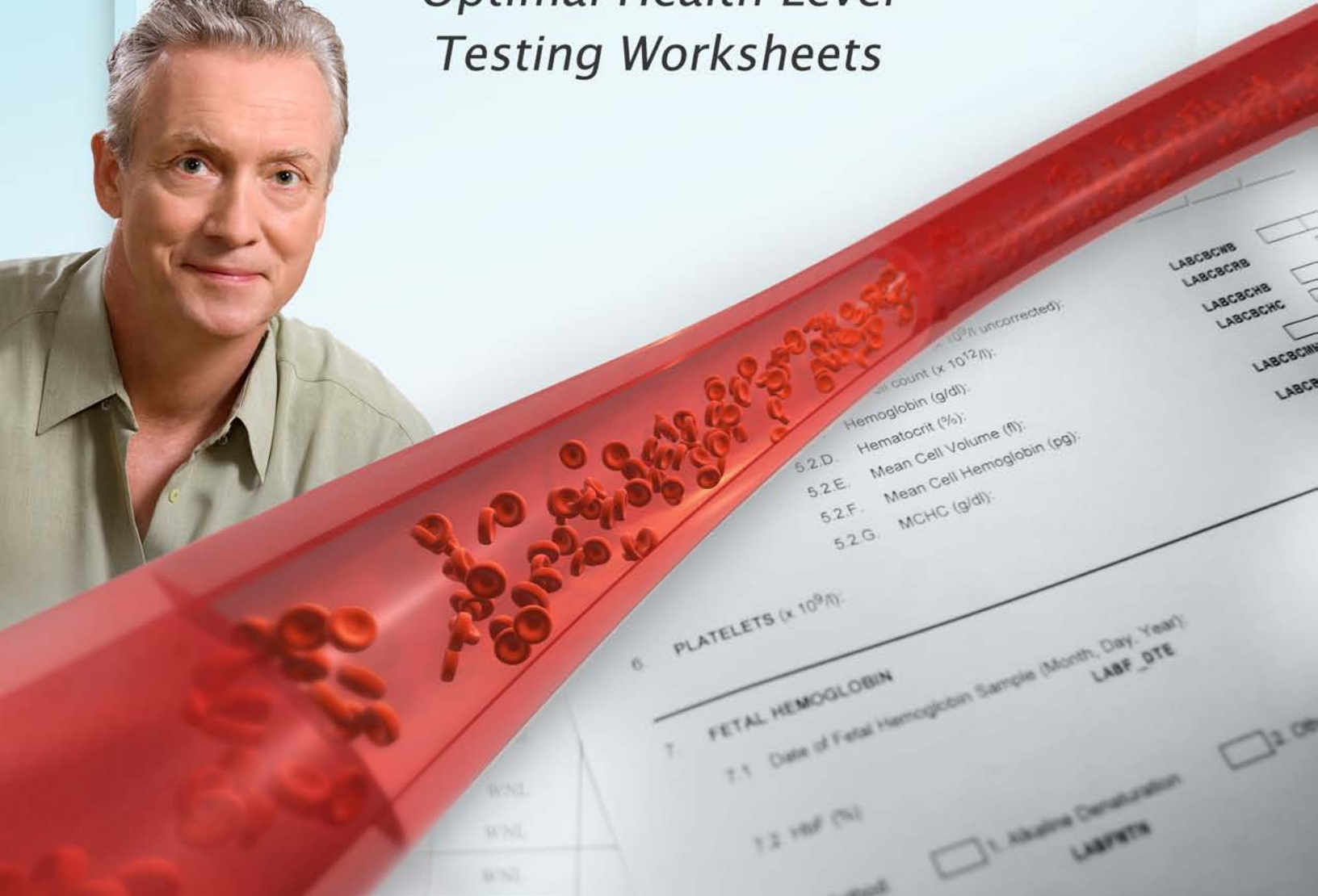


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How to Read Your Own Blood Tests

*Optimal Health Level
Testing Worksheets*



Definitions

Normal Reference Ranges refer to the laboratory values that are generally associated with absence of disease. Values higher or lower indicate deviation from the standard norm and can indicate disease.

Desirable Ranges are those that are associated with absence of disease and lower risk for illness.

