OPTIMAL LAB VALUES Patient: Date: Fasting? Y or N

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Analyte | Test Result | Ref Range | Lab High/ Low | Optimal Range | Functionally High/Low | Core Centers of Health Correlation (only assess if fasting) |
| WBC  |  | 3.8-10.8 thousand/uL |  | 4.8-7.8 |  |  |
| RBC  |  | 3.8-5.10million/uL |  | 4.0-4.8 |  |  |
| Hemoglobin  |  | F: 11.7-15.5 g/dLM: 13.2- 17.1 g/dL |  | F: 12.9-14.5M: 14.0-15.0 |  | Anaerobic if↓ |
| Hematocrit  |  | F: 35-45%M: 38.5-50 |  | F: 38-42M: 41-45 |  | Anaerobic if ↓ |
| MCV  |  | 80-100 fL |  | 86-95 |  | Anaerobic if↓Oxidative Stress if↑ |
| MCH  |  | 27.0-33 pg |  | 28-32 |  |  |
| MCHC  |  | 32-36.0 g/dL |  | 32-36 |  |  |
| RDW  |  | 11.0-15.0 % |  | 11-14 |  | Anaerobic if↑ |
| Platelets  |  | 140-400 thousand/uL |  | 140-300 |  |  |
| ABS Lymphocytes  |  | 850-3900 cells/uL |  | 2000-3000 |  | \*Ominous sign if count is <1500 along w/albumin <3.5 |
| ABS Neutrophils  |  | 1500-7800 cells/uL |  | Around-3000 |  |  |
| ABS Monocytes  |  | 200-950 cells/uL |  | 400-600 |  |  |
| ABS Eosinophils  |  | 15-500 cells/uL |  | 200-500 |  |  |
| ABS Basophils |  | 0-200 cells/uL |  | 100-200 |  |  |
| Neutrophils  |  | 40-75% |  | 50-65 |  |  |
| Lymphocytes  |  | 16-46% |  | 26-40 |  |  |
| Monocytes  |  | 0-12% |  | 4-6 |  |  |
| Eosinophils  |  | 0-7% |  | 0-3 |  | Oxidative Stress if↑ |
| Basophils  |  | 0-2% |  | 0-2 |  |  |
| MEBs |  |  |  | <9 |  | = or >9 toxic assault, or infection |
| GGT (GGTP) |  | 3-70 U/L |  | 10-40 |  | Oxidative Stress if↑ |
| AST (SGOT) |  | 0-40 U/L |  | 10-30 |  | Oxidative Stress if↑Inflammation if↑ |
| ALT (SGPT)  |  | 6-40 U/L |  | 12-30 |  | Oxidative Stress if↑Inflammation if↑ |
| Alk Phos  |  | 37-130 U/L |  | 50-90 |  | Inflammation if↓↑  |
| Total Bilirubin  |  | .2-1.2 mg/dL |  | .5-1.2 |  | Oxidative Stress if↓ |
| Total Protein  |  | 6.2-8.3 g/dL |  | 6.9-7.4 \* Should not be below 6.9. Sweet spot is 6.9 – 7.4 |  | Acid Stress if↓↑Anaerobic if↓Connective Tissue Integrity if↓↑ Inflammation if↓ |
| Albumin  |  | 3.6-5.3 g/dL |  | 4.3-4.8 almost always. Definitely not in the 3s. |  | Acid Stress if ↓↑Anaerobic if↓ Free Ca++ if↓\*Ominous sign if less than 3.5 Acute phase reactant if lab ↓ |
| Pro/Alb ratio  |  |  |  | < 1.65 |  | Protease inhibition/Connective Tissue Integrity if ↑ |
| Globulin  |  | 2.2-3.7 g/dL |  | 2.6-3.0 |  | Once this goes into the 3s, start thinking maybe infection. Other s/s? |
|  |  |  |  |  |  |  |
| A/G Ratio  |  | 1-2.6 (calc) |  | 1.8-2.2 |  | Inflammation if↑\*Ominous sign if <1.3 |
| Glucose  |  | 65-99 mg/dL |  | 80-93(79-89)\*Not above 90 |  | Anaerobic if↑Oxidative Stress if↑Inflammation if↑ |
| HGB A1c |  | <5.7% |  | <5.2 (or <5) |  |  |
| BUN  |  | 7-25 mg/dL |  | 13-20 |  | Oxidative Stress if↓↑ |
