Coagulation Specimen Requirement

SPECIMEN TYPE

The only acceptable specimen is whole blood drawn in Blue top (plus plastic 3.2% buffered sodium citrate) vacutainer tubes. The recommended proportion of blood to the sodium citrate anticoagulant volume is 9:1. The tubes must be full to maintain the proper anticoagulant to blood ratio. A minimum of 90% fill is recommended.

SAFETY

All specimens, reagents and controls should be handled as though capable of transmitting infectious diseases. Wear appropriate personal protective equipment when running patient samples or performing scheduled maintenance. Refer to: Policy and Procedures Safety Manual Infection Control and Procedures 11-085-01.

TEST STABILITY

Protime

- If unopened specimens maybe left at room temperature, unspun for **24 hours**. Testing must be completed within **24 hours** after draw time.

PTT and aPTT Mixing Studies

- Must be tested within **4 hours** of collection.
- If testing cannot occur within **4 hours**, then plasma must be separated and frozen (see Note and Centrifugation section)

Anti-Xa heparin assays

- Must be tested within **2 hours** of collection.
- If testing cannot occur, then centrifugation section).

Fibrinogen

- Store at room temperature, stable for **8 hours** after collection

D-dimer

- Remove plasma if not run immediately.
- Plasma storage: **8 hours** at Room Temperature (20 ± 5ºC).

NOTE: PT, aPTT, aPTT Mixing Studies and Anti-Xa can be stored frozen if sample has been double spun. Double spun citrated plasma can be stored for 2 weeks at -20 ºC or 6 months at -70 ºC

Coagulation Specimen Requirement, Continued

Centrifugation

Blue top tube for coagulation testing should be centrifuged in a refrigerated centrifuge if possible. Centrifuge for 3 minutes at an RPM high enough to create a platelet poor plasma (platelet count less than 10,000/uL).

- If freezing is needed, plasma must be double spun as described below:
    1. Separate the plasma in a plastic tube [being careful not to go near the bottom of the plasma and disturb the buffy coat]
    2. Spin again for 3 minutes.
    3. Separate the plasma again in a plastic tube [being careful not to go near the bottom of the plasma and disturb the buffy coat]

Record on the label that the specimen has been double spun

Coag Special Studies

Special Coagulation studies may require that the blood sample be placed on ice at the time it is drawn. See Kaiser Permanente Reference Manual for Laboratory Tests for specific requirements

Anticoagulant Adjustment for High Hematocrit Specimen

This adjustment is for a 3 mL tube.
The anticoagulant (sodium citrate) in blue top tube must be adjusted when Hematocrit is greater than 55%.
The formula is as follows:

$$X = \frac{Y\ (100 - HCT)}{HCT}$$

X = amount of anticoagulant needed
Y = 0.3 (3 ml tube)

Pipette out and discard the amount of anticoagulant from the 3 ml that you do not need and draw patient blood to the top of the tube.

Coagulation Specimen Requirement, Continued

Specimen Rejection Criteria

The following conditions are not acceptable for coagulation specimens:

- Unlabeled or improperly labeled.
- Hemolyzed.
- Tube improperly filled.
- Wrong anticoagulant.
- Clotted.
- Improperly processed.

Validation of Specimen Processing for Platelet-Poor Plasma

CAP Standard HEM.37175 requires a *"system to at least annually measure the actual platelet count of the "platelet-poor" plasma used for many coagulation tests.*

NOTE: Platelet-poor plasma is particularly important when testing for the presence of a lupus anticoagulant, when measuring the level of unfractionated heparin, and in plasma samples to be frozen for later testing. Platelet-poor plasma should have a residual platelet concentration of less than 10 X 10^9/L. aPTT, prothrombin time/international normalized ratio (PT/NR) performed on fresh plasma samples are not affected by platelet counts of at least up to 200 x 10^9/L (200,000/µL)."

Annually the lab will evaluate all centrifuges used for processing coagulation testing specimens.

- Five specimens collected in sodium citrate tubes will be spun in each centrifuge to be evaluated for 3 minutes.
- The residual platelet count of the plasma will be measured using the hematology analyzer.
- If the average platelet count of the 5 specimens is less than 10x10 ^{9}/L, specimens requiring platelet-poor plasma may be spun for 3 minutes in the centrifuge.
- If the average platelet count exceeds 10x10 ^{9}/L, repeat the test with 5 new specimens and centrifuge for 5 minutes.
- See form for recording and evaluating data.

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MEASUREMENT OF PLATELET-POOR PLASMA LOGSHEET

Centrifuge IR # _____

Date Tested _____

HEM.37175 Platelet-poor Plasma

Platelet-poor plasma should have a residual platelet concentration of less than 10 X 10^9/L.

Sample #	Platelet Count 3-minute Centrifugation	Acceptable/ Not Acceptable	Platelet Count 5-minute Centrifugation	Acceptable/ Not Acceptable	Platelet Count 10-minute centrifugation	Acceptable/ Not Acceptable
Average Platelet Count						

☐**PASSED:**
(Specimens requiring platelet-poor plasma may be spun for 3 or 5 minutes in this centrifuge)

☐**NOT PASSED:**
(Specimens requiring platelet-poor plasma must be spun for 10 minutes in this centrifuge)

CLS_____ Date_____

Document History Page

Change type: New, Major, Minor etc.	Changes Made to SOP – describe	Name of responsible person/date	Med. Dir. reviewed/ date	Lab Manager reviewed/ date	Date change Imp.
Minor	1) Updated the format. 2) Added SAFETY section.	Julius Salomon 08/21/14			
Major	1) Added Thrombin Time 2) Revised test stability of Anti-XA, centrifuge within 1 hour of collection.	Julius Salomon 11/19/15			
Minor	Remove Thrombin Time test. Testing to be done at RRL.	Julius Salomon 4/26/17			
Minor	1) Update format 2) Updated Index number 3) Added the minimum recommended 90% fill volume under specimen type	Marlon Esguerra 6/25/18			
Major	1) Changed the centrifugation time to 3 min for samples and for the platelet poor plasma procedure and revised the log sheet	Marlon Esguerra 6/25/18			