



Danbury Hospital
Department of Pathology & Laboratory Medicine
Technically Speaking

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PLATELET FUNCTION ASSAY (PFA) REPLACES BLEEDING TIME

The Coagulation area of the Clinical Microscopy section of the Laboratory is pleased to announce the introduction of a new technology for evaluating platelet function, the PFA-100®, Platelet Function Analyzer. The PFA-100® is capable of detecting platelet dysfunction under high shear flow conditions in a citrated whole blood sample. PFA testing can provide valuable information on a patient's platelet function prior to any invasive procedure or when other inherited or acquired platelet dysfunction disorders are suspected. Two types of test cartridges are used with the system, Collagen/Epinephrine or Collagen/ADP. The Collagen/Epinephrine (COL/EPI) test cartridge is the primary cartridge used to detect platelet dysfunction induced by intrinsic platelet defects, von Willebrand disease or exposure to platelet inhibiting agents such as Aspirin® or Aspirin® containing medication. If the Collagen/Epinephrine test result is abnormal, the Collagen/ADP (COL/ADP) test cartridge is then used to indicate if an abnormal result obtained with the COL/EPI test cartridge may have been caused by the effect of Aspirin® or medications containing Aspirin®.

The instrument aspirates a blood sample under constant vacuum from the sample reservoir through a capillary and a microscopic aperture cut into the membrane of the test cartridge. The membrane is coated with collagen and epinephrine or ADP. The presence of these biochemical stimuli, and high shear rates generated under standardized flow conditions that simulate *in vivo* vascular injury, result in platelet attachment, activation and aggregation, slowly building a platelet plug at the aperture. The time required to obtain occlusion of the aperture is reported as the "closure time" (CT). The CT is indicative of the platelet function in the sample.

The Laboratory will offer both tests, Epinephrine and ADP on the PFA-100®. The patient results will be reported as closure time in seconds (CT). The reference range for both types of cartridges is as follows:

Cartridge Type	Mean (sec)	Reference (sec)	Range
Collagen/Epinephrine	126	82 – 170	
Collagen/ADP	81	47 – 115	

The following are expected patterns observed with the PFA test on normal subjects and subjects with various disorders:

	<u>Normal</u>	<u>ASA</u>	<u>vWD</u>	<u>Glanzmann's thrombasthenia</u>
COL/EPI	Normal	Abnormal	abnormal	abnormal
COL/ADP	Normal	Normal	abnormal	abnormal

The formation of the platelet plug is affected by low platelet counts (< 150,000), inadequate hematocrit (< 35%) because of the flow process and certain fatty acids and lipids known to inhibit platelet function. A platelet count will be performed with the PFA testing to assist the physician with test interpretation. It is recommended to advise patients to refrain from fatty foods prior to testing.

The Laboratory will no longer perform the conventional Bleeding Time. The Platelet Function Assay (PFA) will replace the Bleeding Time for assessment of platelet function in both the adult and the pediatric patient.

Specimen Requirements – 2 Specimens required; 1 Blue stoppered tube and 1 Lavender stoppered tube

Venipuncture should be performed using a 21g or larger needle.

Specimen 1: Blood should be drawn directly into an evacuated plastic or siliconized glass tube containing 3.2% buffered sodium citrate (blue stoppered tube). It is essential that the blood to anticoagulant ratio 9:1 be maintained. Inadequate filling of the tube may lead to inaccurate test results and will not be accepted.

Specimen 2: A minimum of one 1 cc of blood should be drawn directly into an evacuated or siliconized glass tube containing either dipotassium or tripotassium salt of EDTA (lavender stoppered tube).

After sample collection, proper mixing of the sample is essential by gently inverting the tube 6 to 8 times. **Hemolyzed samples are not acceptable.**

Samples must be received within 3 hours of collection and must be stored at room temperature. Do not refrigerate or centrifuge samples.

Testing will be available 7 days a week, 24 hours a day on a routine and a STAT basis with a STAT Turn-around-time of 60 minutes.

Please forward any questions to Dr. Leonel Edwards at extension 7527 or Patricia Palmer at extension 7538 or 7333.

References:

Dade Behring Inc. Hemostasis – PFA-100 Platelet Function Analyzer, Operating Manual, 1717 Deerfield Road Deerfield, IL 60015 Technical Services 1-800-242-3233

Danbury Hospital, Dept. of Laboratory Medicine, 24 Hospital Ave., Danbury CT 06810
Client Services Rep: 797-7800. Specimen Pickup: 797-7306