

Minimum Whole Blood Volumes for Microcollection Tubes for Neonates, Pediatrics, Patients less than 45 kg (100 lb) and Difficult Collections

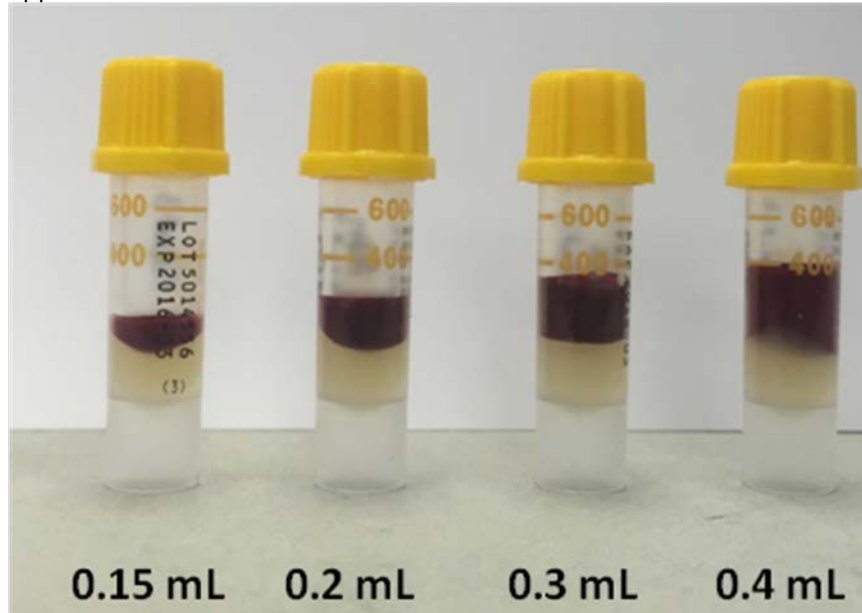
The following table outlines the minimum whole blood volume that must be drawn into a **microcollection tube** (unless otherwise stated) for an individual test on a neonate, pediatric, patient weighing less than 45 kg (100 lb) and patients who are difficult to collect.

COLLECTION TUBE CAUTION: Additional whole blood must be drawn if using standard blood collection tubes.

The volumes in the table below are based on a blood hematocrit of 0.60 L/L and are calculated for the instrumentation in the CLS laboratory.

For neonatal chemistry tests, the minimum whole blood volume for neonates is 0.3 mL for 1-4 tests with an additional 0.1 mL of whole blood (2 drops) for each additional test.

Appearance of various volumes of whole blood in microcollection tubes:



| Microcollection Tube Types | | | |
|---|-------------------|---------------------------------------|---|
| Light green (mint) top Lithium Heparin PST tube | Gold top SST tube | Lavender top K ₂ EDTA tube | Grey top Sodium fluoride/Potassium oxalate tube |

| Standard Tube Types | | To Protect Tubes from Light |
|---|---|---|
| Red top microcollection tube unavailable; use 4 mL red top tube | Dark green top microcollection tube unavailable; use 4 mL dark green top heparin tube | Use amber collection tube, or insert microcollection tubes into amber carrier tubes |

| Individual Test – for multiple test orders, see charts below | Whole Blood Volume (mL) | Tube Top Colour P = preferred tube | | |
|--|-------------------------|---------------------------------------|----|--|
| Acetaminophen | 0.2 | P | or | |
| ACTH | 0.6 | on ice | | |
| Acylcarnitine Profile | 0.4 | | or | |
| Alanine Transaminase | 0.2 | P | or | |
| Albumin | 0.2 | P | or | |



