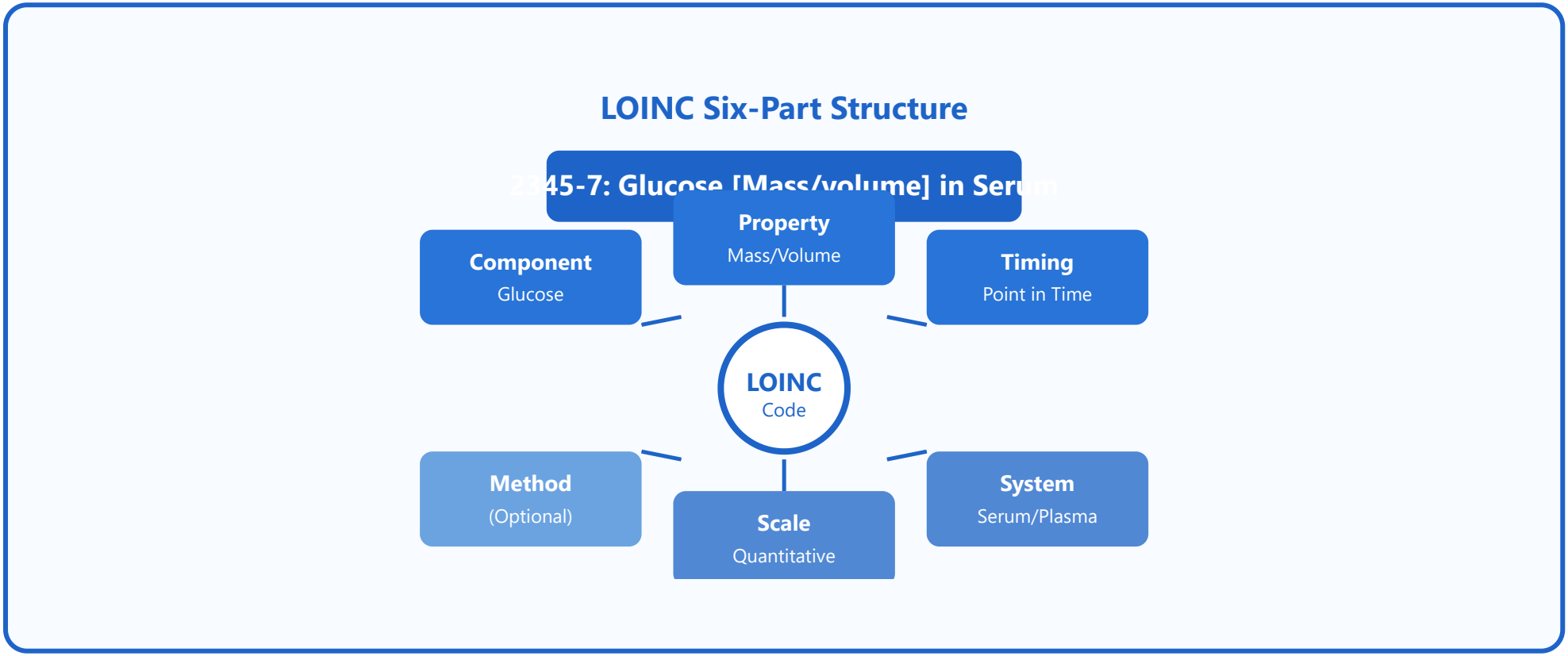
LOINC for Laboratory Tests



Common LOINC Code Examples

2160-0	718-7	2951-2	4544-3
Creatinine in Serum	Hemoglobin in Blood	Sodium in Serum	Hematocrit in Blood

🧪 Test Categories

- Chemistry tests
- Hematology & coagulation
- Microbiology cultures
- Serology & immunology
- Molecular pathology

📊 Panel Organization

- Basic Metabolic Panel (BMP)
- Complete Blood Count (CBC)
- Comprehensive Metabolic Panel
- Lipid panel
- Liver function tests

⚡ LOINC Properties

- MCnc: Mass concentration
- NCnc: Number concentration
- Prid: Presence/Identity

