

Clinical Guideline

Minimum Blood Draw Volumes

Children's Hospital of Richmond at VCU

- ❖ Minimum volume assumes hematocrit ≤ 50%.
- ❖ Additional volume may be needed if HCT exceeds 50%.
- ❖ Acceptable Tubes: The order the tubes are listed does not indicate lab preference.
- ❖ Use of a microtainer tube is acceptable if the required volume of the test is less than the fill volume of the microtainer.

For any test not listed, please contact the Path Lab at (804)-828-7284 for further instruction.

Test	Volume									
17-Hydroxy Pregnenolone ¹	0.50 mL		YES	YES			YES			
5' Nucleotidase ²	0.75 mL	YES	YES							
Acetaminophen	0.50 mL	YES	YES							
ACTH ³	0.50 mL			YES						
Acylcarnitine, Plasma, Quantitative	0.50 mL					YES				
Alanine Aminotransaminase (ALT)	0.25 mL	YES	YES							
Albumin	0.50 mL	YES	YES							
Aldolase ⁴	0.75 mL	YES	YES							
Aldosterone	2.00 mL		YES	YES			YES			
Alkaline Phosphatase	0.50 mL	YES	YES							
Allergen, IGE ⁵	Call		YES							
Alpha-1-Antitrypsin	0.25 mL	YES	YES							
Amikacin ⁶	0.30 mL	YES	YES							
Amino Acid, Plasma	0.30 mL	YES		YES		YES				
Amiodarone ⁷	1.00 mL					YES	YES			
Ammonia ⁸	0.50 mL	YES		YES		YES				
Amylase	0.50 mL	YES	YES							
ANA (Anti-Nuclear Antibody) by IFA	0.50 mL		YES							
Androstenedione	1.00 mL						YES			
Anti-Neutrophilic Cytoplasmic Antibodies	1.00 mL		YES							
Anti-streptolysin O	1.00 mL		YES							
Apolipoprotein A-1 ⁹	4.00 mL		YES							
Apolipoprotein B ¹⁰	4.00 mL						YES			

¹ Deliver to the lab in 1 hour.

² Deliver to the lab within 1 hour.

³ Draw between 7 AM – 10 AM. Collect on ice. Deliver on ice to the lab within 15 minutes.

⁴ Deliver to the lab within 10 minutes of collection

⁵ Required volume based on allergen ordered. Please call Path Lab for further instruction.

⁶ Trough just prior to next dose. Peak 0.5 – 1 hour after dose.

⁷ Deliver to lab within 1 hour of collection.

⁸ Deliver to the lab on ice within 1 hour. The preferred sample for ammonia determination is venous blood with minimal stasis.

⁹ Patient must be fasting 12 to 14 hours prior to blood collection.

¹⁰ Patient must be fasting 12 to 14 hours prior to blood collection.

Minimum Blood Draw Volumes

Test	Volume									
AST (Aspartate Aminotransaminase)	0.50 mL	YES	YES							
Bartonella Antibody Panel	1.00 mL		YES							
Beta-2 Glycoprotein 1 Antibodies (IGG & IGM)	1.00 mL		YES							
Beta-2 Glycoprotein Antibody (IGA, IGA, or IGM)	1.00 mL		YES							
Beta-2 Microglobulin	0.60 mL		YES							
Bile Acids	0.40 mL	YES	YES	YES		YES	YES			
Bilirubin (Conjugated or Total) ¹¹	0.50 mL	YES	YES							
BUN (Blood Urea Nitrogen)	0.50 mL	YES	YES							
CA 125	0.50 mL	YES	YES							
Calcitriol	0.60 mL	YES	YES							
Calcium	0.25 mL	YES	YES							
Calcium, Ionized, WB ¹²	0.13 mL					YES		YES		
Carbamazepine	0.25 mL	YES	YES							
Carbohydrate Antigen 19-9	1.40 mL		YES							
Cardiolipin Antibody (IgA, IgG, or IgM) Quantitative	1.00 mL		YES							
Carnitine, Free and Total	0.50 mL		YES			YES	YES			
Carotene, Beta ¹³	0.80 mL		YES				YES			
Catecholamines (supine or upright) ¹⁴	4.00 mL			YES						
CBC (with / without diff) ¹⁵	0.25 mL			YES						
CEA (Carcinoembryonic Antigen)	0.30 mL	YES	YES							
Ceruloplasmin	0.40 mL		YES							
Chloride	0.50 mL	YES	YES							
Cholesterol	0.50 mL	YES	YES							
Cholinesterase, RBC	0.50 mL			YES						
Cholinesterase, Serum	0.50 mL	YES	YES				YES			
CK (Creatine Kinase)	0.25 mL	YES	YES							
CKMB	0.50 mL	YES	YES							
Clozapine ¹⁶	0.60 mL			YES		YES	YES			
CO2 Total	0.50 mL	YES	YES			YES				
Complement C2	0.25 mL		YES							
Complement C3 ¹⁷	0.50 mL	YES	YES							
Complement C4 ¹⁸	0.50 mL	YES	YES							