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| Individual Test – for multiple test orders, see charts below | Whole Blood Volume (mL) | Tube Top Colour P = preferred tube | | |
|--|--|---------------------------------------|----|----------------------|
| Aldosterone | 0.7 | | | |
| Alkaline Phosphatase | 0.2 | P | or | |
| Allergy Testing, IGE | 0.5 for one allergen For each 1-5 additional allergens ordered, add 0.2 | | | |
| Alpha-1 Antitrypsin | 0.3 | | | |
| Alpha-1 Fetoprotein, Non-Pregnant | 0.5 | | | |
| Amikacin | 0.2 | P | or | |
| Amino Acid | 1.0 | | | |
| Amiodarone | 1.6 | | | |
| Ammonia | 0.4 | | | on ice, venous only |
| Amylase | 0.2 | P | or | |
| Androstenedione | 0.3 | | | |
| Anti-CCP | 0.5 | | | |
| Anti-Endomysial Antibodies | 0.7 | | | |
| Anti-Nuclear Antibody | 0.5 | | | |
| Antithyroid Peroxidase Anti-TPO | 0.3 | | | |
| Apolipoprotein (A-1) and/or Apolipoprotein (B) | 1.0 | | | |
| ASOT | 0.3 | | | |
| Aspartate Transaminase | 0.2 | P | or | |
| Beta-2 Glycoprotein Antibody | 0.4 | | | |
| Beta-2 Microglobulin | 0.9 | P | or | |
| Beta-Carotene | 0.4 | | | protect from light |
| Beta HCG, Quantitative | 0.3 | P | or | |
| Bile Acids | 0.3 | P | or | |
| Bilirubin, Direct | 0.2 | P | or | |
| | | protect from light | | protect from light |
| Bilirubin, Total | 0.2 | P | or | |
| | | protect from light | | protect from light |
| Bilirubin, Direct and Total | 0.2 | P | or | |
| | | protect from light | | protect from light |
| C-Peptide | 0.5 | P | | |
| CA 19-9 | 0.4 | P | or | |
| CA 125 | 0.4 | P | or | |
| Calcium | 0.2 | P | or | |
| Carbamazepine | 0.2 | P | or | |
| Carcinoembryonic Antigen | 0.5 | P | or | |
| Cardiolipin Antibody | 0.4 | | | |
| Carnitine, Total and Free | 0.4 | | or | |
| Catecholamines | 6.0 | | | CATP collection tube |
| Celiac Disease Screen | 0.7 | | | |
| Ceruloplasmin | 0.3 | P | or | |

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| Individual Test – for multiple test orders, see charts below | Whole Blood Volume (mL) | Tube Top Colour P = preferred tube | | |
|--|-------------------------|---------------------------------------|----|--|
| Chloride | 0.2 | P | or | |
| Cholesterol, Total | 0.2 | P | or | |
| CK | 0.2 | P | or | |
| CKMB | 0.3 | P | or | |
| Clozapine | 0.5 | | | |
| CO2 Content | 0.2 | P | or | |
| Complement C3/Complement C4 | 0.3 | P | or | |
| Complete Blood Count/Reticulocyte Count | 0.5 | | | |
| Cortisol | 0.3 | P | or | |
| Creatinine | 0.2 | P | or | |
| CRP | 0.3 | P | or | |
| CRP, High Sensitivity | 0.5 | P | or | |
| Cyclosporin ** | 0.5 | | | |
| DHEA-S | 0.2 | P | or | |
| Digoxin | 0.2 | P | or | |
| Direct Antiglobulin Test (Coombs) | 0.3 | | | |
| DNA Antibodies | 0.4 | | | |
| Doxepine | 5.0 | | | |
| Electrolytes | 0.2 | P | or | |
| Electrophoresis, Protein | 0.3 | | | |
| Estradiol | 0.3 | P | or | |
| Ethanol | 0.2 | P | or | |
| Ethylene Glycol | 0.6 | P | or | |
| Extractable Nuclear Antigen Antibodies (ENA) | 0.4 | | | |
| Ferritin | 0.3 | P | or | |
| Folate - Serum | 0.5 | | | |
| Follicle Stimulating Hormone | 0.3 | P | or | |
| Fructosamine | 0.3 | P | or | |
| Gamma Glutamyl-transferase | 0.2 | P | or | |
| Gastrin | 0.4 | | | |
| Gentamicin | 0.2 | P | or | |
| Glomerular Basement Membrane Antibody | 0.4 | | | |
| Glucose | 0.2 | P | or | |
| Glucose-6-Phosphate Dehydrogenase | 0.5 | | | |
| Growth Hormone | 0.4 | P | or | |
| 17-Hydroxyprogesterone | 0.5 | | | |
| Haptoglobin | 0.3 | P | or | |
| HDL Cholesterol | 0.2 | P | or | |
| Hemoglobin A1c | 0.3 | | | |
| Hepatitis Screen | 0.8 | | | |
| HIV Serology | 1.5 | | | |
| HIV by PCR | 2.0 | on ice, venous only | | |
| Immunoglobulin E | 0.3 | P | or | |
| Immunoglobulin M | 0.3 | P | or | |
| Immunoglobulins (IgG, IgA, IgM) | 0.6 | P | or | |
| Insulin | 0.5 | | | |