| Creatinine  |  | .50-.1.05 mg/dL |  | .8-1.01 |  | Connective Tissue Integrity if↑ |
| Calcium  |  | 8.6-10.2 mg/dL |  | 9.1-9.8 \* (If protein and albumin are optimal, no less than 9.4) |  | Anaerobic if↓Free Ca++ if↑(Need phosphorus to determine.) |
| \*Calcium: Albumin Ratio (calcium divided by albumin) |  |  |  | 2.2 – 2.5 |  | \*Ominous sign if >2.7 |
| Free Calcium Excess Risk Index: phosphorus lab level x 2.5 = predicted calcium (calcium level you would expect to see). Then take actual measured fasting calcium from lab and subtract predicted calcium. |  | If 0.9-1.4 = low to slightly increased risk for plaque excess.If 1.5 – 2.1 = mod risk for plaque excess. Anything above 2.2 is a high risk |  | Below .8 is the goal (negative numbers are okay)  |  | If at risk: until corrected, avoid calcium supplements, increase phosphorus foods to balance out (add raw pumpkin seeds. Refer to high phos foods list). Often seen with vegetarians  |
| Phosphorus |  | 2.5-4.5 mg/dL |  | 3.3-4.0 |  | Acid Stress if↓Free Ca++ if↓ |
| Sodium  |  | 135-146 mmol/L |  | 138-142 |  |  |
| Potassium  |  | 3.5-5.3 mmol/L |  | 4.0-4.8 |  | Acid Stress if↑ |
| Chloride  |  | 98-110 mmol/L |  | 100-105 |  |  |
| Sodium/Chloride Ratio |  |  |  | Ideally 1.41 |  | Lower than 1.39 is moving into acidic tendency |
| CO2  |  | 21-33 mmol/L |  | 24-29 |  | Acid Stress if↓Anaerobic if↑ |
| Cholesterol  |  | <200 mg/dL |  | 160-200(not below 155) |  | Oxidative Stress if↑Inflammation if↑\*Ominous sign if below 140 |
| Triglycerides  |  | <150 mg/dL  |  | 70-100 |  | Anaerobic if↑Oxidative Stress if↑ |
| HDL  |  | > 50 mg/dL female > 40 mg/dL Male |  | 55-90 |  | Oxidative Stress if↓Consider toxic burden over 100 (neurological) |
| LDL  |  | <130 mg/dL calc  |  | 70-110 |  |  |
| Chol/HDLc ratio |  | <5.0  |  | 3-4 (keep) |  |  |
| TG/HDL ratio |  |  |  | <2 |  |  |
| Iron  |  | 40-160 mcg/ dL |  | 60-120 |  |  |
| TIBC  |  | 240-450 mcg/dL |  | 300-375 |  |  |
| % Saturation (AKA Transferrin)  |  | 15-50% calc |  | 30-34 |  | Acute phase reactant if lab↓ |
| Ferritin  |  | 20-380 ng/mL |  | 40-150 |  | Anaerobic if↓Oxidative Stress if↑Inflammation if↑Acute Phase Reactant if↑ |
| TSH  |  | .40-4.50 mIU/L |  | 1.3-3.0 |  | Anaerobic if ↑ |
| Total T4 (Thyroxine)  |  | 4.5-12.0 ug/dl |  | 6.0-12.0 |  | Anaerobic if↓ |
| Free T4 (Free Thyroxine)  |  | .8-1.8 ng/dL |  | 1.0-1.8 |  |  |
| T3 Uptake |  | 24%-39% |  | 28%-38% |  |  |
| Free T3 |  | 2.3-4.2 pg/mL |  | 2.7-4.2 |  |  |
| Total T3 |  | 71 – 180 ng/Dl |  | 75 - 175 |  |  |
| TPO |  | 0 – 34 IU/mL |  | 0 |  |  |
| Thyroglobulin antibody |  | 0.0 – 0.9 IU/mL |  | 0 |  |  |
| LDH |  | 0-220 U/L |  | 140-180 |  |  |
| Vitamin B12 |  | 200-1100 pg/mL |  | 500-1100 |  |  |
| MMA  |  | 0.0 - .40 umol/L |  | 0.0 - .30 umol/L |  | Take in context with related labs/signs & Sx |
