



**Coagulation Case Studies
Coagulation Specimen Handling Issues
2016 CGL-A Survey**

Two properly labeled, citrated blood samples filled to the appropriate volume are received in the laboratory at 10:24 for coagulation testing. The specimens were collected at 9:47 and immediately placed on ice for transportation to the laboratory. The specimen requisition paperwork indicates a PT, aPTT, FVIII, platelet function analysis (PFA-100), and von Willebrand antigen and activity assays have been ordered.

What is the best next step with this specimen?

- A. Spin 1 tube for the platelet poor plasma clot-based assays and use the second tube for the PFA-100 assay. Report all results.

INCORRECT CHOICE: While this is the process a laboratory should follow for a specimen transported at room temperature, whole blood sample must not be transported on ice (or refrigerated). Cold storage temperatures of whole blood samples can cause cold activation of FVII, decrease von Willebrand and factor VIII, and disrupt platelets and reduce platelet function. Changes such as these may result in erroneous test results.

- B. Reject the specimens as they have been stored on ice for 37 minutes.

CORRECT CHOICE: Specimens received on ice (or refrigerated) are inappropriate for testing in the coagulation laboratory.

- C. Reject the specimens as the pre-analytic time exceeded the recommended guidelines for testing.

INCORRECT CHOICE: The specimen was received in the laboratory in an appropriate amount of time. Specimens must be processed into platelet poor plasma and then tested (or frozen) with 4 hours for aPTT clot-based assays and within 24 hours PT clot-based assays. Platelet function assays must be tested within 4 hours of collection. If a specimen is sent to measure heparin levels, the specimen must be processed to plasma within 1 hour to avoid potential heparin neutralization by platelet factor 4 (PF4).

- D. Remove both specimens from the ice and re-warm at room temperature for 30 minutes. After rewarming, spin one tube for the platelet poor plasma clot-based assays and use the second tube for the PFA-100 assay. Report all results.

INCORRECT CHOICE: As stated above, specimens used for coagulation testing must be transported at room temperature. Cold storage temperatures of whole blood samples can cause cold activation of FVII, decrease von Willebrand and



factor VIII, and disrupt platelets and reduce platelet function. Changes such as these will result in erroneous test results, and re-warming specimens prior to testing will not resolve these negative effects.

- E. Freeze both citrated whole blood sample tubes until all testing is ready to perform.

INCORRECT CHOICE: It is never acceptable to freeze whole blood specimens prior to testing in the coagulation laboratory.