

# Pediatric Blood Specimens

Often, only a small volume of blood can be drawn from a pediatric patient. For maximum benefit from the limited sample, the specimen is handled individually, with special emphasis on micro techniques and procedures designed to conserve the specimen. Duplicate determinations (the standard procedure for assuring accurate results) may not be done if the sample is not large enough to perform all the requested tests.

This section describes special procedures for specimen collection from infants and children, and lists the **minimum** sample volume required for individual tests or test combinations. Please consult the tables before collecting the blood specimen.

All containers of patient specimens must be protected by plastic biohazard or similar bags during transportation to the laboratory.

## I. OBTAINING BLOOD SPECIMENS FROM INFANTS

1. Warm the patient's foot with a warming device or towel (do not exceed 42 degrees C) for 10 minutes before obtaining sample.
2. Assemble the appropriate tubes for blood collection. If a pediatric blood collection container ("bullet") does not have the flo-top collector attachment, detach one from a bullet that does.
3. Choose the appropriate lancet for heelstick. It is important to prick only the lateral aspect of the heel and never the medial aspect of the heel.
4. Cleanse the area thoroughly with alcohol and dry with sterile gauze before pricking. The depth of the cut is no more than 2.4 mm. Repeated lancing of the same area may result in macerations, skin breakdown, and increase the chance for infection. Deep puncture or lancing the curvature of the heel may result in osteochondritis. Lancing the medial aspect of the heel may result in puncture of the medial plantar artery.
5. Hold foot firmly to produce a good blood flow. Wipe off the initial drop of blood with sterile gauze to remove alcohol which may dilute specimen or hemolyze the RBC's.
6. Touch tip of flo-top collector to the underside of drop; do not touch middle of drop. Blood should flow freely through the flo-top collector and down the tube wall. Allow blood to flow by gravity through the flo-top collector to the required volume. Avoid excessive milking of the puncture site, since this may cause hemolysis and contamination with tissue fluids.
7. For chemistry specimens, scraping too hard with the flo-top collector against the heel during collection may cause hemolysis.
8. For hematology specimens, tap the micro collection container gently after collection of each drop of blood to mix it with the anticoagulant and prevent clotting.
9. After collection is complete, remove flo-top collector and discard. Replace the lid and gently invert 8-10 times to ensure proper mixing of the sample.
10. Apply pressure on the wound using a sterile gauze pad until bleeding stops. Use a small adhesive dressing only if it is needed.
11. Place the labeled tube in a biohazard or similar specimen bag for delivery to the laboratory. The requisition must be placed in the **outside** pocket. Follow the procedures under the Delivering Specimens section of this manual.
12. Capillary collectors are not the same as Micro-hematocrit tubes. Capillary collectors are available in a lavender container (EDTA) for Hematology tests and amber or green containers for Clinical Chemistry procedures.

## II. MINIMUM SPECIMEN REQUIREMENTS FOR PEDIATRIC TESTS

The preferred pediatric collection container for chemistry testing is the amber SST bullet (500 µL).

When collecting blood specimens (venous, capillary, arterial) for chemistry testing from newborns (hematocrit greater than 50%), we recommend the use of a green top bullet with heparin (400 µL). This tube type is our smallest volume blood collection tube, and will facilitate a maximum yield of plasma from whole

blood. In addition, the minimum whole blood requirements listed below are based on an average hematocrit value of 50%. The resulting volume of plasma after centrifugation and separation from cells should meet the minimum amount of plasma required to do one analysis of the specimen.

Repeat analysis would require collection of additional blood samples.

