	110*	ND
7-12 mo	ND	ND	ND	ND	ND	260*	1500	5.5*	ND	ND	220*	ND	0.5*	0.9	ND	130*	ND
Children																	
1-3 y	ND	ND	ND	3	500	700	2500	11*	ND	260	340	1000	0.7*	1.3	65	90	200
4-8 y	ND	ND	ND	6	800	1000	2500	15*	ND	340	440	3000	1*	2.2	65	90	300
Males																	
9-13 y	ND	ND	ND	11	1100	1300	3000	25*	ND	540	700	5000	2*	10	73	120	600
14-18 y	ND	ND	ND	17	1100	1300	3000	35*	ND	685	890	8000	3*	10	95	150	900
19-30 y	ND	ND	ND	20	800	1000	2500	35*	ND	700	900	10000	4*	10	95	150	1100
31-50 y	ND	ND	ND	20	800	1000	2500	35*	ND	700	900	10000	4*	10	95	150	1100
51-70 y	ND	ND	ND	20	800	1000	2000	30*	ND	700	900	10000	4*	10	95	150	1100
>70 y	ND	ND	ND	20	1000	1200	2000	30*	ND	700	900	10000	4*	10	95	150	1100
Females																	
9-13 y	ND	ND	ND	11	1100	1300	3000	21*	ND	540	700	5000	2*	10	73	120	600
14-18 y	ND	ND	ND	17	1100	1300	3000	24*	ND	685	890	8000	3*	10	95	150	900
19-30 y	ND	ND	ND	20	800	1000	2500	25*	ND	700	900	10000	3*	10	95	150	1100
31-50 y	ND	ND	ND	20	800	1000	2500	25*	ND	700	900	10000	3*	10	95	150	1100
51-70 y	ND	ND	ND	20	1000	1200	2000	20*	ND	700	900	10000	3*	10	95	150	1100
>70 y	ND	ND	ND	20	1000	1200	2000	20*	ND	700	900	10000	3*	10	95	150	1100
Pregnancy																	
≤ 18 y	ND	ND	ND	17	1100	1300	3000	29*	ND	785	1000	8000	3*	10	160	220	900
19-30 y	ND	ND	ND	20	800	1000	2500	30*	ND	800	1000	10000	3*	10	160	220	1100
31-50 y	ND	ND	ND	20	800	1000	2500	30*	ND	800	1000	10000	3*	10	160	220	1100
Lactation																	
≤ 18 y	ND	ND	ND	17	1100	1300	3000	44*	ND	985	1300	8000	3*	10	209	290	900
19-30 y	ND	ND	ND	20	800	1000	2500	45*	ND	1000	1300	10000	3*	10	209	290	1100
31-50 y	ND	ND	ND	20	800	1000	2500	45*	ND	1000	1300	10000	3*	10	209	290	1100

This table presents *Estimated Average Requirements (EARs) in italics*, **Recommended Dietary Allowances (RDAs) in bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

** New 2010 values have replaced previous 1997 values.

¹⁶ Although a UL was not determined for arsenic, there is no justification for adding arsenic to food or supplements.

¹⁷ Due to lack of suitable data, ULs could not be established for arsenic and chromium. This does not mean that there is no potential for adverse effects resulting from high intakes.

