



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:

- Neonate
- Pediatric
- Patient weighing less than 45 kg (100 lb)
- Patients who are difficult to collect.

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

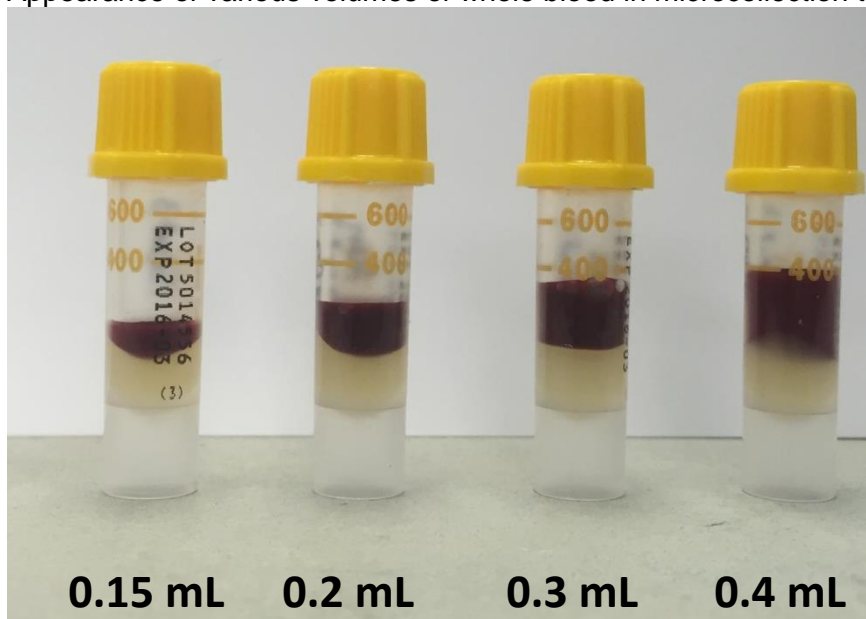


**NOTE: For tests that require serum or plasma, the volumes in the table below are based on a blood hematocrit of 0.60 L/L**

**NOTE: Volumes listed are specific for the instrumentation in the APL Calgary laboratories.**

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			
<b>MINT LIHEP PST</b> Light green (mint) top Lithium Heparin PST tube	<b>GOLD SST</b> Gold top SST tube	<b>LAVENDER EDTA</b> Lavender top K <sub>2</sub> EDTA tube	<b>GREY</b> Grey top Sodium fluoride/Potassium oxalate tube

Standard Tube Types		To Protect Tubes from Light
<b>RED</b> Red top microcollection tube unavailable; use 4 mL red top tube.	<b>GREEN NAHEP</b> 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
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)	0.5		
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 protect from light	or protect from light
Bilirubin, Total	0.2	P protect from light	or protect from light
Bilirubin, Direct and Total	0.2	P protect from light	or 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	on ice	
Celiac Disease Screen	0.7		
Ceruloplasmin	0.3	P	or
Chloride	0.2	P	or



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	
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 B Screen (HBsAg – draw before vaccination)	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			
Iron/TIBC	0.2	P	or	



Individual Test – for multiple test orders, see charts below	Whole Blood Volume (mL)	Tube Top Colour P = preferred tube	
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 & Chemistry: 0.5		
Osmolality	0.2	P	or
Parathyroid Hormone	0.7	P	or
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		
Reticulin Antibody*	0.3		
Reticulocyte Count	0.5		
Rheumatoid Factor, Quantitative	0.3	P	or
Rubella Antibodies, Acute (IgG, IgM)	0.8		
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
T3, Total	0.3	P	or
T4, Free	0.3	P	or
Tacrolimus **	0.5		
Testosterone, Total	0.3	P	or



Individual Test – for multiple test orders, see charts below	Whole Blood Volume (mL)	Tube Top Colour P = preferred tube	
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
Type and Screen - Neonate	2 x 0.5		
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		
Vitamin B6	0.3		
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**

Refer to Connect Care labels for number of tubes to be collected as multiple tubes may be required.

The following tests are performed on Roche and Vitros analyzers and may be grouped together in the same type of collection tube.

The preferred microcollection tube type is MINT LIHEP PST for all tests.

GOLD SST microcollection is also acceptable.

Minimum volume is 0.30 mL whole blood per collected tube 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**

Refer to Connect Care labels for number of tubes to be collected as multiple tubes may be required.

The following tests may be grouped together in the same type of collection tube.

The preferred microcollection tube type is GOLD 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>Persistent Hypoglycemia (NICU)</b>		<b>Thyroid Marker Group</b>	
Glucose	0.2 mL	Anti Tg	2.0 mL for all tests
TSH	0.3 mL	Anti TPO	
Free T4	0.3 mL	Thyroglobulin	
Cortisol	0.3 mL	TSH, Total T3, Free T3, Free T4	
Growth Hormone	0.4 mL		
Insulin	0.5 mL		