ASSAY	MIN. VOL SERUM/PLASMA	TUBE
Acetaminophen	120 µL	1 SST Amber bullet (full 500 µL)
Albumin	120 µL	1 SST Amber bullet (full 500 µL)
Anti HCV	200 µL	2 SST Amber bullets (full 500 µL)
Bilirubin (Total and/or Direct)	120 µL	1 SST Amber bullet (full 500 µL)
Blood Urea Nitrogen	120 µL	1 SST Amber bullet (full 500 µL)
BNP	200 µL	2 Lavender EDTA bullets (full 500 µL)
C Reactive Protein High Sensitivity	300 µL	2 SST Amber bullets (full 500 µL)
Calcium	120 µL	1 SST Amber bullet (full 500 µL)
Carbamezepine	125 µL	1 SST Amber bullet (full 500 µL)
Carbon Dioxide	120 µL	1 SST Amber bullet (full 500 µL)
CD4/CD8 by Flow Cytometry	200 µL	1 Lavender EDTA bullet
Chloride	120 µL	1 SST Amber bullet (full 500 µL)
Cholesterol	120 µL	1 SST Amber bullet (full 500 µL)
Complement C3	300 µL	2 SST Amber bullets (full 500 µL)
Complement C4	300 µL	2 SST Amber bullets (full 500 µL)
Copper	600 µL	1/2 Royal Blue top (not a "bullet")
Cortisol	130 µL	1 SST Amber bullet (full 500 µL)
Creatinine	120 µL	1 SST Amber bullet (full 500 µL)
Digoxin	160 µL	1 SST Amber bullet (full 500 µL)
Ferritin	140 µL	1 SST Amber bullet (full 500 µL)
FSH	300 µL	Cannot use pediatric bullets for this
FT4	140 µL	1 SST Amber bullet (full 500 µL)
G-6PD	150 µL + CBC	1 Lavender EDTA bullet (full 500 µL)
Gentamicin	125 µL	1 SST Amber bullet (full 500 µL)
Glucose	120 µL	1 SST Amber bullet (full 500 µL)
HA1c	100 µL	1 Lavender EDTA bullet
Haptoglobin	300 µL	2 SST Amber bullets (full 500 µL)
HCG	160 µL	1 SST Amber bullet (full 500 µL)
Hep A IgM	200 µL	2 SST Amber bullets (full 500 µL)
Hep A Total Antibody	200 µL	2 SST Amber bullets (full 500 µL)

Hep B Core IgM	200 µL	2 SST Amber bullets (full 500 µL)
Hep B Core Total Antibody	300 µL	2 SST Amber bullets (full 500 µL)
Hep B Surf Antibody	300 µL	2 SST Amber bullets (full 500 µL)
Hep B Surf Antigen	300 µL	2 SST Amber bullets (full 500 µL)
Hepatitis Panel Acute (HEPP)	800 µL	4 SST Amber bullets (full 500 µL)
Hepatitis Panel Source (HEPS)	1.0 mL	5 SST Amber bullets (full 500 µL)
HGBV-Hemoglobinopathy Variants	500 µL	1 Lavender EDTA bullet (full 500 µL)
Immunoglobulin A (IgA)	300 µL	2 SST Amber bullets (full 500 µL)
Immunoglobulin G (IgG)	300 µL	2 SST Amber bullets (full 500 µL)
Immunoglobulin M (IgM)	300 µL	2 SST Amber bullets (full 500 µL)
Insulin	125 µL	1 SST Amber bullet (full 500 µL)
Lead	120 µL	1 Lavender EDTA bullet
Magnesium	120 µL	1 SST Amber bullet (full 500 µL)
METB	120 µL	1 SST Amber bullet (full 500 µL)
METC	200 µL	2 SST Amber bullets (full 500 µL)
Phenobarbital	120 µL	1 SST Amber bullet (full 500 µL)
Phenytoin	120 µL	1 SST Amber bullet (full 500 µL)
Phosphorous	120 µL	1 SST Amber bullet (full 500 µL)
Potassium	120 µL	1 SST Amber bullet (full 500 µL)
Rheumatoid Factor, Quantitative	300 µL	2 SST Amber bullets (full 500 µL)
Salicylate	120 µL	1 SST Amber bullet (full 500 µL)
Sodium	120 µL	1 SST Amber bullet (full 500 µL)
Theophylline	130 µL	1 SST Amber bullet (full 500 µL)
Tobramycin	160 µL	1 SST Amber bullet (full 500 µL)
TSH	350 µL	3 SST Amber bullets (full 500 µL)
Valproic Acid	140 µL	1 SST Amber bullet (full 500 µL)
Vancomycin	150 µL	1 SST Amber bullet (full 500 µL)
Vit B12	300 µL	Cannot use pediatric bullets for this
Zinc	600 µL	1/2 Royal Blue top (not a "bullet")

Note: call Lab for minimum requirements on combination orders