| Folate, Serum |  | Low: <3.4 Borderline: 3.4-5.4Normal: > 5.4 |  | >10 |  |  |
| Vitamin D, 25-OH Total  |  | 30-100 ng/mL |  | 45-60 (in some cases 80) |  | Inflammation if LAB ↓ |
| 1,25 OH Vit D Calcitriol |  | 18-64 pg/mL |  |  |  | If higher end, don’t supplement; evaluate for infection 1st |
| Immunoglobulin A |  | 81-463 mg/ dL |  | 100-150 |  |  |
| Immunoglobulin G |  | 694-1618 mg/dL |  | 900-1200 |  |  |
| Immunoglobulin M |  | 48-271 mg/dL |  | 70-100 |  | Anaerobic if↓ |
| Insulin |  | <23 uIU/mL |  | <10Goal is less than 5 if hyperglycemic |  |  |
| Magnesium **RBC** |  | 4.0-6.4 mg/dL |  | 5.0-6.0 |  |  |
| Beta-2 Microglobulin |  | <OR= 2.51 |  | < 1.50 |  | Oxidative Stress if↑ |
| Uric Acid |  | Men 3.7-8.6 mg/dlWomen 2.5-7.1 mg/dl |  | Men 5-6.0Women 3.8-5.5 |  | Oxidative Stress if↓ |
| ANA screen IFA |  | Negative |  |  |  |  |
| Anti -Nuclear Ab titer |  | Negatlve- <1:40Low Antibody Level -1:40-1:80Elevated Antibody level >1:80 |  | Negative |  |  |
| Copper  |  | 70-175 mcg/dl |  | 80-150 More depends on free Cu excess |  | Assess w/Ceruloplasmin |
| Free Excess CopperCeruloplasmin |  | Ceruloplasm x 3 = #. Subtract serum cupper from this result |  | Fasting serum copper should equal no more than 20 points above this calculated #. |  | Marker for need for zinc - Consider screen all pts at high risk and with or post cancer; also all estrogen dominant  |
| Fibrinogen |  | 150-400 mg/dL |  | 150-200 |  | Acute phase reactant if lab ↑ |
| C-reactive Protein (CRP)HS CRP |  | .00-.80<1.0 |  | .00 - .40 |  | Acute phase reactant if lab ↑. Persistent elevation may be associated w/infection  |
| Homocysteine |  | <13 |  | 4-8Cont…If >8, assess for B12, B6, and folate |  | Acute phase reactant if lab ↑ |
| Zinc, plasma |  | 60-130 mcg/dl  |  | >90 |  | Albumin is the primary zinc binding protein: zinc levels should be interpreted with awareness of serum albumin level. |
| Anion Gap  |  | 2-11 mmol/L |  |  |  |  |
| Egfr Non-African American  |  | >60 |  |  |  |  |
| Mean Platelet Volume  |  | 7.4-10.4 |  |  |  |  |
| Sed Rate |  |  Male Female≤50 Years ≤15 mm/h ≤20 mm/h>50 Years ≤20 mm/h ≤30 mm/h |  |  |  | The lower, the better. Assess in context of other inflammation markers.  |
| Transferrin |  | 203-362 mg/dL |  |  |  |  |

**IMPORTANT! This form should not be used without proper training on Functional Blood Chemistry Interpretation and awareness of the Six Core Centers of Health, as they are taught in the Next Level Functional Nutrition Certification Course, Modules 1 and 2. It would be irresponsible to use this form to interpret lab data without proper training, as misinterpretation could lead to ineffective, or worse yet, negative patient outcomes that place the clinician at increased liability.**