



# Cardiac Catheterization

*TEG® 5000 hemostasis system for personalized antiplatelet therapy*

- *Identify the prothrombotic state*
- *Identify therapeutic response and / or resistance*
- *Assess risk of bleeding or ischemia due to antiplatelet / anticoagulant therapy*
- *Stratify risk of ischemic events.*





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Personalized antiplatelet and anticoagulant therapy post intervention needs to be the new standard, because the current standard of care treatment has not delivered on its promise. Each day patients bruise or bleed, or, worse, face repeat ischemic events.

It is possible, right now, to provide personalized antiplatelet and anticoagulant therapy after intervention. What does it take to be able to do this? Answers to two simple questions:

- What is the patient's maximum platelet function?
- What is the patient's platelet inhibition relative to their own maximum platelet function?

Knowing the maximum platelet function helps you determine the degree of hypercoagulability. Armed with that information, you can:

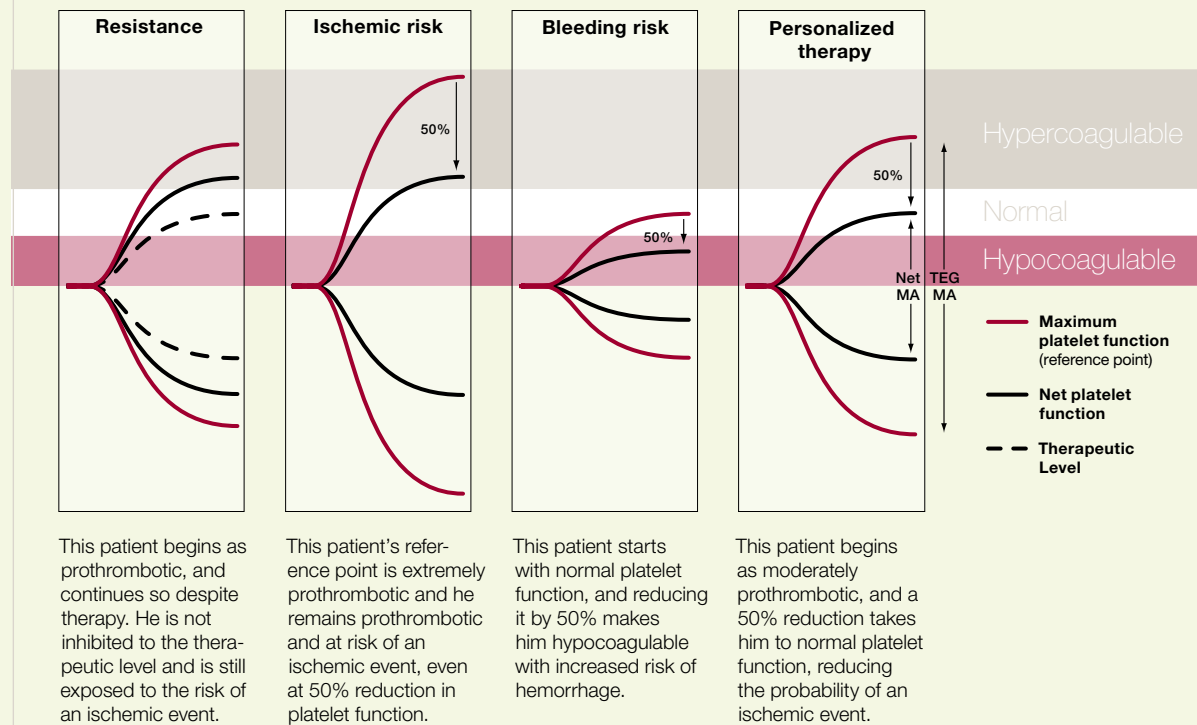
- Determine how much inhibition is needed
- Decide which antiplatelet drug(s) are needed.

Knowing platelet inhibition relative to maximum platelet function, you can assess:

- Whether your patient is responding to his antiplatelet therapy
- If he is at the proper therapeutic level
- His risk of bleeding or ischemic event.

The schematic below illustrates the relationship between maximum platelet function and platelet inhibition, and shows why both parts of the puzzle are needed.

