

Blood Chemistry Patterns

Below is a list of the blood markers that are particularly relevant for each specific condition, as well as how many markers need to be out of range for it to be considered a pattern. If a pattern is seen, then that particular condition would warrant further evaluation.

Test/Marker	Number of Markers for Pattern
Hyperglycemia / Met Syn (primary markers)	3
Fasting glucose (high)	
Hemoglobin A1c (high)	
Fructosamine (high)	
Triglycerides (high)	
Triglycerides / HDL ratio (high)	
Post-meal glucose (high)	
HDL (low)	
Hyperglycemia / Met Syn (secondary markers)	N/A
Uric acid (high)	
Fasting insulin (high)	
ALT (high)	
AST (high)	
LDH (high)	
GGT (high)	
Hypoglycemia / Reactive hypoglycemia	1
Glucose (low)	
LDH (low)	
Impaired kidney function	3
BUN (high)	
Creatinine (high)	
eGFR (low)	
Phosphorus (high)	

Sodium (high)	
Potassium (high)	
AST (high)	
ALT (high)	
GGT (high)	
Dehydration	2
BUN (high)	
Carbon Dioxide (high)	
RBC (high)	
Hemoglobin (high)	
Hematocrit (high)	
Sodium (high)	
Potassium (low)	
Gout	2
Uric acid (high)	
BUN (high)	
RBC (high)	
Hemoglobin (high)	
Glucose, A1c, Insulin, Leptin, etc. (high)	
Iron markers (high)	
Rhabdomyolysis	2
Creatine Kinase (5x higher than upper limit)	
AST (high)	
ALT (high)	
LDH (high)	
Potassium (high)	
Calcium (low)	
Increased muscle mass	1
Creatinine (high)	

BUN (high)	
Impaired liver function	2
AST (high)	
ALT (high)	
GGT (high)	
LDH (high)	
Alkaline phosphatase (high)	
Impaired gallbladder function	2
GGT (high)	
ALT (high)	
AST (high)	
Bilirubin (high)	
Alkaline phosphatase (high)	
LDH (high)	
5'-Nucleotidase (high)	
Iron deficiency	2
Ferritin (low)	
Iron (low)	
Iron saturation (low)	
UIBC (high)	
TIBC (high)	
RDW (high)	
Soluble transferrin receptor (high)	
Iron overload	2
Iron (high)	
Iron saturation (high)	
UIBC (low)	
TIBC (low)	
Ferritin (high)	

sTfR (low)	
B12 deficiency	1
Serum B12 (low)	
HoloTC (low)	
Serum MMA (high)	
Homocysteine (high)	
Anemia (Iron deficiency)	At least one marker high and one marker low
RBC (low)	
Hemoglobin (low)	
Hematocrit (low)	
MCV (low)	
MCH (low)	
MCHC (low)	
RDW (high)	
Ferritin (low)	
Iron (low)	
Iron saturation (low)	
sTfR (high)	
UIBC (high)	
TIBC (high)	
Reticulocyte hemoglobin content (low)	
Anemia (B12/folate deficiency)	At least one marker high and one marker low
RBC (low)	
Hemoglobin (low)	
Hematocrit (low)	
MCV (high)	
MCH (high)	
MCHC (low)	

RDW (high)	
Serum B12 (low)	
HoloTC (low)	
Serum folate (low)	
RBC folate (low)	
MMA (high)	
Homocysteine (high)	
Formiminoglutamate (high)	
Anemia (Chronic disease)	Ferritin must be high with at least one other marker out of range
Iron (low)	
Iron saturation (low)	
Hemoglobin (low)	
Ferritin (high or normal)	
MCV (normal to slightly low)	
TIBC (low)	
UIBC (low)	
WBC (low, normal, or high)	
Dyslipidemia (w/o Met Syn)	1
Total cholesterol (high)	
LDL (high)	
Total Cholesterol / HDL Ratio (high)	
Dyslipidemia (w/ Met Syn)	3
Total cholesterol (high)	
LDL (high)	
HDL (low)	
Triglycerides (high)	
Total Cholesterol / HDL Ratio (high)	
Triglycerides / HDL Ratio (high)	

Glucose (high)	
Hemoglobin A1c (high)	
Thyroid hypofunction (core markers)	2
TSH (high)	
T4, total (low)	
T3, total (low)	
T4, free (low)	
T3, free (low)	
Reverse T3 (high)	
TPO antibodies (high)	
TG antibodies (high)	
Thyroid hypofunction (adjunct markers)	N/A
Alkaline phosphatase (low)	
MCV (high)	
Urine iodine: 24-hour, spot (low)	
Hair iodine (low)	
Thyroid hyperfunction (core markers)	TSH must be low, and either T4, T3, FT4, FT3 must be high
TSH (low)	
T4, total (high)	
T3, total (high)	
T4, free (high)	
T3, free (high)	
TPO antibodies (high)	
TG antibodies (high)	
TSI antibodies (high)	
Thyroid hyperfunction (adjunct markers)	N/A
ALT (high)	
AST (high)	

Urine iodine: 24-hour, spot (low)	
Hair iodine (low)	
Acute viral infection	WBC must be high with at least one other marker out of range
WBC (high)	
Neutrophils (low)	
Lymphocytes (high)	
Monocytes (high)	
Acute bacterial infection	WBC must be high with at least one other marker out of range
WBC (high)	
Neutrophils (high)	
Lymphocytes (low)	
Monocytes (high)	
Chronic infection (non-specific)	WBC must be low with at least one other marker out of range
WBC (low)	
Neutrophils (low, normal, or high)	
Lymphocytes (low, normal, or high)	
Monocytes (high)	
Parasite infection	1
Eosinophils (high)	
WBC (high)	
Monocytes (high)	
Autoimmunity	2
WBC (low)	
Lymphocytes (low)	
Neutrophils (low)	
Platelets (high or low)	
Ferritin (high)	

CRP (high)	
HDL (>85)	
Vitamin D, 25-hydroxy (low)	
Inflammation	2
WBC (high)	
Neutrophils (high)	
Lymphocytes (high or low)	
Ferritin (high)	
CRP (high)	
HDL (>85)	
Allergies	1
Eosinophils (high)	
WBC (low, normal, or high)	
Cancer	N/A
WBC (high or low)	
Neutrophils (low)	
Lymphocytes (high or low)	
Eosinophils (high)	
Monocytes (high or low)	
Platelets (high or low)	
Impaired methylation	1
Homocysteine (high)	
Serum B-12 (high or low)	
Serum MMA (high)	
Serum folate (low)	
RBC folate (low)	
Urine MMA (high)	
Urine Figlu (high)	
Zinc-copper imbalance	1

Zinc (low)	
Copper (high)	
Zinc:Copper ratio (<0.8 or >1.2)	
Magnesium deficiency	1
Magnesium (<2.0)	
Vitamin D deficiency	1
25(OH)D (low)	
25(OH)D <35 and PTH (>30)	
Vitamin D toxicity	1
Vitamin D, 25-hydroxy (>70)	