🔬 UCUM Units

- mg/dL, mmol/L (chemistry)
- 10*3/uL (cell counts)
- IU/L (enzymes)

- Titr: Titer (dilution)
- Arb: Arbitrary units

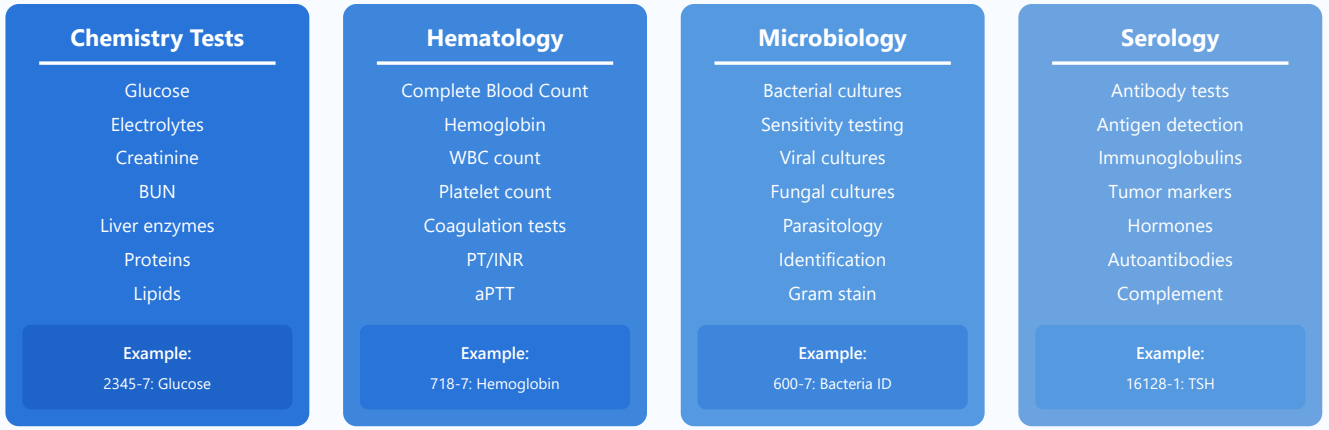
- Standardized unit conversion
- Reference range mapping

Detailed Category Descriptions

🧪 Test Categories

LOINC provides comprehensive coverage of laboratory test categories, each representing different analytical domains in clinical diagnostics. These categories enable systematic organization and identification of all laboratory observations.

Laboratory Test Category Hierarchy



Real-World Example: Chemistry Test

Test: Glucose measurement in serum/plasma

LOINC Code: `2345-7`

Full Name: Glucose [Mass/volume] in Serum or Plasma

Clinical Use: Diabetes screening, monitoring, diagnosis of hyperglycemia/hypoglycemia

Units: mg/dL or mmol/L (UCUM standard)

Real-World Example: Hematology Test

Test: Hemoglobin measurement in whole blood

LOINC Code: `718-7`

Full Name: Hemoglobin [Mass/volume] in Blood
Clinical Use: Anemia diagnosis, blood loss assessment, monitoring chronic disease
Units: g/dL or g/L (UCUM standard)

📊 Panel Organization

Laboratory test panels group related tests together for efficient clinical assessment. LOINC provides specific codes for both individual tests and complete panels, enabling comprehensive documentation of multi-test orders.

Common Laboratory Panels

Basic Metabolic Panel
(BMP - LOINC: 51990-0)

- Glucose
- Sodium
- Potassium
- Chloride
- CO_2, BUN, Creatinine

Complete Blood Count
(CBC - LOINC: 58410-2)

