Hematology parameters at a glance

Human
Diagnostics Worldwide

	Parameter		Decreased	Normal range	Increased	HumaCount 30TS / 80TS	HumaCount 5D	HumaCount 5L
Leukocytes	WBC – White blood cells		Autoimmune diseases, viral infections, bone marrow diseases, cancer	4-10 x 10^9/l	Infection, leukemia, drug reaction	●	●	●
	Lym – Lymphocytes		Acute inflammation, autoimmune disease, HIV infection, TB, endogenous or exogenous steroids, chemotherapy, bone marrow damage	0.8-4 x 10^9/l	Acute viral infections, some bacterial infections (e.g. TB, chronic inflammation), physiological increase (e.g. epinephrine effect on anxiety, physical activity), lymphoma, lymphatic leukemia	●	●	●
	Neu – Neutrophils		Sepsis, acute consumption, peripheral destruction (immune-mediated), inefficient production in bone marrow (bone marrow disease: toxic, neoplastic, infectious, immune-mediated), drug reactions	2-7 x 10^9/l	Acute bacterial infections, inflammation, necrosis, physiological reasons (e.g. exercise, smoking, stress), pregnancy, myeloid leukemia		●	●
	Bas – Basophils		*Not clinically relevant*	0-0.1 x 10^9/l	Allergic reactions, certain leukemias		●	●
	Eos – Eosinophils		First phase of an acute infectious disease, diseases associated with increased secretion of ACTH or adrenal cortex hormones e.g. Cushing's disease, elevated glucocorticoid levels	0.02-0.5 x 10^9/l	Hypersensitivity (e.g. allergy, asthma), parasitic infections, drug reactions, mast cell degranulation for inflammation (e.g. cutaneous, respiratory, intestinal, urogenital), inflammatory bowel disease, celiac disease, hypoadrenocorticism		●	●
	Mon – Monocytes		Bone marrow damage and/or failure, an isolated monocytopenia is very rare	0.12-1.2 x 10^9/l	Chronic infections, inflammation, Hodgkin's disease, solid tumors, ulcerative colitis, Crohn's disease, rheumatic diseases, myeloid leukemia, chronic myelomonocytic leukemia	● (MID)	●	●
	ALY – Atypical lymphocytes		*Not clinically relevant*	0-0.2 x 10^9/l	Viral infections, neoplastic diseases		●	
	LIC – Large immature cells		*Not clinically relevant*	0-0.2 x 10^9/l	Leukemia, active immunreaction		●	
Erythrocytes	RBC – Red blood cells		Anemia, blood loss, hemolysis, malnutrition, deficiency of iron, vitamin B6, vitamin B12, expanded plasma volume, kidney disease	3.5-5.5 x 10^{12}/l	Dehydration, polycytemia vera, poor oxygen supply by heart and lung disease, adaption to high altitude	●	●	●
	HGB – Hemoglobin		Anemia, blood loss, malnutrition, cirrhosis, cancer	11-16 g/l	Dehydration, polycytemia vera, poor oxygen supply by heart and lung disease, adaption to high altitude	●	●	●
	HCT – Hematocrit		Anemia, blood loss, malnutrition, cirrhosis, cancer	37-54 %	Dehydration, polycytemia vera, hemochromatosis	●	●	●
	MCV – Mean corpuscular volume		Microcytic anemia, malnutrition, iron deficiency, copper or vitamin B6 deficiency, thalassemia, tumor disease	80-100 fl	Macrocytic anemia, folic acid or vitamin B12 deficiency, drug reaction, alcohol misuse	●	●	●
	MCH – Mean corpuscular hemoglobin		Hypochromic microcytic anemia (e.g. iron deficiency), thalassemia, malnutrition	27-34 pg	Hyperchromic macrocytic anemia, folic acid or vitamin B12 deficiency, drug reaction, alcohol misuse	●	●	●
	MCHC – Mean corpuscular hemoglobin concentration		Hypochromic microcytic anemia (e.g. iron deficiency), thalassemia, copper deficiency, iron utilization disorders + partly chronic diseases, myelodysplastic syndrome	320-360 g/l	Hyperchromic macrocytic anemia, folic acid or vitamin B12 deficiency, intravascular hemolysis, hereditary spherocytosis, extreme hypertriglyceridemia, cold agglutinins	●	●	●
	RDW-CV / RDW-SD – Red cell distribution width		*Not clinically relevant*	11-16 % 35-56 fl	Hemolytic anemia, pernicious anemia, osteomyelofibrosis, increased mortality risk for COVID-19 hospitalized patients	●	●	●
Thrombocytes	PLT and PCT – Platelets and Plateletcrit		Hereditary diseases with reduced platelet formation, collagenosis, anemia, acute leukemia, drug reaction, radiation, bleeding and clotting disorders, idiopathic	100-300 x 10^9/l 0.108-0.282 %	Reactive thrombocytosis (e.g. acute bleeding, malignancy, inflammation, sepsis), myeloproliferative syndrome	●	●	●
	MPV – Mean platelet volume		Bone marrow aplasia, chemotherapy, hypersplenism, reactive thrombocytosis, myeloproliferative diseases, hypothyroidism, chronic renal failure, HIV infection, hereditary cause (e.g. Wiskott-Aldrich syndrome)	6.5-12 fl	Idiopathic thrombocytopenic purpura, pregnancy-induced hypertension, myelodysplastic syndrome (e.g. myeloproliferative diseases), myocardial infarction, hyperthyroidism, chronic hypoxia, infections, diabetes mellitus, hereditary diseases	●	●	●
	PDW – Platelet size distribution width		*Not clinically relevant*	9-17 fl	Anisocytosis, platelet activation (e.g. vascular diseases or certain cancers)	●	●	●
	P-LCR – Percentage of large platelets		Thrombocytosis	11-45 %	Hyperlipidemia, increased risk of thrombosis, thrombocytopenia	●	●	●
	P-LCC – Absolute count of large platelets		Thrombocytosis	30-90 x 10^9/l	Hyperlipidemia, increased risk of thrombosis, thrombocytopenia	●	●	●

References

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HumaCount
3-part and 5-part Systems

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