NOTE: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

Dietary Reference Intakes Reference Values for Elements

Unit	Iron ¹⁸			Magnesium			Manganese		Molybdenum			Nickel		Phosphorus		
	mg/day			mg/day			mg/day		µg/day			mg/day		mg/day		
	EAR	RDA/AI	UL	EAR	RDA/AI	UL ¹⁹	AI	UL	EAR	RDA/AI	UL	AI	UL	EAR	RDA/AI	UL
Infants																
0-6 mo	<i>ND</i>	0.27*	40	<i>ND</i>	30*	ND	0.003*	ND	<i>ND</i>	2*	ND	ND	ND	<i>ND</i>	100*	ND
7-12 mo	6.9	11	40	<i>ND</i>	75*	ND	0.6*	ND	<i>ND</i>	3*	ND	ND	ND	<i>ND</i>	275*	ND
Children																
1-3 y	3.0	7	40	65	80	65	1.2*	2	13	17	300	ND	0.2	380	460	3000
4-8 y	4.1	10	40	110	130	110	1.5*	3	17	22	600	ND	0.3	405	500	3000
Males																
9-13 y	5.9	8	40	200	240	350	1.9*	6	26	34	1100	ND	0.6	1055	1250	4000
14-18 y	7.7	11	45	340	410	350	2.2*	9	33	43	1700	ND	1.0	1055	1250	4000
19-30 y	6	8	45	330	400	350	2.3*	11	34	45	2000	ND	1.0	580	700	4000
31-50 y	6	8	45	350	420	350	2.3*	11	34	45	2000	ND	1.0	580	700	4000
51-70 y	6	8	45	350	420	350	2.3*	11	34	45	2000	ND	1.0	580	700	4000
>70 y	6	8	45	350	420	350	2.3*	11	34	45	2000	ND	1.0	580	700	3000
Females																
9-13 y	5.7 ^e	8^e	40	200	240	350	1.6*	6	26	34	1100	ND	0.6	1055	1250	4000
14-18 y	7.9 ^e	15^e	45	300	360	350	1.6*	9	33	43	1700	ND	1.0	1055	1250	4000
19-30 y	8.1 ^e	18^e	45	255	310	350	1.8*	11	34	45	2000	ND	1.0	580	700	4000
31-50 y	8.1 ^e	18^e	45	265	320	350	1.8*	11	34	45	2000	ND	1.0	580	700	4000
51-70 y	5 ^e	8^e	45	265	320	350	1.8*	11	34	45	2000	ND	1.0	580	700	4000
>70 y	5 ^e	8^e	45	265	320	350	1.8*	11	34	45	2000	ND	1.0	580	700	3000
Pregnancy																
< 18 y	23	27	45	335	400	350	2.0*	9	40	50	1700	ND	1.0	1055	1250	3500
19-30 y	22	27	45	290	350	350	2.0*	11	40	50	2000	ND	1.0	580	700	3500
31-50 y	22	27	45	300	360	350	2.0*	11	40	50	2000	ND	1.0	580	700	3500
Lactation																
< 18 y	7	10	45	300	360	350	2.6*	9	35	50	1700	ND	1.0	1055	1250	4000
19-30 y	6.5	9	45	255	310	350	2.6*	11	36	50	2000	ND	1.0	580	700	4000
31-50 y	6.5	9	45	265	320	350	2.6*	11	36	50	2000	ND	1.0	580	700	4000

This table presents *Estimated Average Requirements (EARs) in italics*, **Recommended Dietary Allowances (RDAs) in bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

¹⁸ The requirement for iron is 1.8 times higher for vegetarians due to the lower bioavailability of iron from a vegetarian diet.

¹⁹ The UL for magnesium represents intake from a pharmacological agent only and does not include intake from food and water.

^e For the EAR and RDA, it is assumed that girls younger than 14 years do not menstruate and that girls 14 years and older do menstruate. It is assumed that women 51 years and older are post-menopausal.

NOTE: These are reference values for normal, apparently healthy individuals eating a typical mixed North American diet. An individual may have physiological, health, or lifestyle characteristics that may require tailoring of specific nutrient values.