- WBC count
- RBC count
- Hemoglobin
- Hematocrit
- Platelet count, MCV

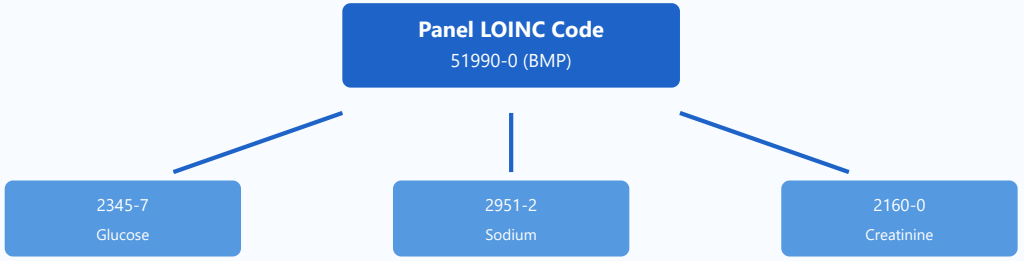
Comprehensive Metabolic Panel
(CMP - LOINC: 24323-8)

- All BMP tests
- Albumin
- Total protein
- AST, ALT, ALP
- Total bilirubin

Lipid Panel
(LOINC: 24331-1)

- Total cholesterol
- HDL cholesterol
- LDL cholesterol
- Triglycerides
- Chol/HDL ratio

Panel Structure in LOINC



Real-World Example: Basic Metabolic Panel (BMP)

Panel LOINC Code: `51990-0`

Full Name: Basic metabolic panel - Blood

Components: 8 individual tests (Glucose, Sodium, Potassium, Chloride, CO_2, BUN, Creatinine, Calcium)

Clinical Use: Routine metabolic screening, kidney function assessment, electrolyte balance

Advantage: Single order code generates all component test orders

Real-World Example: Complete Blood Count (CBC)

Panel LOINC Code: `58410-2`

Full Name: Complete blood count (hemogram) panel - Blood by Automated count
Components: WBC, RBC, Hemoglobin, Hematocrit, MCV, MCH, MCHC, Platelets, RDW
Clinical Use: Anemia diagnosis, infection screening, general health assessment
Result Format: Each component has its own LOINC code for reporting

⚡ LOINC Properties

The Property axis in LOINC defines what is being measured about the analyte. This critical component distinguishes different measurement types for the same substance, ensuring precise test identification.

LOINC Property Types

Real-World Example: Mass Concentration (MCnc)

Test: Glucose in Serum

LOINC Code: `2345-7`

Property: MCnc (Mass Concentration)

Measurement: Mass of glucose per volume of serum

Units: mg/dL (conventional) or mmol/L (SI units)

Calculation: If result is 100 mg/dL, this means 100 milligrams of glucose per deciliter of serum

Real-World Example: Number Concentration (NCnc)

Test: White Blood Cell Count

LOINC Code: `6690-2`

Property: NCnc (Number Concentration)