¹¹ Protect from light.

¹² Blood gas syringe.

¹³ Protect from light. Deliver to lab in 10 minutes.

¹⁴ If ordered supine, patient should remain supine in quiet surroundings for at least 30 minutes before collection. Collect required amount of whole blood in TWO Lavender-top (EDTA) tubes. Deliver to the lab within 10 minutes of collection.

¹⁵ Deliver to the lab within 4 hours of collection.

¹⁶ Deliver to the lab within 1 hour.

¹⁷ Deliver to the lab within 1 hour.

¹⁸ Deliver to the lab within 1 hour.

Minimum Blood Draw Volumes

Test	Volume									
Complement, Total	1.00 mL		YES				YES			
Cortisol	0.30 mL	YES	YES							
Coxsackie Virus Group A (IGG, IGM)	1.00 mL		YES							
Coxsackie Virus Group B Antibodies	1.00 mL		YES							
C-Peptide	0.60 mL		YES							
Creatinine	0.25 mL	YES	YES							
C-Reactive Protein	0.30 mL	YES	YES							
CRP, High Sensitivity (Cardiac) ¹⁹	1.00 mL	YES	YES							
Cyclic Citrullinated Peptide Antibody, IGG	0.60 mL		YES							
Cyclosporine ²⁰	0.50 mL			YES						
DHEA	1.00 mL		YES							
DHEA-Sulfate	1.40 mL		YES							
Digoxin	0.25 mL	YES	YES							
Direct Antiglobulin Test (Coombs)	0.50 mL			YES	YES					
DNA Antibody, Double-Stranded	1.00 mL		YES							
Endomysial Antibody, IGA	0.60 mL		YES							
Estradiol	0.50 mL	YES	YES							
Estradiol, Free ²¹	2.00 mL		YES				YES			
Estradiol, LC/MS ²²	3.00 mL		YES							
Ethanol	0.25 mL	YES	YES						YES	
Ethosuximide ²³	1.00 mL			YES		YES	YES			
Ethylene Glycol	1.00 mL		YES						YES	
Factor 8 Activity ²⁴	1.70 mL									YES
Factor 9 Activity ²⁵	1.70 mL									YES
Ferritin	0.50 mL	YES	YES							
Folate (Folic Acid)	0.50 mL	YES	YES							
Folate, RBC ²⁶	Footnote			YES						
Follicle Stimulating Hormone	0.50 mL		YES							
Fructosamine ²⁷	0.40 mL		YES							
Gamma Glutamyl Transferase	0.25 mL	YES	YES							
Gastrin	0.60 mL		YES				YES			

¹⁹ Deliver to the lab within 15 minutes of collection.

²⁰ Collect just prior to the next dose.

²¹ Deliver to the lab within 10 minutes of collection.

²² Deliver to the lab within 10 minutes of collection.

²³ Deliver to the lab within 1 hour.

²⁴ Please refer to Collection Information on the Pathology Labs [Factor 8 Activity](#) Test Information site for collection information. Please call the hematology laboratory (804) 628-4037 regarding number of tubes required if multiple factor testing is ordered.