*Optimal Ranges** are those that reflect low to zero risk for disease and denote optimal wellness and healthy aging.

*Optimal Ranges that are highlighted denote Optimal SI Units and are ONLY TO BE USED OUTSIDE OF THE UNITED STATES.

 = Optimal SI Units. Only Use Outside of the U.S.

Disclaimer

Standard laboratory reference values are based on population statistics for people who are generally healthy and with an absence of quantifiable disease. However, true health is not just the absence of disease but a state of optimal wellness. The information in this course and reference sheet is for educational purposes only. It is meant to as a guide towards health and does not replace the evaluation by and advice of a qualified licensed healthcare professional. For detailed interpretation of your blood tests, consult with your physician.

Complete Blood Count Panel with Differential

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range = <i>Outside U.S.</i> |
|-----------------------|--------------------------------|---------------------|-----------------|---|
| WBC | 4.0-10.5 x 10 ³ /μL | | within range | 5.5-10.0 5.5-10.0 10 ⁹ /L |
| RBC, male | 3.89-5.6 x 10 ³ /μL | | within range | within range within range |
| RBC, female | 4.2-6.1 x 10 ³ /μL | | within range | within range within range |
| Hemoglobin | 11.5-15.0 g/dL | | within range | within range within range |
| Hematocrit | 34.0-44.0% | | within range | within range within range |
| MCV | 80-98 fL | | within range | within range within range |
| MCH | 27.0-34.0 pg | | within range | within range within range |
| RDW | 11.7-15.0% | | within range | within range within range |
| Platelets | 140-415 x 10 ³ /μL | | within range | 240-400 240-400 10 ⁹ /L |
| Neutrophils | 1.8-7.8 x 10 ³ /μL | | within range | 3.0-6.5 3.0-6.5 10 ⁹ /L |
| Lymphocytes | 0.7-4.5 x 10 ³ /μL | | within range | 2.5-4.5 2.5-4.5 10 ⁹ /L |
| Monocytes | 0.1-1.0 x 10 ³ /μL | | within range | within range within range |
| Eosinophils | 0.0-0.4 x 10 ³ /μL | | within range | 0.0-0.3 0.0-0.3 10 ⁹ /L |
| Basophils | 0.0-0.1 x 10 ³ /μL | | within range | within range within range |
| Immature Granulocytes | 0.0-0.1 x 10 ³ /μL | | within range | within range within range |

Comprehensive Chemistry Panel

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range = Outside U.S. |
|--------------------|------------------------|---------------------|-----------------|--|
| Glucose | 65-99 mg/dL | | within range | 75-85 4.16-4.72 mmol/L |
| BUN | 5-26 mg/dL | | within range | 15-20 5.35-7.14 mmol/L |
| Creatinine | 0.57-1.00 mg/dL | | within range | within range within range |
| eGFR | Greater than 59 | | within range | greater than 60 within range |
| BUN/Creatine Ratio | 8-27 | | within range | 15-27 N/A |
| Sodium | 135-145 mmol/L | | within range | within range within range |
| Potassium | 3.5-5.2 mmol/L | | within range | within range within range |
| Chloride | 97-108 mmol/L | | within range | within range within range |
| Carbon Dioxide | 20-32 mmol/L | | within range | within range within range |
| Calcium | 8.7-10.2 mg/dL | | within range | 9.0-10.2 2.25-2.55 mmol/L |
| Total Protein | 6.0-8.5 g/dL | | within range | 7.0-8.5 70-85 g/L |
| Albumin | 3.5-5.5 g/dL | | 4.0-5.5 | 4.5-5.5 45-55 g/L |
| Globulin | 1.5-4.5 g/dL | | within range | within range within range |
| A/G Ratio | 1.1-2.5 | | within range | within range within range |

Comprehensive Chemistry Panel *(cont...)*

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range ■ = <i>Outside U.S.</i> |
|----------------------|------------------------|---------------------|-----------------|--|
| Bilirubin | 0.0-1.2 mg/dL | | within range | within range within range |
| Alkaline Phosphatase | 25-150 IU/L | | within range | 65-85 1.08-1.42 μ kat/L |
| AST | 0-40 IU/L | | within range | within range within range |
| ALT | 0-40 IU/L | | within range | within range within range |

