

# Blood count

Clear explanations of laboratory values and examinations. Individual results do not replace medical interpretation; reference ranges and personal circumstances are considered together.

## Leukocytes

White blood cells are part of the immune system. Counts and subtypes can change with infection, inflammation, stress or medication. Interpretation considers the differential count and the clinical context.

## Erythrocytes

Red blood cells transport oxygen. Low counts may indicate anaemia; possible causes are assessed together with haemoglobin, cell indices and other findings.

## Hemoglobin

Haemoglobin is the oxygen-binding protein in red blood cells. A low result may indicate anaemia, whose cause requires individual assessment.

## Hematocrit

Haematocrit is the proportion of blood volume occupied by red blood cells. It is influenced by cell count, cell size and hydration.

## MCV (Mean Corpuscular Volume)

Cell volume of red blood cells; possible indication of the cause of anemia.

## MCH (mean corpuscular hemoglobin)

Blood pigment content of the individual red blood cells; also an indication of the cause of anemia.

## Platelets

Platelets contribute to haemostasis and clotting. Count and function are different properties; abnormalities are assessed alongside symptoms and other laboratory results.

## Neutrophil granulocytes, rod-nucleated

Band neutrophils are younger cells of the innate immune system. A higher proportion may occur with infection or inflammation and is not a diagnosis on its own.

## Neutrophil granulocytes, segment nucleated

Segmented neutrophils are mature cells of the innate immune system. Their number may change with infection, inflammation, stress and medication.

## Basophilic granulocytes

Subgroup of white blood cells.

### Eosinophil granulocytes

Eosinophils are a white blood cell subtype. Raised counts may occur with allergies, some parasitic infections or reactions to medication.

### Lymphocytes

Lymphocytes perform important functions in adaptive immunity. Their count may change with infections and many other conditions.

### Monocytes

Monocytes are cells of the innate immune system. Counts may vary with infection, inflammation or during recovery.

# Glucose metabolism

## Glucose (fasting)

Fasting glucose is blood glucose measured after an agreed fasting period. Raised values may indicate impaired glucose metabolism and may require confirmation.

## HbA1c

HbA1c measures the proportion of haemoglobin bound to glucose. It reflects average glucose exposure over roughly two to three months; some blood conditions can affect the result.

## HOMA Index

The HOMA index is calculated from fasting glucose and fasting insulin. It may indicate insulin resistance; the assay and clinical context matter when interpreting it.

# Lipid metabolism

## Total cholesterol

Cholesterol is needed for cell membranes and hormone production. Total cholesterol is interpreted together with LDL, HDL, triglycerides and individual risk.

## LDL cholesterol

LDL particles transport cholesterol. Higher LDL levels promote atherosclerotic changes. Appropriate targets depend on individual cardiovascular risk.

## HDL cholesterol

HDL particles participate in cholesterol transport. A high HDL result does not automatically protect against cardiovascular disease or offset raised LDL.

## Triglycerides

Triglycerides are fats in the blood. Levels are influenced by diet, metabolism and medication. Raised results are interpreted alongside the rest of the lipid profile and the individual situation.

# Liver & enzymes

## Gamma-GT (gamma-glutamyltransferase)

Gamma-GT is an enzyme that may rise in liver or bile duct disorders. Alcohol and medication can also affect it; the result alone does not identify a specific cause.

## GOT (glutamate oxaloacetate transaminase)

GOT, also called AST, is found in the liver and muscle, among other tissues. Raised values are assessed with other enzymes, symptoms and possible exertion.

## GPT (glutamate pyruvate transaminase)

GPT, also called ALT, is an enzyme used particularly in assessing liver cell injury. The cause of a raised result requires consideration of other findings.

# Symptoms & conditions

## Unexplained chest pain

Chest pain can have various causes and is assessed according to symptoms and individual risk. For sudden severe or persistent pain, breathlessness or circulatory problems, call 112 immediately.

## Heart failure

Heart failure, i.e. usually shortness of breath with limited pumping power or filling problem of the left ventricle.

## Coronary artery perfusion disorders

Coronary artery disease can impair blood flow in the coronary arteries. Symptoms may include chest pressure or breathlessness on exertion; investigations depend on the individual situation.

## Heart valve defect

Heart valves may be narrowed or leaky. Echocardiography helps assess changes and their effects on the heart.

## Cardiac arrhythmias

Arrhythmias affect the formation or conduction of electrical impulses. They may cause palpitations, a racing heartbeat or dizziness and are investigated using ECG methods, among other tests.

## Hypertension

Persistently raised arterial blood pressure is an important cardiovascular risk factor. Repeated standardised measurements or ambulatory monitoring support diagnosis.

## Cardiomyopathy

Heart muscle diseases include various cardiomyopathies and inflammatory conditions such as myocarditis. They may affect cardiac structure, pumping function or rhythm.

## Blood sugar disease

Diabetes mellitus / insulin resistance, which pose a significant cardiovascular risk and therefore need to be adjusted.

## Overweight

Obesity may be associated with hypertension, lipid disorders and diabetes. Body measurements, body composition and other risk factors support individual advice.

