

LABORATORY COLLECTION MANUAL	SPECIMENS FOR COAGULATION STUDIES
Effective Date: 10/94	Page 1 of 2

Hemostasis is a delicately balanced physiologic mechanism that controls the ability of the blood to coagulate (form a fibrin clot), thus preventing spontaneous bleeding and controlling hemorrhage. Normally, blood remains in a fluid state, circulating under pressure through a closed system until the need for coagulation arises. Any injury to the vascular system or defect in a vessel wall usually sets in motion a complex sequence of physical and biochemical reactions that result in clot formation.

Hemostasis is achieved and maintained through the interaction of a number of vascular and intravascular processes, including:

- constriction of blood vessels
- platelet aggregation
- plasma factor activity
- clot retraction, and
- tissue repair.

The orderly progression of these processes transforms fluid blood into a fibrin clot that effectively closes and seals the damaged lining of an injured vessel.

Dysfunction of any one or more of these processes may produce clinical evidence of bleeding tendency. On the other hand, over stimulation of the clotting mechanism in individuals with thromboembolic disorders may result in excessive clot formation with thrombosis. Coagulation testing determines problems with hemostasis as well as tests for monitoring both heparin and coumadin therapy.

I. SPECIMENS FOR COAGULATION STUDIES

Blood should be anticoagulated with one part of 3.2% (0.109M) sodium citrate to nine parts blood (1:9). Draw by syringe or evacuated tube and mix immediately. We use the 2.7 ml draw blue top tube and the 1.8 ml for pediatric specimens. It is recommended that blood for coagulation testing be collected by venipuncture using a system that collects the specimen directly into a tube containing the anticoagulant. When using the needle/syringe, it is important that the blood is added to the appropriate volume of anticoagulant within one minute of completion of draw. Regardless of the device used for specimen collection, all tubes should be inverted 3-4 times to mix. All specimens should be collected in a non-activating surface container.

The proper needle gauge used should be determined according to the age of the patient, size of his/her veins, and the amount of blood to be drawn. The citrate tube should be the first tube drawn unless using a winged blood collection set and collecting directly into the citrate tube in which case a discard tube should be drawn first (a discard citrate tube) and filled with enough blood to fill the blood collection tubing dead air space. Do not draw a citrate tube after a plastic red top tube as these have a clot activator which could interfere with the testing.

II. STORAGE REQUIREMENTS FOR SPECIMENS:

A. Specimens for Protime testing:

Store spun or un-spun in unopened tube at room temperature, or spin at 3200 RPM for 15 minutes or at 7200 RPM for 4 minutes and remove plasma from cells and store in plastic, capped transport tube. Test must be performed within 24 hours of draw. Specimens are acceptable, stored un-spun and at room temperature for 24 hours. If the specimen cannot be tested within 24 hours, it must be spun and the plasma frozen.

B. Specimens for PTT testing on non-heparinized patients:

Store spun or un-spun in unopened tube at room temperature, or spin at 3200 RPM for 15 minutes or at 7200 RPM for 4 minutes and remove plasma from cells and store in plastic, capped transport tube. Test must be performed within 4 hours of draw. If the specimen can not be tested within four hours, it must be separated, and the plasma should be frozen until testing can be performed.

LABORATORY COLLECTION MANUAL	SPECIMENS FOR COAGULATION STUDIES
Effective Date: 10/94	Page 2 of 2

- C. Specimens for PTT testing on heparinized patients:
Spin within one hour of collection, and remove plasma. PTT must be performed within four hours of draw. If the specimen can not be tested within four hours, it must be separated, and the plasma should be frozen until testing can be performed.

- D. Plasma can be frozen at -20 °C for up to two weeks. Maintain frozen state during shipping. Frozen specimens must be tested within two hours of thawing.

- E. Very lipemic plasma may not give a reading on the CA1500 depending on the degree of turbidity. These specimens must be processed per instructions in the Coagulation Manual. Hemolyzed specimens should not be used for coagulation testing. Very icteric specimens may not read on the CA1500 and CA560.

APPROVED BY: Martin F. Belli, M.D. **DATE:** 10-94

REVISED BY: Kay Shaw, MT(ASCP)SBB **DATE:** 6-96, 4-98, 4-99, 5-2000, 5-2002, 6-2004
3-2008, 3-2012

APPROVED BY: Martin F. Belli, M.D. **DATE:** 6-96, 4-98, 4-99, 5-2000, 5-2002, 6-2004
3-2008, 3-2012

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

References:

Collection, Transport, and Processing of Blood Specimens for Testing Plasma-Based coagulation Assays; Approved Guideline, Fourth edition, NCCLS (CLSI), 2003