²⁵ Please refer to Collection Information on the Pathology Labs [Factor 9 Activity](#) Test Information site for collection information. Please call the hematology laboratory (804) 628-4037 regarding number of tubes required if multiple factor testing is ordered.

²⁶ Two separate EDTA tubes are required, 2 mL in each tube.

²⁷ Deliver to the lab within 15 minutes of collection.

Minimum Blood Draw Volumes

Test	Volume									
Gentamicin ²⁸	0.25 mL	YES	YES							
Glomerular Basement Membrane Antibody, IgG	0.60 mL		YES							
Glucose	0.50 mL	YES	YES						YES	
Glucose (WB) ²⁹	0.13 mL					YES		YES		
Glucose 6 Phosphate Dehydrogenase	0.30 mL			YES						
Haptoglobin	0.50 mL	YES	YES							
HCG Serum, Quantitative	0.50 mL	YES	YES							
HDL (HDL Cholesterol)	0.25 mL	YES	YES							
Hemoglobin A1C	1.00 mL			YES						
Hepatic Function Panel	0.50 mL	YES	YES							
Hepatitis A Antibody, IGG ³⁰	1.60 mL		YES							
Hepatitis A Antibody, IGM ³¹	1.60 mL	YES	YES							
Hepatitis B Core Antibody, IGM ³²	2.00 mL	YES	YES							
Hepatitis B Core Antibody, Total ³³	2.00 mL	YES	YES							
Hepatitis B Surface Antibody ³⁴	2.00 mL	YES	YES							
Hepatitis B Surface Antigen ³⁵	2.00 mL	YES	YES							
Hepatitis B Virus Genotype	1.20 mL			YES						
Hepatitis BE Antibody	0.40 mL		YES							
Hepatitis BE Antigen	0.40 mL		YES							
Hepatitis C Antibody ³⁶	2.00 mL	YES	YES							
Hepatitis D Antibody ³⁷	0.40 mL	YES	YES							
Hepatitis D Virus, Quantitative PCR	1.00 mL		YES							
Histoplasma Antigen	0.75 mL		YES							
Histoplasma Capsulatum Antibodies ³⁸	2.00 mL		YES							
Human Herpes Virus (HHV-6) Antibodies, IGG	1.00 mL		YES							
Human Herpes Virus (HHV-6) Antibodies, IGM	1.00 mL		YES							
Human Herpes Virus (HHV-6) PCR Qualitative	1.00 mL			YES						
Human Herpes Virus (HHV-6) PCR Quantitative	2.00 mL			YES						
Human Herpes Virus (HHV-8) PCR Quantitative	1.00 mL			YES						
HIV Phenosense	10.00 mL			YES						
HIV RNA, Quantitative	1.20 mL				YES					

²⁸ Trough just prior to next dose. Peak 0.5 – 1 hour after dose.

²⁹ Blood gas syringe or heparin capillary tube.

³⁰ If initial result is positive, test must be repeated before a positive result is released.

³¹ If initial result is positive, test must be repeated before a positive result is released.

³² If initial result is positive, test must be repeated before a positive result is released.

³³ If initial result is positive, test must be repeated before a positive result is released.

³⁴ If initial result is positive, test must be repeated before a positive result is released.

³⁵ If initial result is positive, test must be repeated before a positive result is released.

³⁶ If initial result is positive, test must be repeated before a positive result is released.

³⁷ Deliver to the lab within 15 minutes of collection.

³⁸ Collect at least 2 mL whole blood in SST (gold) tube.