Healthy Lipid Panel

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range ■ = <i>Outside U.S.</i> |
|------------------------|------------------------|---------------------|-----------------|--|
| Total Cholesterol (TC) | 130-200 mg/dL | | < 200 | 145-165 3.75-4.27 mmol/L |
| Triglycerides (TG) | 30-150 mg/dL | | < 100 | < 50 < .57 mmol/L |
| HDL | 35-150 mg/dL | | > 60 | > 65 > 1.68 mmol/L |
| LDL | 0-129 mg/dL | | < 100 | < 70 < 1.81 mmol/L |
| TC/HDL | 3.9-5.7 | | < 3.5 | < 2.5 < 2.5 |
| TG/HDL | None | | < 2.0 | < 2.0 < .87 |
| LDL/HDL | 0.5-3.0 | | < 2.0 | < 2.0 < 2.0 |

Inflammation Marker Panel

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range ■ = <i>Outside U.S.</i> |
|--------------------|------------------------|---------------------|-----------------|--|
| Sedimentation Rate | 0-30 | | 0-20 | 0-10 0-10 |
| Cardiac CRP | 1.00-3.00 mg/L | | within range | < 1.0 < 1.0 |
| Homocysteine | 0.0-15.0 µmol | | 0.0-9.0 | 0.0-6.0 0.0-6.0 µmol/L |

Healthy Thyroid Panel

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range ■ = <i>Outside U.S.</i> |
|-------------|------------------------|---------------------|-----------------|--|
| TSH | 0.4-5.5 mU/L | | 1.0-3.5 | 1.0-2.0 1.0-2.0 mU/L |
| T4, total | 4.5-12.5 mcg/dL | | within range | 7.5-8.1 98.55-104.25 nmol/L |
| T4, free | 0.8-1.8 ng/dL | | within range | 1.2-1.4 15.44-18.02 pmol/L |
| T3, total | 60-181 ng/dL | | 80-180 | 120-124 1.85-1.91 nmol/L |
| T3, free | 2.60-4.80 pg/mL | | within range | 2.80-3.20 4.31-4.93 pmol/L |
| T3, uptake | 24-39 % | | within range | within range within range |
| T3, reverse | 90-350 | | within range | within range within range |

Healthy Male Hormone Panel

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range = Outside U.S. |
|-------------------|------------------------|---------------------|-----------------|--|
| Estradiol (E2) | 21-54 pg/mL | | within range | < 40 < 146.84 pmol/L |
| LH | 1.7-8.6 mIU/mL | | within range | within range within range |
| Testosterone | 280-800 ng/dL | | 450-800 | 650-850 22.6-29.5 nmol/L |
| Free Testosterone | 4.7-26.5 pg/mL | | within range | 10-25 346.7-866.75 pmol/L |
| DHT | 30-85 ng/dL | | within range | 55-85 1.91-2.95 nmol/L |
| DHEA-S | 30-620 mcg/dL | | 250-350 | 250-450 2500-4500 µg/L |
| Cortisol | 5-29 mcg/dL | | 5-15 | 5-10 137.95-265.9 nmol/L |
| PSA | 0.0-4.0 ng/mL | | 0.0-3.5 | 0.0-1.5 0.0-1.5 µg/L |

Healthy Female Hormone Panel

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range = <i>Outside U.S.</i> |
|----------------|---|---------------------|--------------------------|--|
| Estradiol (E2) | 12-498 pg/mL (age-matched range) | | within age-matched range | within age-matched range within age-matched range |
| Progesterone | 0.1-27.0 ng/mL (age-matched range) | | within age-matched range | women <i>under</i> 50: within range women <i>over</i> 50: 1.5-4.5 4.77-14.3 nmol/L |
| LH | 1.0-95.6 mIU/mL (age-matched range) | | within age-matched range | within age-matched range within age-matched range |
| FSH | 1.7-134.8 mIU/mL (age-matched range) | | within age-matched range | women <i>under</i> 50: within range women <i>over</i> 50: 25-100 25-100 IU/L |
| Testosterone | 6-82 ng/dL | | 25-82 | 35-65 1.21-2.25 nmol/L |
| DHEA-S | 30-560 mcg/dL (age-matched range) | | 150-250 | 150-350 1500-3500 µg/L |
| Cortisol | 5-29 mcg/dL | | 5-15 | 5-10 137.9-265.9 nmol/L |