## Psychomental stress

In addition to organic causes, we deal with their psychosocial context and help you actively reduce stress in everyday life.

# Examinations

## Differentiated cardiovascular risk stratification.

We consider personal risk factors and findings together. SCORE2 or SCORE2-OP support guideline-based cardiovascular risk assessment in suitable individuals.

## Bioimpedance analysis (BIA)

The seca mBCA Ultra assesses body composition using weak electrical signals. Skeletal muscle mass is validated against whole-body MRI; fat mass uses a four-compartment reference. Hydration and measurement conditions are considered.

## Differentiated laboratory analysis

In knowledge of the differentiated disease theory, laboratory values far beyond the usual are analyzed, partly in the practice with point-of-care (POC) devices, partly in different laboratories in Düsseldorf, Munich, Berlin. Important are specific inflammation parameters from the plaque, immune status, periodontitis biomarkers (as risk of myocardial infarction), hormone analyses, special tumor markers.

## Electrocardiogram (ECG) incl. Holter (long-term) ECG /(1 – 3 days)

Current waveform registration for detection of myocardial problems and/or arrhythmias

## Blood pressure measurement incl. ambulatory blood pressure monitoring (ABDM) (long-term blood pressure measurement)

Safe diagnosis of hypertension with Riva-Rocci measurement on the upper arm based on European guidelines

## Duplex sonography (vascular status)

Ultrasound method with detection of blood flow velocity with circulatory disturbance, if any.

## Echocardiography · tissue Doppler & strain

Echocardiography assesses heart size, pumping function and valves. Tissue Doppler and, where appropriate, strain analysis add information about heart muscle movement. We use Philips EPIQ.

## Transesophageal echocardiography (TEE; "swallowing sound")

Ultrasound examination via a probe through the esophagus and stomach for special questions using the latest high-end equipment (Epiq Elite®, Philips)

## Dynamic and pharmacological stress echocardiography.

Stress echocardiography examines cardiac function during exercise or pharmacological stress. It can indicate inducible ischaemia; the method is chosen according to medical indication.

## Pulmonary function diagnostics

Measurement of forced expiratory volume as well as vital capacity for the detection of bronchial and lung framework changes (spirometer, custo)

### Magnetic resonance imaging (MRI), computed tomography (MSCT) and scintigraphy

MRI, CT and scintigraphy use different imaging techniques. Selection depends on the clinical question. MRI examinations use the latest generation of Siemens MAGNETOM systems.

### Ergospirometry

Exercise testing with recording of inhaled and exhaled gases; measurement of the golden standards of cardiopulmonary function (fitness) based on maximal oxygen uptake and anaerobic threshold (cortex and custo).

### Telemedicine funduscopy

Retinal imaging with Skleo complements the medical assessment of vascular health. The images are interpreted alongside your other findings.

### Short- and long-term heart rate variability (HRV)

Registration of consecutive, variable heart action durations to determine the (dys)balance of sympathetic and parasympathetic nervous systems (autonomic nervous system), thus objective recording of stress vs. relaxation

### Pulse Wave Analysis (PWS)

Registration of the pulse wave course with measurement of pulse wave velocity and augmentation index as well as central blood pressure; thus recording of elasticity or stiffness of the arteries (Arteriograph®, Tensomed; Vicorder®, 80 Beats Medical); furthermore also measurement of flow mediated slowing (FMS) similar to flow mediated dilatation (FMD) for recording of endothelial dysfunction (earliest arterial change) Vicorder®, 80 Beats Medical)

### AGE measurement

Measurement of advanced glycation endproducts (AGE Reader®; 80 Beats Medical), i.e. saccharified proteins in tissue, which thus cause arterial vessel wall changes (atherosclerosis) as well as tissue aging (similar to the background of HbA1c measurements in blood)

### Cardio / cardisiography

The examination records electrical cardiac signals in three dimensions. Algorithm-assisted analysis provides additional information interpreted by a doctor alongside the other findings.

### Fat attenuation index (FAI)

FAI assesses CT characteristics of fat surrounding the coronary arteries. They may provide information about coronary inflammatory activity. It requires a suitable coronary CT; indication and interpretation are discussed individually.

### SCORE2 / SCORE2-OP

European risk models estimate fatal and non-fatal cardiovascular event risk in suitable individuals. Age, region and certain pre-existing conditions determine which model is applicable.

# Treatment & advice

## Holistic / interdisciplinary (holistic) approach

Differentiated pharmacotherapy based on state-of-the-art drugs (current phase III trials / European guidelines), pharmacogenetics if necessary

## Lifestyle advice

Coaching of all 3 lifestyle pillars, i.e. exercise, nutrition, relaxation.

## Cooperative interventional and surgical treatment

Organization of interventional measures such as cardiac catheterization or surgical measures such as bypass or heart valve operations in the personal cardiological network with cardiac clinics after extensive and goal-oriented, non-invasive diagnostics; closest personal cooperation here

## Second opinion

We will be happy to advise you on a specific medical or personal concern and provide you with an assessment