

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

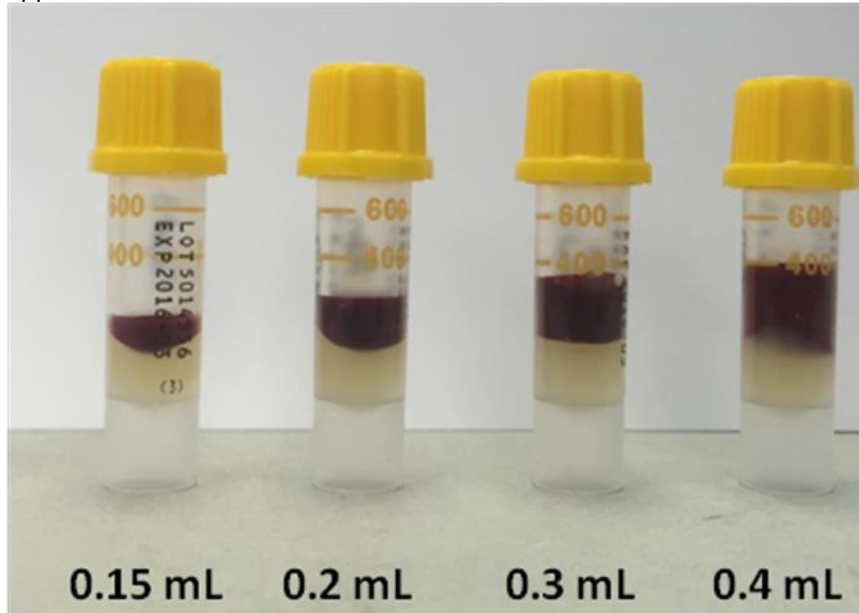
The following table outlines the minimum whole blood volume that must be drawn into a **microcollection tube** (unless otherwise stated) for an individual test on a neonate, pediatric, patient weighing less than 45 kg (100 lb) and patients who are difficult to collect.

**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 <sub>2</sub> 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			
Antithyroid Peroxidase Anti-TPO	0.3	P	or	
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	
Chloride	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		
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	ACH only: 0.1 using capillary collection kit All other sites: 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	

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Individual Test – for multiple test orders, see charts below	Whole Blood Volume (mL)	Tube Top Colour P = preferred tube		
Insulin	0.5			
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			
Nuclear Antibody	0.5	P		
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			

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Individual Test – for multiple test orders, see charts below	Whole Blood Volume (mL)	Tube Top Colour P = preferred tube		
Sodium	0.2	P	or	
T3, Free	0.3	P	or	
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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\*\*\* If these tests are ordered together, only 1.0 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
<b>Serum Protein Electrophoresis</b>		<b>Lipid Group</b>	
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
<b>Hepatitis Group</b>		<b>Thyroid Marker Group</b>	
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		
<b>Persistent Hypoglycemia (NICU)</b>			
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		