Minimum Blood Draw Volumes

Test	Volume									
HIV-1 Genosure Archive	8.00 mL			YES						
HIV-1 Genosure Genotyping	10.00 mL			YES						
HIV-1 Genosure Integrase	10.00 mL			YES						
HIV-1/2 Antigen-Antibody ³⁹	6.00 mL		YES							
HIV-2/HIV-2 RNA, Qualitative ⁴⁰	2.00 mL			YES						
Human Growth Hormone	0.40 mL		YES							
HSV 1 and 2 Antibodies, IGG	0.75 mL		YES							
HSV 1,2 DNA Qualitative (Serum)	1.50 mL		YES							
Immunoglobulins (IgA, IgE, or IgM) ⁴¹	0.30 mL	YES	YES							
Invitae Inborn Errors of Immunity and Cytopenias Panel	2.00 mL			YES						
Insulin, Free and Total	3.00 mL		YES				YES			
Insulin, Total	0.60 mL		YES							
Iron	0.25 mL	YES	YES							
Isopropanol	0.25 mL		YES						YES	
Ketones, Qualitative	0.50 mL	YES	YES				YES			
Lacosamide	0.60 mL			YES		YES	YES			
Lactate	0.25 mL								YES	
Lactate Dehydrogenase	0.25 mL	YES	YES							
Lactate, WB ⁴²	0.13 mL					YES		YES		
Lamotrigine ⁴³	1.00 mL									
Levetiracetam	0.60 mL			YES			YES			
Lipase	0.25 mL	YES	YES							
Lipid Panel	0.75 mL	YES	YES							
Lipoprotein (A) ⁴⁴	0.40 mL						YES			
Lithium	0.25 mL			YES		YES	YES			
Luteinizing Hormone, Highly Sensitive ⁴⁵	0.30 mL		YES							
Lymphocyte Enumeration Panel	0.50 mL			YES						
Magnesium	0.25 mL	YES	YES							
Magnesium, Ionized ⁴⁶	0.13 mL					YES		YES		
Metabolic Panel, Basic (8)	0.25 mL	YES	YES							
Metabolic Panel, Comprehensive (14)	0.50 mL	YES	YES							

³⁹ 3 mL whole blood in each tube; 2 tubes required. If initial result is positive, test must be repeated in house and then sent out for confirmation before a positive result is released.

⁴⁰ Collect at least 2 mL of whole blood in a lavender top EDTA tube.

⁴¹ Listed volume required for each immunoglobulin ordered.

⁴² Blood gas syringe or heparin capillary tube.

⁴³ Collect just prior to next dose.

⁴⁴ Deliver to the lab within 15 minutes of collection.

⁴⁵ Deliver to the lab within 10 minutes of collection.

⁴⁶ Blood gas syringe or heparin capillary tube.

Minimum Blood Draw Volumes

Test	Volume									
Metanephrines, Plasma ⁴⁷	1.40 mL			YES						
Methanol	0.25 mL		YES						YES	
Methotrexate	1.00 mL	YES	YES			YES	YES			
Mitochondrial Antibody by IFA	0.60 mL		YES							
Neutrophil Oxidative Burst Assay ⁴⁸	1.00 mL					YES				
Nicotine and Metabolite, Quantitative ⁴⁹	1.00 mL			YES		YES				
N-Terminal Pro BNP	1.00 mL	YES	YES							
NPM1 Dx Mutation Quant Blood	3.00 mL			YES						
Osmolality	0.50 mL	YES	YES			YES	YES			
Oxcarbazepine	0.60 mL						YES			
Parietal Cell Antibody by IFA	0.60 mL		YES							
Parvovirus B19 Antibodies IGG and IGM	1.00 mL		YES							
Parvovirus B19 DNA PCR	1.00 mL			YES						
Parvovirus B19 Quantitative	1.00 mL			YES						
Pentobarbital ID Confirmation	1.00 mL			YES			YES			
Phenobarbital	0.80 mL	YES	YES							
Phenytoin (free or total)	0.50 mL	YES	YES							
Phosphorus	0.25 mL	YES	YES							
Platelet function assay ⁵⁰	5.40 mL									YES
Potassium	0.25 mL	YES	YES							
Potassium, WB ⁵¹	0.13 mL					YES		YES		
Prealbumin	0.25 mL		YES							
Primidone	0.60 mL					YES	YES			
Procalcitonin	0.35 mL	YES	YES							
Progesterone	0.25 mL	YES	YES							
Prolactin	0.25 mL	YES	YES							
Protein, Total	0.25 mL	YES	YES							
PTH (Parathyroid Hormone) Intact	0.75 mL			YES						

⁴⁷ The patient should be in a fully recumbent position (lying down) for at least 20 minutes before and during sample collection. Collect in a chilled lavender top tube and deliver to the lab within 10 minutes of collection.