Growth Hormone Markers

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range = <i>Outside U.S.</i> |
|-----------|------------------------|---------------------|-----------------|---|
| IGF-1 | 65-483 ng/mL | | 165-350 | 250-350 250-350 µg/L |
| IGFBP-3 | 3.4-6.8 mg/L | | within range | within range within range |

Healthy Glucose Metabolic Panel

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range = <i>Outside U.S.</i> |
|----------------|------------------------|---------------------|-----------------|---|
| Glucose | 65-99 mg/dL | | within range | 75-85 4.16-4.72 mmol/L |
| Hemoglobin A1c | 4.8-5.6% | | within range | 4.8-5.1 .048-.051 |
| Insulin | 0.0-24.9 µIU/mL | | 0.0-15.0 | 2.0-10.0 13.89-69.45 pmol/L |

Healthy Nutrient Panel

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range = <i>Outside U.S.</i> |
|-----------------------|------------------------|---------------------|-----------------|--|
| Folic Acid (Folate) | 2.2-3.0 ng/mL | | within range | > 3.0 > 6.8 nmol/L |
| Iron, Adult Female | 35-155 µg/dL | | within range | 55-125 9.85-22.38 µmol/L |
| Iron, Adult Male | 40-155 µg/dL | | within range | 55-125 9.85-22.38 µmol/L |
| Vitamin B12 | 211-946 pg/mL | | 400-946 | 600-1000 442.8-738 pmol/L |
| Vitamin C | 0.4-2.0 mg/dL | | within range | 1.5-3.0 85.17-170.3 µmol/L |
| Vitamin D, 25-Hydroxy | 32-100 ng/mL | | 39-100 | 70-100 174.7-249.6 nmol/L |

Healthy Vegan-Vegetarian Profile

Plus COMPLETE BLOOD COUNT and CHEMISTRY PANEL

| Test Name | Normal Reference Range | <i>Your Results</i> | Desirable Range | Optimal Range ■ = Outside U.S. |
|-----------------------|------------------------|---------------------|-----------------|-----------------------------------|
| Folic Acid (Folate) | 2.2-3.0 ng/mL | | within range | > 3.0 > 6.8 nmol/L |
| Iron, Adult Female | 35-155 µg/dL | | within range | 55-125 9.85-22.38 µmol/L |
| Iron, Adult Male | 40-155 µg/dL | | within range | 45-125 9.85-22.38 µmol/L |
| Vitamin B12 | 211-946 pg/mL | | 400-946 | 600-1000 442.8-738 pmol/L |
| Vitamin C | 0.4-2.0 mg/dL | | within range | 1.5-3.0 85.17-170.3 µmol/L |
| Vitamin D, 25-Hydroxy | 32-100 ng/mL | | 39-100 | 70-100 174.7-249.6 nmol/L |
| Ferritin, Male | 30-400 ng/mL | | within range | 70-150 157.3-337.1 pmol/L |
| Ferritin, Female | 13-150 ng/mL | | within range | 70-90 157.3-202.3 pmol/L |
| Methylmalonic Acid | 73-376 nmol/L | | within range | within range within range |
| Homocysteine | 0.0-15.0 µmol | | 0.0-9.0 | 0.0-6.0 0.0-6.0 µmol/L |

¹Deficiencies of cobalamin (vitamin B12) or folate are common conditions that predispose for anemia and chronic diseases. An elevated concentration of methylmalonic acid in plasma/serum is an indicator of cobalamin deficiency, whereas an increased concentration of total homocysteine in plasma occurs with deficiency of both cobalamin and folate. The biomarkers methylmalonic acid and homocysteine are therefore complementary.

Ueland PM, Schneede J. Measurement of methylmalonic acid, homocysteine and methionine in cobalamin and folate deficiencies and homocystinuria. Tidsskr Nor Laegeforen. 2008 Mar 13;128(6):690-3.

There is no "gold standard" for establishing optimal ranges for Methylmalonic Acid (MMA). However, since levels above the reference range establishes vitamin B12 deficiency, it's reasonable to assume that levels between 75 and 300 are more optimal.