It is readily evident that 50% inhibition has different meanings, depending on what the maximum platelet function (reference point) is.

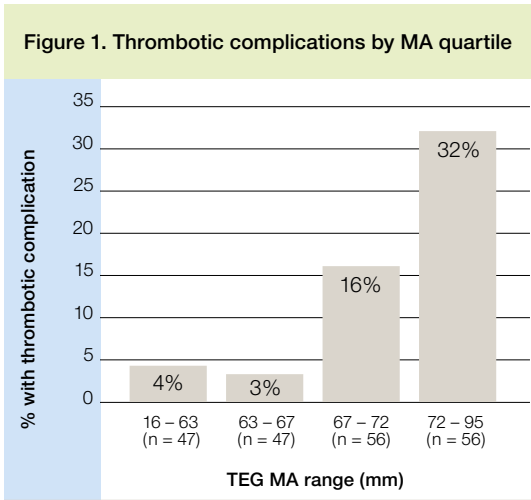




**Thrombotic risk assessment and stratification**

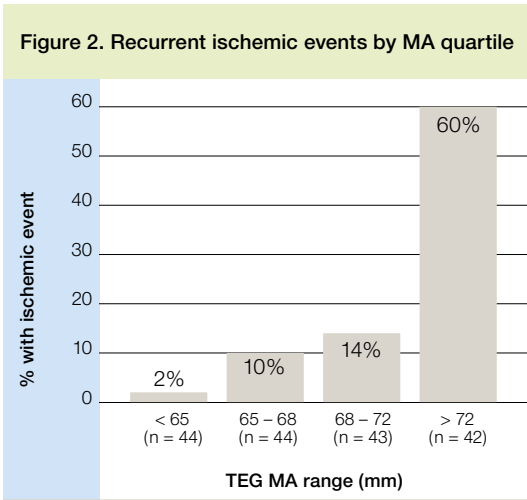
A prospective observational study by McCrath et al at Columbia University\* monitored 219 non-cardiac surgical patients for prothrombotic events in the post-surgical period.

A striking 87% of those who had thrombotic complications had hypercoagulable platelet function (TEG MA) values — higher than the high normal limit (68mm). Figure 1 shows the distribution of TEG MA values into quartiles (ranging from approximately -2SD to +2SD about the mean) vs ischemic events. The largest occurrence of events was in the 4th quartile.



Similar findings were shown in another prospective observational study\*\* of 175 cardiac patients by Gurbel et al at the Sinai Center for Thrombosis Research (Baltimore MD). This study monitored standard combination aspirin and clopidogrel therapy post-intervention for six months.

In this study, 86% of patients with recurrent ischemic events within the six-month follow-up period had TEG MA values higher than the high normal limit. Figure 2 shows these results.



The results of both of these studies support the ability of the TEG MA values to both identify and stratify the risk of ischemic events. The higher the platelet function value, the higher the incidence of ischemic events.

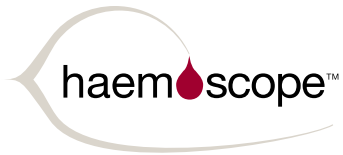
Both studies suggest that reducing the level of platelet function with appropriate antiplatelet therapy may reduce the ischemic risk. For example, using appropriate doses of aspirin and/or clopidogrel to reduce platelet function below 67mm may reduce risk to under 10% according to both studies.

So, being able to assess the maximum platelet function, together with the measurement of degree of platelet inhibition, on a patient-by-patient basis, allows personalized treatment with antiplatelet drugs. There is an instrument that can provide this information now. The TEG 5000 Hemostasis System.



\* McCrath D, Cerboni E, Hirsh A, Frumento RJ, Bennett-Guerrero E. Association of Thrombelastography (MA) and thrombotic complications after major non-cardiac surgery. *Anesth Analg* 2005; 100(6).

\*\* Bliden KP, Tantry US, Hayes KM, Zaman K, Yoho JA, Gurbel PA. Hypercoagulability measured by thrombelastography strongly predicts recurrent ischemic events post coronary stenting. Presented at ACC 2005, session 852-5. Supported in part by NIH grant 5R44HL059753-03.



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