⁴⁸ **Collect control specimen (1 mL) from a healthy individual unrelated to patient at approximately the same time under similar conditions to the patient. Collect Monday – Friday before 12 PM. Sample must be shipped to the reference laboratory on the day of collection. Sample must be received in the Main Lab (CSC 6) Monday – Friday by 2 PM for same-day shipment to reference lab.**

⁴⁹ Transport at room temperature.

⁵⁰ Hand-deliver the specimen to lab immediately after collection or within 1 hour of collection. Do not send to lab via pneumatic tube system. **Appointment is required. Please contact the Special Coagulation Laboratory at (804)-628-5738 to schedule an appointment for this test: Monday – Friday 8:30 AM to 4:00 PM.**

⁵¹ Blood gas syringe or heparin capillary tube.

Minimum Blood Draw Volumes

Test	Volume									
Quantiferon TB Gold Plus ⁵²	Footnote									
Rasburicase ⁵³	0.50 mL	YES	YES							
Renin ⁵⁴	1.60 mL			YES						
Reticulocyte Count	0.50 mL			YES						
Rheumatoid Factor	0.25 mL		YES							
Rocky Mountain Spotted Fever (IgG or IgM)	0.40 mL		YES							
Rubella Antibodies, (IgG or IgM) ⁵⁵	0.40 mL		YES							
Rubeola Antibody, (IgG)	0.40 mL		YES							
Salicylate	0.25 mL	YES	YES							
Sex Hormone Binding Globulin	1.40 mL		YES							
Sickle Cell Screen ⁵⁶	0.25 mL			YES						
Sirolimus ⁵⁷	0.25 mL			YES						
Sjogrens Syndrome-A Extractable Nuclear Antibody	1.00 mL		YES							
Sjogrens Syndrome-B Extractable Nuclear Antibody	1.00 mL		YES							
Sodium	0.13 mL	YES	YES							
Sodium, WB ⁵⁸	0.25 mL					YES		YES		
T3	0.40 mL	YES	YES							
T3, Free	1.40 mL		YES							
T4	0.40 mL	YES	YES							
T4, Free	0.40 mL	YES	YES							
Tacrolimus ⁵⁹	0.25 mL			YES						
Theophylline	0.25 mL	YES	YES							
Thiocyanate ⁶⁰	0.25 mL		YES				YES			
Thyroglobulin Antibody	0.60 mL		YES							
Thyroid Peroxidase Antibody	1.40 mL		YES							
Tissue Transglutaminase IgA	1.00 mL		YES							
Tissue Transglutaminase IgG	1.00 mL		YES							
Tobramycin ⁶¹	0.25 mL	YES	YES							

⁵² Obtain the 4-tube Qiagen QFT-Plus Dispenser Pack from central supply. Workday Number: 441342; Part Number 622433. Deliver to the lab within 1 hour. Fill each tube with 1 mL, taking caution not to overfill or underfill the tube. **Color printed on the label must match the tube color.** After filling the tubes, shake firmly but not vigorously, 10 times. **Do NOT use the traditional gentle invert technique for this test.** Tubes should be coated with blood after shaking. Frothing of blood is OK. Put tubes back into original plastic bag and Ziplock the bag. Place this bag into a biohazard specimen bag for transport. Return tubes within 16 hours of collection at room temperature. Tubes can be sent to Lab through the Pneumatic tube system. **Can be collected at any time during the week.** Please contact the Path Lab at (804)-828-7284 with any questions.

⁵³ Collect in pre-chilled tube, deliver to the lab on ice within 10 minutes.

⁵⁴ Deliver to lab within 10 minutes of collection. Keep tube at room temperature.

⁵⁵ Listed volume required for each antibody ordered.

⁵⁶ Deliver to the lab within 4 hours of collection.