Dietary Reference Intakes Reference Values for Elements

	Selenium			Silicon ²⁰		Vanadium ²²		Zinc ²³			Potassium ²⁴		Sodium ²⁵		Chloride ²⁶		Sulfate ²⁷	
Unit	µg/day			N/A		mg/day		mg/day			mg/day		mg/day		mg/day		N/A	
	EAR	RDA/AI	UL	AI	UL ²¹	AI	UL	EAR	RDA/AI	UL	AI	UL ²¹	AI	UL	AI	UL	AI	UL ²¹
Infants																		
0-6 mo	<i>ND</i>	15*	45	ND	ND	ND	ND	<i>ND</i>	2*	4	400*	ND	120*	ND	180*	ND	ND	ND
7-12 mo	<i>ND</i>	20*	60	ND	ND	ND	ND	2.5	3	5	700*	ND	370*	ND	570*	ND	ND	ND
Children																		
1-3 y	17	20	90	ND	ND	ND	ND	2.5	3	7	3000*	ND	1000*	1500	1500*	2300	ND	ND
4-8 y	23	30	150	ND	ND	ND	ND	4.0	5	12	3800*	ND	1200*	1900	1900*	2900	ND	ND
Males																		
9-13 y	35	40	280	ND	ND	ND	ND	7.0	8	23	4500*	ND	1500*	2200	2300*	3400	ND	ND
14-18 y	45	55	400	ND	ND	ND	ND	8.5	11	34	4700*	ND	1500*	2300	2300*	3600	ND	ND
19-30 y	45	55	400	ND	ND	ND	1.8	9.4	11	40	4700*	ND	1500*	2300	2300*	3600	ND	ND
31-50 y	45	55	400	ND	ND	ND	1.8	9.4	11	40	4700*	ND	1500*	2300	2300*	3600	ND	ND
51-70 y	45	55	400	ND	ND	ND	1.8	9.4	11	40	4700*	ND	1300*	2300	2000*	3600	ND	ND
>70 y	45	55	400	ND	ND	ND	1.8	9.4	11	40	4700*	ND	1200*	2300	1800*	3600	ND	ND
Females																		
9-13 y	35	40	280	ND	ND	ND	ND	7.0	8	23	4500*	ND	1500*	2200	2300*	3400	ND	ND
14-18 y	45	55	400	ND	ND	ND	ND	7.3	9	34	4700*	ND	1500*	2300	2300*	3600	ND	ND
19-30 y	45	55	400	ND	ND	ND	1.8	6.8	8	40	4700*	ND	1500*	2300	2300*	3600	ND	ND
31-50 y	45	55	400	ND	ND	ND	1.8	6.8	8	40	4700*	ND	1500*	2300	2300*	3600	ND	ND
51-70 y	45	55	400	ND	ND	ND	1.8	6.8	8	40	4700*	ND	1300*	2300	2000*	3600	ND	ND
>70 y	45	55	400	ND	ND	ND	1.8	6.8	8	40	4700*	ND	1200*	2300	1800*	3600	ND	ND
Pregnancy																		
< 18 y	49	60	400	ND	ND	ND	ND	10.5	12	34	4700*	ND	1500*	2300	2300*	3600	ND	ND
19-30 y	49	60	400	ND	ND	ND	ND	9.5	11	40	4700*	ND	1500*	2300	2300*	3600	ND	ND
31-50 y	49	60	400	ND	ND	ND	ND	9.5	11	40	4700*	ND	1500*	2300	2300*	3600	ND	ND
Lactation																		
< 18 y	59	70	400	ND	ND	ND	ND	10.9	13	34	5100*	ND	1500*	2300	2300*	3600	ND	ND
19-30 y	59	70	400	ND	ND	ND	ND	10.4	12	40	5100*	ND	1500*	2300	2300*	3600	ND	ND
31-50 y	59	70	400	ND	ND	ND	ND	10.4	12	40	5100*	ND	1500*	2300	2300*	3600	ND	ND

This table presents *Estimated Average Requirements (EARs) in italics*, **Recommended Dietary Allowances (RDAs) in bold type** and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

²⁰ Although silicon has not been shown to cause adverse effects in humans, there is no justification for adding silicon to supplements.

²¹ Due to lack of suitable data, ULs could not be established for silicon, potassium, and sulfate. This does not mean that there is no potential for adverse effects resulting from high intakes.

²² Although vanadium in food has not been shown to cause adverse effects in humans, there is no justification for adding vanadium to food and vanadium supplements should be used with caution. The UL is based on adverse effects in laboratory animals and this data could be used to set a UL for adults but not children and adolescents.

²³ The requirement for zinc may be as much as 50 percent greater for vegetarians, particularly for strict vegetarians whose major food staples are grains and legumes, due to the lower bioavailability of zinc from a vegetarian diet.

²⁴ The beneficial effects of potassium appear to be mainly from the forms of potassium found naturally in foods such as fruits and vegetables. Supplemental potassium should only be provided under medical supervision because of the well-documented potential for toxicity.

²⁵ Grams of sodium × 2.53 = grams of salt.

²⁶ Sodium and chloride are normally found in foods together as sodium chloride (table salt). For this reason, the AI and UL for chloride are set at a level equivalent on a molar basis to those for sodium, since almost all dietary chloride comes with sodium added during processing or consumption of foods.

²⁷ An AI for sulfate was not established because sulfate requirements are met when dietary intakes contain recommended levels of sulfur amino acids (protein).

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Dietary Reference Intakes Reference Values for Macronutrients

