

LABORATORY COLLECTION MANUAL	HEMATOLOGY SPECIMEN COLLECTION, PREPARATION, AND STORAGE
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I. Summary:

Hematology testing must be performed on whole blood. As soon as a blood specimen is withdrawn from a patient, it is mixed with an anticoagulant to prevent coagulation. **SPECIMENS TO BE PROCESSED FOR HEMATOLOGY MUST BE RUN WITHIN 24 HOURS, IF KEPT AT ROOM TEMPERATURE AND 36 HOURS, IF KEPT AT 4° CENTIGRADE.** No special preparation of the patient is necessary. For erythrocyte sedimentation rate, specimens must be run within four hours, if kept at room temperature and 12 hours if kept refrigerated.

II. Principle:

Our hematology department uses the K₂ EDTA anticoagulant 3 ml tubes. (LAVENDER TOP TUBES) for adults and pediatric patients and if necessary the pediatric EDTA (K₂) blood collection tube for micro hematology specimens. EDTA (K₂ EDTA) is di-potassium ethylenediamine tetraacetate. The EDTA process forms in insoluble calcium salt that prevents coagulation. EDTA is the most commonly used anticoagulant in hematology for tests such as the CBCD (complete blood count with auto diff or manual diff), CBCWOD (Complete blood count without a differential) platelet count, ESR (Erythrocyte sedimentation rate), and reticulocyte count. K₂ EDTA anticoagulant 4 ml tubes and 5 ml tubes can be used on the Sysmex instruments in both the automated and manual modes. EDTA 6-ml tubes can be used in the manual mode on the Sysmex instruments, but this is not preferred.

III. Specimen Acceptance:

Specimens must meet the following criteria to be considered acceptable in hematology:

- A. Correct Specimen container (LAVENDER TOP K₂ EDTA anticoagulant tubes).
- B. Correct specimen volume:
 1. All EDTA tubes are optimized at 1.5 mg. EDTA/ ml of whole blood. The minimum amount suggested by Hematology vendor is at least a 50% draw volume.
 - a. The 6.0 EDTA tubes should have at least 3.0 of whole blood.
 - b. The 3.0 ml EDTA tubes should have at least 1.5 ml of whole blood.
 - c. The 4.0 ml EDTA tubes should have at least 2.0 ml of whole blood.
 - d. The 5.0 ml EDTA tubes should have at least 2.50 ml of whole blood.
 2. Microtainer® EDTA (K₂) capillary blood collection tube:
 - a. The lavender cap colored pediatric EDTA (K₂) used for pedi collections must have blood collected to the recommended level to ensure optimal blood to additive ratio.
 - b. The first line to draw to is 250µl which is the absolute minimum draw acceptable for pedi draws. It is recommended to reach at the very least the 375µl line. These should be rotated at least 8 times while drawing.
 - c. The last line is 500µl, and is also acceptable.
 - d. Prior to running any skin puncture specimen, always use a stick to check for small clots in the specimen. Any time the platelet count <100 on a pedi-sample EDTA (K₂) blood collection tube draw; you must redraw the patient and recheck results. It is virtually impossible to always detect clots in these tubes.
- C. Correct specimen collection.
- D. Correct specimen identification:
 1. **Full patient name and Date of Birth**
 2. Patient identification number
 3. Date and time of collection.
 4. Collector's initials.

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E. Correct requisition and name of test.

IV. Rejection of Unacceptable Specimens:

The laboratory data from a submitted specimen is reliable only if the specimen is properly collected and labeled and transported to the laboratory in a timely fashion. Certain specimens, which meet these criteria, are still not acceptable due to characteristics, which could result in interference with the assay. It is the policy of this department that specimens failing to meet certain criteria will be rejected and the ordering physician notified if the patient cannot be recollected, (Outpatients). **Exceptions may be made in individual cases in which recollection of the specimen may be difficult or impossible or in which the results can still provide useful information despite interfering circumstances.** Reasons to reject specimens for hematology are:

- A. Clotted specimen.
- B. Severely hemolyzed specimen.
- C. Improperly labeled or unlabeled specimen.
- D. Specimen too old.
- E. Failure to meet volume criteria.
- F. Improperly collected (diluted) capillary specimen.
- G. Leaking tube.
- H. Delay in transport.
- I. Collection of specimen in wrong tube.

V. Inspection of Received Hematology Containers and Preparation of Specimen:

Each specimen will be checked to eliminate errors in test results. This will be done by observing clots in the specimen, which can give false test results.

- A. Visually inspect each specimen tube by gently mixing the tube and observe for clots.
- B. Inspect histogram prior to reporting results.
- C. Random specimens may be checked with applicator sticks.
- D. If severe lipemia is observed, perform a capillary dilution procedure.
- E. If a severe cold agglutinin is observed through patient results, preheat specimen for 15-20 minutes at 37°C prior to rerunning the specimen.
- F. If hemolysis is present, collect another specimen and repeat the test.
- G. Specimens are mixed thoroughly before analysis. The Sysmex XE-2100 and XE-5000 Hematology instrumentation performs adequate mixing before sampling and it is not necessary to use a mechanical rocker before sampling on the instruments. Constant rocking may cause platelet clumping and alter white cell membranes resulting in false interpretive messages.

VI. Final Summary:

A properly collected blood specimen is essential to quality performance in the laboratory. Accurate results can only be observed by strict adherence to specimen collection, storage, and preparation of each individual patient specimen. Identification errors, either of the patient or of the specimen, are potential major sources of error, which we as a laboratory cannot tolerate. A properly collected blood specimen is essential to reporting quality and accurate results in the laboratory.

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See original policy in the Laboratory for all documented annual reviews.

References:

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Laboratory Collections Manual, Hematology Procedures Manual