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| Individual Test – for multiple test orders, see charts below | Whole Blood Volume (mL) | Tube Top Colour P = preferred tube | | |
|--|-----------------------------|---------------------------------------|----|--|
| Iron/TIBC | 0.2 | P | or | |
| Isopropanol | 0.3 | P | or | |
| Ketone Screen | 0.2 | P | or | |
| Lactate | 0.3 | on ice | | |
| Lactose Tolerance | 0.2 | P | or | |
| LD | 0.2 | P | or | |
| LDL Cholesterol | 0.3 | P | or | |
| Lipase | 0.2 | P | or | |
| Lipoprotein (a) | 0.5 | P | or | |
| Lithium | 0.3 | | | |
| Luteinizing Hormone | 0.3 | P | or | |
| Magnesium | 0.2 | P | or | |
| Metanephrines – Plasma | 2.0 | | | |
| Methanol | 0.3 | P | or | |
| Methotrexate | 0.3 | P | | |
| Mitochondrial Antibody* | 0.3 | | | |
| Neutrophil Cytoplasmic Antibody | 0.7 | | | |
| Nicotine, Quantitative | 6.0 | | | |
| NT-pro BNP | RRL: 0.3 | P | or | |
| | HCTL & Immunochemistry: 0.5 | | | |
| Osmolality | 0.2 | P | or | |
| Parathyroid Hormone | 0.7 | | | |
| Parietal Cell Antibody* | 0.3 | | | |
| Phenobarbital | 0.2 | P | or | |
| Phenytoin | 0.2 | P | or | |
| Phenytoin, Free | 2.0 | P | or | |
| Phosphate | 0.2 | P | or | |
| Potassium | 0.2 | P | or | |
| Prealbumin | 0.3 | | | |
| Primidone | 0.3 | P | or | |
| Progesterone | 0.3 | P | or | |
| Prolactin | 0.3 | P | or | |
| Protein, Total | 0.2 | P | or | |
| PSA | 0.3 | P | | |
| PSA, Free | 0.3 | P | | |
| Pseudocholinesterase | 0.3 | P | or | |
| Renin | 0.7 | on ice | | |
| Reticulin Antibody* | 0.3 | | | |
| Reticulocyte Count | 0.5 | | | |
| Rheumatoid Factor, Quantitative | 0.3 | P | or | |
| Rubella Antibodies, Acute (IgG, IgM) | 0.8 | P | or | |
| Salicylate | 0.2 | | | |
| Sex Hormone Binding Globulin | 0.3 | | | |
| Sirolimus ** | 0.5 | | | |
| Smooth Muscle Antibody* | 0.3 | | | |
| Sodium | 0.2 | P | or | |
| T3, Free | 0.3 | P | or | |