⁵⁷ Collect just prior to next dose

⁵⁸ Blood gas syringe or heparin capillary tube.

⁵⁹ Collect just prior to next dose.

⁶⁰ Deliver to the lab within 2 hours of collection.

⁶¹ Trough just prior to next dose. Peak 0.5 - 1 hour after dose.

Minimum Blood Draw Volumes

Test	Volume									
Transferrin	0.25 mL	YES	YES							
Tricyclic Antidepressants	0.50 mL	YES				YES				
Triglycerides	0.25 mL	YES	YES							
Troponin I	1.20 mL	YES	YES							
TSH (Thyroid-stimulating Hormone)	0.60 mL	YES	YES							
Type & Screen / Type Confirmation, Newborn	0.75 mL			YES	YES					
Type & Screen / Type Confirmation	0.75 mL			YES	YES					
Uric Acid	0.25 mL	YES	YES							
Valproic Acid, Free	2.00 mL					YES				
Valproic Acid, Total	0.25 mL	YES	YES							
Vancomycin ⁶²	0.25 mL	YES	YES							
Vitamin A (Retinol)	0.80 mL		YES							
Vitamin B1 (Thiamine)	0.50 mL			YES						
Vitamin B12 - Core TAP	0.50 mL	YES	YES							
Vitamin B2 (Riboflavin) ⁶³	0.25 mL			YES						
Vitamin B3 (Niacin)	2.00 mL			YES		YES				
Vitamin B6 ⁶⁴	0.50 mL			YES						
Vitamin B7 ⁶⁵	1.00 mL					YES				
Vitamin C (Ascorbic Acid) ⁶⁶	1.00 mL	YES								
Vitamin D 25 Hydroxy	0.50 mL		YES			YES				
Vitamin K1 ⁶⁷	1.00 mL	YES	YES	YES		YES				
von Willebrand Factor Activity ⁶⁸	1.70 mL									YES
von Willebrand Factor Antigen ⁶⁹	1.70 mL									YES
Zonisamide	0.60 mL			YES		YES				

⁶² Collect trough just prior to next dose.

⁶³ Protect from light.

⁶⁴ Protect from light.

⁶⁵ Protect from light.

⁶⁶ Protect from light.

⁶⁷ Protect from light.

⁶⁸ Please refer to Collection Information on the Pathology Labs [von Willebrand Factor Activity](#) Test Information site for collection information. Please call the hematology laboratory (804) 628-4037 regarding number of tubes required if multiple factor testing is ordered.

⁶⁹ Please refer to Collection Information on the Pathology Labs [von Willebrand Factor Antigen](#) Test Information site for collection information. Please call the hematology laboratory (804) 628-4037 regarding number of tubes required if multiple factor testing is ordered.

Executive Summary

Minimum Blood Draw Volumes

Children's Hospital of Richmond at VCU

Children's Hospital of Richmond at VCU: Pediatric Practice Committee

Pediatric Nursing/Rapid Response Team Owner: Craig Register, RN, MSN, CCRN

Medical Technologist Manager: Nikki Williams, MT, ASCP

Approved (December 2025)

Chair of Pediatric Practice Committee:

Lisa Shaver, MS, RNC-NIC

CHoR Clinical Guidelines Committee:

Jonathan Silverman, MD, MPH

Ashlie Tseng, MD, MEd

CHoR Quality Council:

Matt Schefft, DO, MSHA

Elizabeth Peterson, RN, MPH, CPHQ

References

Department of Pathology – Laboratory Services Catalog: <https://pathcat.vcu.edu/>

Citation

Title: **Minimum Blood Draw Volumes**

Authors:

Children's Hospital of Richmond at VCU

Craig Register, RN, MSN, CCRN

Nikki Williams, MT, ASCP

Date: **December 2025**

Retrieval website: <https://www.chrichmond.org/health-care-professionals/chor-clinical-guidelines>

Example:

Children's Hospital of Richmond at VCU, Register C, Williams N. Minimum Blood Draw Volumes. Available from: <https://www.chrichmond.org/health-care-professionals/chor-clinical-guidelines>