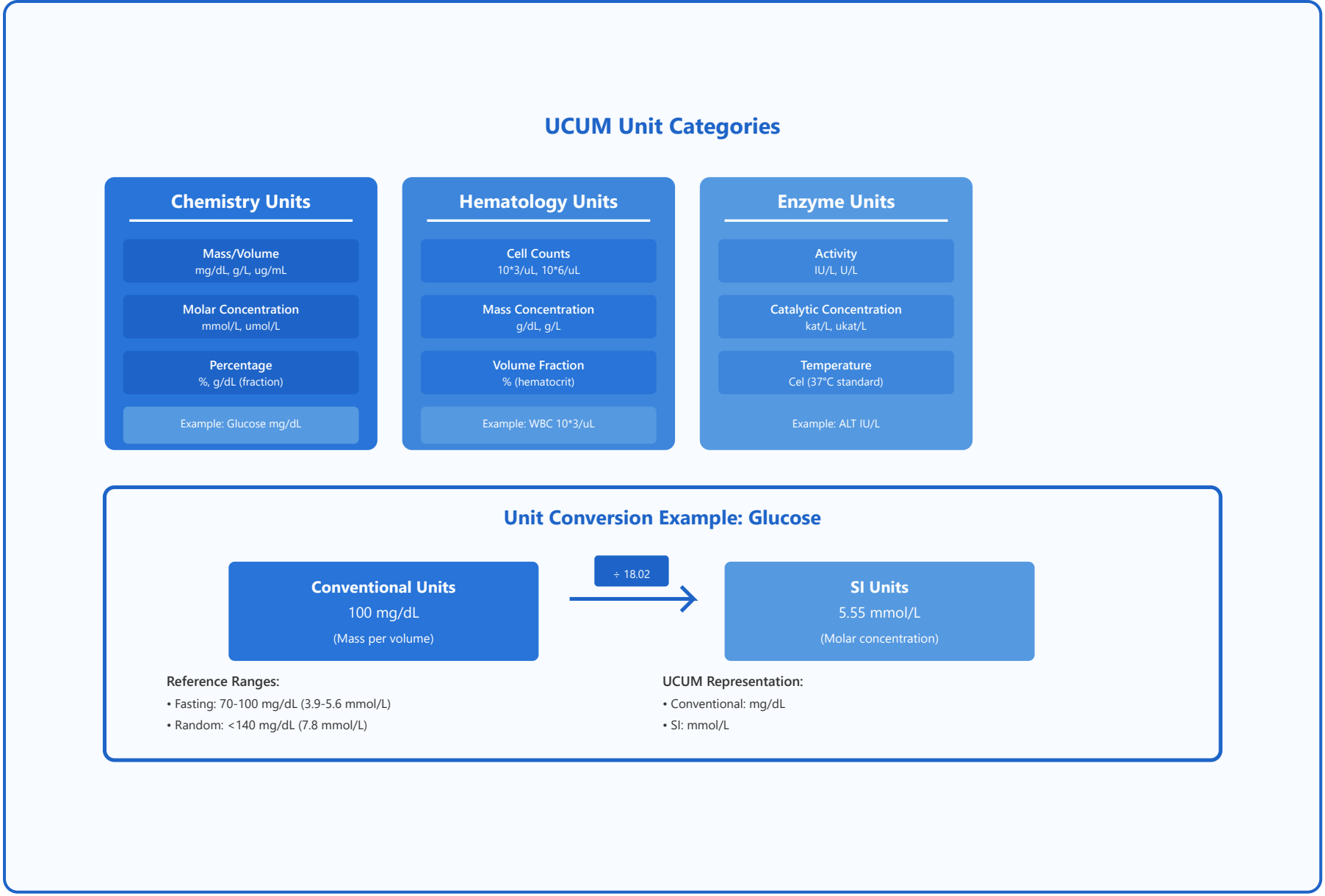
Measurement: Number of WBCs per unit volume

Units: 10*3/uL (thousands per microliter) or 10*9/L

Interpretation: Result of 7.5 means 7,500 white blood cells per microliter

UCUM Units (Unified Code for Units of Measure)

UCUM provides a standardized system for expressing units of measure in clinical laboratory testing. Integration with LOINC ensures consistent, unambiguous reporting of test results across different healthcare systems.



Real-World Example: Chemistry Test Units

Test: Serum Creatinine

LOINC Code: `2160-0`

Conventional Units: mg/dL (milligrams per deciliter)

SI Units: umol/L (micromoles per liter)

Conversion Factor: mg/dL × 88.4 = umol/L

Example: 1.2 mg/dL = 106 umol/L

Reference Range: 0.7-1.3 mg/dL (62-115 umol/L) for males

Real-World Example: Hematology Cell Count Units

Test: White Blood Cell Count

LOINC Code: `6690-2`

UCUM Units: 10*3/uL (thousands per microliter)

Alternative: 10*9/L (billions per liter)

Conversion: 1 × 10*3/uL = 1 × 10*9/L

Example Result: 7.5 × 10*3/uL means 7,500 cells per microliter

Reference Range: 4.5-11.0 × 10*3/uL

Real-World Example: Enzyme Activity Units

Test: Alanine Aminotransferase (ALT)

LOINC Code: `1742-6`

UCUM Units: IU/L or U/L (International Units per liter)

SI Alternative: ukat/L (microkatals per liter)

Conversion: 1 U/L = 0.0167 ukat/L

Temperature: Measured at 37°C (body temperature)

Reference Range: 7-56 U/L (varies by laboratory)

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For complete LOINC database and documentation, visit **loinc.org**