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| Individual Test – for multiple test orders, see charts below | Whole Blood Volume (mL) | Tube Top Colour P = preferred tube | | |
|--|-------------------------|---------------------------------------|----|--|
| T3, Total | 0.3 | P | or | |
| T4, Free | 0.3 | P | or | |
| Tacrolimus ** | 0.5 | | | |
| Testosterone, Total | 0.3 | P | or | |
| Theophylline | 0.2 | P | or | |
| Thiocyanate | 6.5 | P | or | |
| Thiopental | 3.5 | | | |
| Thyroglobulin (includes Anti-TG) | 0.8 | | | |
| TTG (Celiac Disease Screen) | 0.7 | | | |
| TTG IgG | 0.4 | | | |
| Tobramycin | 0.2 | P | or | |
| Total Protein | 0.2 | P | or | |
| Transferrin | 0.3 | P | or | |
| Tricyclic Screen | 0.3 | | | |
| Triglycerides | 0.2 | P | or | |
| Troponin T | 0.3 | P | or | |
| TSH | 0.3 | P | or | |
| Urate | 0.2 | P | or | |
| Urea | 0.2 | P | or | |
| Valproate | 0.2 | P | or | |
| Vancomycin | 0.2 | P | or | |
| Vitamin A *** | 1.0 | | | |
| | | protect from light | | |
| Vitamin B1 | 0.5 | | | |
| | | protect from light | | |
| Vitamin B6 | 0.3 | | | |
| | | protect from light | | |
| Vitamin B12 | 0.3 | P | or | |
| Vitamin D, 1, 25 DiHydroxy | 0.6 | | | |
| Vitamin D, 25 DiHydroxy | 0.6 | | | |
| Vitamin E *** | 1.0 | | | |
| | | protect from light | | |

* If these tests are ordered together, only 0.5 mL of whole blood is required.

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Common Chemistry Test Group

The following tests are performed on Roche Analyzers C601, e601, Modular, and Vitros 350, and may be grouped together in the same collection tube. The preferred microcollection tube type is light green (mint) top PST for all tests. Gold top SST microcollection is also acceptable. Minimum volume is 0.30 mL whole blood for 1-4 tests and 0.1 mL whole blood for each additional test.

| | | | |
|-------------------|--------------|-----------|----------------|
| Albumin | Chloride | HDL | Protein, Total |
| ALP | Cholesterol | Iron | Sodium |
| ALT | CK | LD | TIBC |
| Amylase | CO2 | LDL | Triglycerides |
| AST | Creatinine | Lipase | Urate |
| Bilirubin, Direct | Electrolytes | Magnesium | Urea |
| Bilirubin, Total | GGT | Phosphate | |
| Calcium | Glucose | Potassium | |

Other Test Groups

The following tests may be grouped together in the same collection tube. The preferred microcollection tube type is gold top SST for all tests in a group.

| Test | Whole Blood Volume | Test | Whole Blood Volume |
|---------------------------------------|--------------------|---------------------------------|----------------------|
| Serum Protein Electrophoresis | | Lipid Group | |
| SPE: includes SPE and TP | 0.5 mL | LDL Calc, Chol, Trig, HDL | 0.3 mL |
| HSPE: includes SPE | 0.5 mL | Add ApoA-1 & ApoB | 1.0 mL |
| Total TP, SPE, IgG, IgA & IgM | 1.1 mL | Add Lpa (Lipoprotein little a) | 0.9 mL |
| Hepatitis Group | | Thyroid Marker Group | |
| HAV-Total & HAVAB-M | 0.8 mL | Anti Tg | 2.0 mL for all tests |
| HBsAg, core, Anti HBs | 1.5 mL | Anti TPO | |
| Anti HBs & HAVAB total | 1.5 mL | Thyroglobulin | |
| Hepatitis Screen (HBsAg & AHAVM) | 0.8 mL | TSH, Total T3, Free T3, Free T4 | |
| Positive HBsAg – confirmation | 0.8 mL | | |
| Persistent Hypoglycemia (NICU) | | | |
| Glucose | 0.2 mL | 2.0 mL for all tests | |
| TSH | 0.3 mL | | |
| Free T4 | 0.3 mL | | |
| Cortisol | 0.3 mL | | |
| Growth Hormone | 0.4 mL | | |
| Insulin | 0.5 mL | | |