	Carbohydrate (Digestible)			Total Protein ²⁹				Total Fat		Linoleic Acid (n-6)		α-linolenic Acid (n-3)		Total Fibre ³¹		Total Water ³³	
Unit	g/day			g/kg/day		g/day ³⁰		g/day		g/day		g/day		g/day		Litres/day	
	EAR	RDA/AI	UL ²⁸	EAR	RDA/AI	RDA/AI	UL ²⁸	AI	UL ²⁸	AI	UL ²⁸	AI	UL ²⁸	AI ³²	UL ²⁸	AI	UL ²⁸
Infants																	
0-6 mo	ND	60*	ND	ND	1.52*	9.1*	ND	31*	ND	4.4*	ND	0.5*	ND	ND	ND	0.7*	ND
7-12 mo	ND	95*	ND	1.0	1.2	11.0	ND	30*	ND	4.6*	ND	0.5*	ND	ND	ND	0.8*	ND
Children																	
1-3 y	100	130	ND	0.87	1.05	13	ND	ND	ND	7*	ND	0.7*	ND	19*	ND	1.3*	ND
4-8 y	100	130	ND	0.76	0.95	19	ND	ND	ND	10*	ND	0.9*	ND	25*	ND	1.7*	ND
Males																	
9-13 y	100	130	ND	0.76	0.95	34	ND	ND	ND	12*	ND	1.2*	ND	31*	ND	2.4*	ND
14-18 y	100	130	ND	0.73	0.85	52	ND	ND	ND	16*	ND	1.6*	ND	38*	ND	3.3*	ND
19-30 y	100	130	ND	0.66	0.80	56	ND	ND	ND	17*	ND	1.6*	ND	38*	ND	3.7*	ND
31-50 y	100	130	ND	0.66	0.80	56	ND	ND	ND	17*	ND	1.6*	ND	38*	ND	3.7*	ND
51-70 y	100	130	ND	0.66	0.80	56	ND	ND	ND	14*	ND	1.6*	ND	30*	ND	3.7*	ND
>70 y	100	130	ND	0.66	0.80	56	ND	ND	ND	14*	ND	1.6*	ND	30*	ND	3.7*	ND
Females																	
9-13 y	100	130	ND	0.76	0.95	34	ND	ND	ND	10*	ND	1.0*	ND	26*	ND	2.1*	ND
14-18 y	100	130	ND	0.71	0.85	46	ND	ND	ND	11*	ND	1.1*	ND	26*	ND	2.3*	ND
19-30 y	100	130	ND	0.66	0.80	46	ND	ND	ND	12*	ND	1.1*	ND	25*	ND	2.7*	ND
31-50 y	100	130	ND	0.66	0.80	46	ND	ND	ND	12*	ND	1.1*	ND	25*	ND	2.7*	ND
51-70 y	100	130	ND	0.66	0.80	46	ND	ND	ND	11*	ND	1.1*	ND	21*	ND	2.7*	ND
>70 y	100	130	ND	0.66	0.80	46	ND	ND	ND	11*	ND	1.1*	ND	21*	ND	2.7*	ND
Pregnancy																	
< 18 y	135	175	ND	0.88 ^f	1.1 ^f	71 ^f	ND	ND	ND	13*	ND	1.4*	ND	28*	ND	3.0*	ND
19-30 y	135	175	ND	0.88 ^f	1.1 ^f	71 ^f	ND	ND	ND	13*	ND	1.4*	ND	28*	ND	3.0*	ND
31-50 y	135	175	ND	0.88 ^f	1.1 ^f	71 ^f	ND	ND	ND	13*	ND	1.4*	ND	28*	ND	3.0*	ND
Lactation																	
≤ 18 y	160	210	ND	1.05	1.3	71	ND	ND	ND	13*	ND	1.3*	ND	29*	ND	3.8*	ND
19-30 y	160	210	ND	1.05	1.3	71	ND	ND	ND	13*	ND	1.3*	ND	29*	ND	3.8*	ND
31-50 y	160	210	ND	1.05	1.3	71	ND	ND	ND	13*	ND	1.3*	ND	29*	ND	3.8*	ND

This table presents *Estimated Average Requirements (EARs)* in italics, **Recommended Dietary Allowances (RDAs)** in bold type and Adequate Intakes (AIs) in ordinary type followed by an asterisk (*). Tolerable Upper Intake Levels (ULs) are in shaded columns.

²⁸ Although a UL was not set for any of the macronutrients, the absence of definitive data does not signify that people can tolerate chronic intakes of these substances at high levels.

²⁹ Available evidence does not support recommending a separate protein requirement for vegetarians who consume complimentary mixtures of plant proteins, as these can provide the same quality of protein as that from animal proteins.

³⁰ Recommendations for total protein are determined as the amount needed per kg body weight multiplied by the reference weight.

³¹ Total fibre is defined as the sum of dietary fibre and functional fibre. See definitions for further details.

³² The AI for total fibre is based on 14 g/1000 kcal multiplied by the median usual daily energy intake from the Continuing Survey of Food Intakes by Individuals (CSFII 1994-1996, 1998).

³³ Total water includes drinking water, water in beverages, and water that is part of food.

^f The EAR and RDA for pregnancy are only for the second half of pregnancy. For the first half of pregnancy, protein requirements are the same as those of the nonpregnant woman.

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