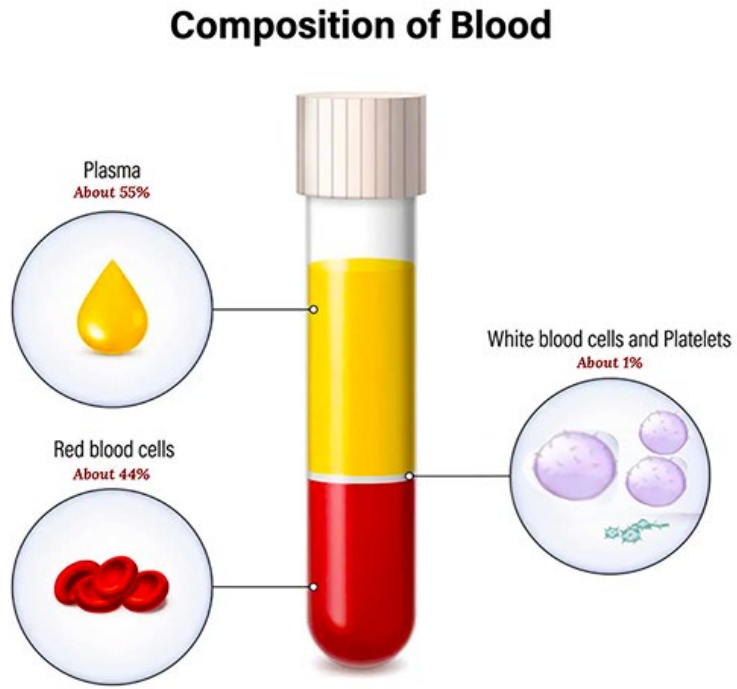
Blood Diagnostic Benchmarks

1. Key Components of a Complete Blood Count (CBC)

A standard CBC measures the following components to evaluate overall health and detect disorders like anemia or infection: nhlbi, nih (.gov) +2

- **Red Blood Cells (RBC):** 4.2–6.1 million/mcL (varies slightly by gender and age). (5m/mcL)
- **Hemoglobin (Hgb):** 12–18 g/dL (varies by gender).
- **Hematocrit (Hct):** 36–52%. (45%)
- **White Blood Cells (WBC):** 4,000–11,000 cells/mcL (essential for immunity). (5,000 /dL)
- **Platelets (Plt):** 140,000–450,000 cells/mcL (crucial for clotting).
- **White Blood Cell Differential:** Including neutrophils (40-60%), lymphocytes (20-40%), monocytes (2-8%), eosinophils (1-4%), and basophils (0.5-1%). Cancer.org +4 (never let monkeys eat bananas)



2. Key Components of a Basic Metabolic Panel (BMP)

A BMP measures chemical compounds to evaluate kidney function, glucose levels, and electrolyte balance: MedlinePlus (.gov) +1

- **Glucose:** 64–100 mg/dL (fasting).
- **Calcium:** 8.5–10.2 mg/dL.
- **Sodium:** 136–144 mmol/L.
- **Potassium:** 3.7–5.2 mEq/L.
- **Carbon Dioxide (CO2/Bicarbonate):** 23–29 mmol/L.
- **Chloride:** 96–106 mmol/L.
- **Blood Urea Nitrogen (BUN):** 6–20 mg/dL.
- **Creatinine:** 0.8–1.2 mg/dL. Cleveland Clinic +1

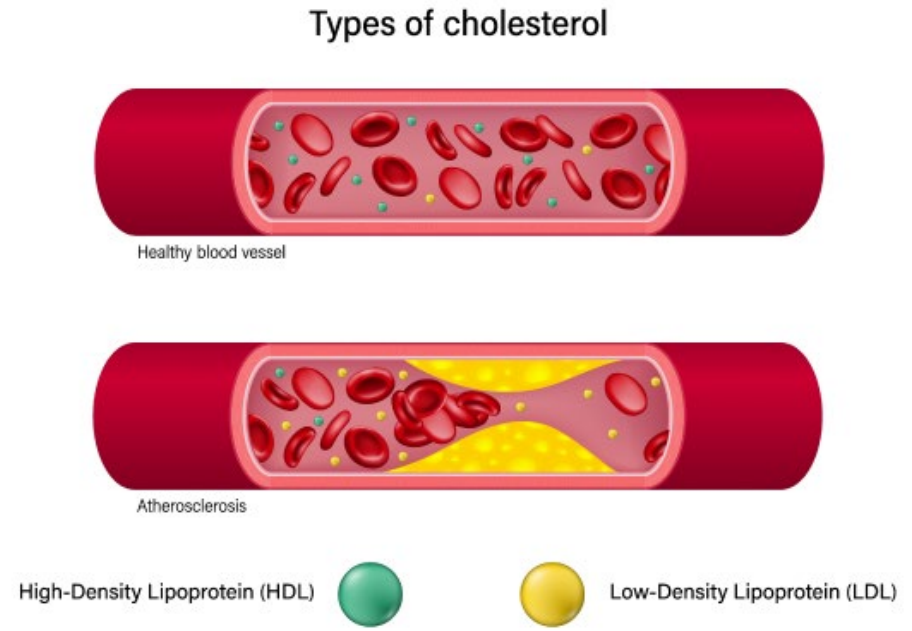
3. Key Components of a Comprehensive Metabolic Panel (CMP)

A CMP includes all elements of the BMP, plus, to provide a deeper look at liver function and protein levels: National Kidney Foundation +3

- **Albumin:** 3.5–5.5 g/dL.
- **Total Protein:** 6.4–8.3 g/dL.
- **Alkaline Phosphatase (ALP), ALT, AST:** Liver enzymes.
- **Total Bilirubin:** 0.3–1.0 mg/dL. Medscape

4. Key Components of a Lipid Panel

- **Total Cholesterol:** <200 mg/dL (desirable).
- **HDL ("Good"):** >60 mg/dL (optimal).
- **LDL ("Bad"):** <100 mg/dL (optimal).
- **Triglycerides:** <150 mg/dL (normal). Clinical Neurology Specialists +4



Characteristics of a Proper Benchmark

- **Contextualization:** Results must be interpreted within the clinical context, as 5% of healthy people may fall outside the normal range.
- **Lab-Specific Ranges:** Reference ranges can vary between laboratories.
- **Gender/Age Differentiation:** Metrics such as hemoglobin and red blood cell counts often differ between men and women.
- **Actionable Thresholds:** Clear indicators for when to repeat a test or initiate treatment, such as a hemoglobin level <7 g/dL requiring potential transfusion.
- **Standardization:** Adherence to benchmarks set by bodies like the College of American Pathologists (CAP). Cleveland Clinic +5