Coagulation Consultants Laboratory
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OPTICAL PLATELET AGGREGATION DRUG MONITORING FOR P2Y12 INHIBITORS (E.G. PLAVIX OR CLOPIDOGREL)

Due to a number of inquiries concerning the monitoring of platelet inhibitors used in cardiovascular procedures, such as **P**ercutaneous **C**oronary **I**nterventions (PCI), we would like to call your attention to some studies in this area and what we do to answer the concerns of physicians to monitor the effectiveness of the drugs currently used to reduce the incidence of non-responders to the therapy. Current recommendations for PCI are to use Clopidogrel (Plavix) and Aspirin prior to and post procedurally to inhibit platelets from coagulating in the newly inserted stents. There is a high incidence of patients who do not respond well to these inhibitors and we can differentiate them from the normal responders using a classical thoroughly validated technique, known as Optical Platelet Aggregation, found on our requisitions as the Platelet Function analysis. Other techniques have been used and their problems have been discussed in the paper cited below along with a comparison with the classical method of **O**ptical **P**latelet **A**ggregation (OPA). This paper compares a population study of 530 patients undergoing PCI who were studied using the techniques of OPA, Verify Now P2Y12 and PFA-100. It evaluated the parameters that influenced the determination of who responded and who didn't respond to the therapy (e.g. age, gender, inflammation, BMI, Diabetes and malignancy which are typical aspects seen as variables with OPA). It noted unexpected variables seen with the Verify Now P2Y12 analyzer of hematocrit and hemoglobin levels, while the PFA-100 was influenced by B-blockers which are used frequently in PCI.

I would also like to mention that the name of Verify Now instrument, "P2Y12" is actually the name of the membrane glycoprotein that is specifically inhibited by Plavix and affects the platelet's response to ADP, an agonist used in OPA to monitor platelet aggregation. Aspirin is also monitored in OPA (platelet aggregation) by using the agonist Arachidonic acid. To confuse the story a little more, researchers have coined the term "High Responders" referring to the fact that patients who are poor responders to the drugs, have good responses to ADP rather than showing inhibition of their platelets.

The reference I refer you to is in the Journal of Haemostasis and Thrombosis, 2009,102:719-727. *The Influence of Clinical Characteristics, Laboratory and Inflamatory Markers on "High on Treatment Platelet Reactivity" as Measured with Different Platelet Function Tests.*

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In conclusion, if anyone asks for P2Y12, Plavix or Clopidogrel monitoring, we do it daily with an order of a Platelet Function Analysis, same day turn around time and the whole blood samples (3-4 Blue top tubes) should be sent with 2 hours of the phlebotomy at room temperature. Please make a note of the type of medications the patient is on so that our comments can be specific as to their response.