

Platelet Function Tests-Buckling the Belief Against: Not Necessary, Time to Forget



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Presenter Disclosure Information

Name: Dominick J Angiolillo

Within the past 12 months, the presenter or their spouse/partner have had a financial interest/arrangement or affiliation with the organization listed below.

Received payment as an individual for:

- a) Consulting fee or honorarium from Bristol Myers Squibb, Sanofi-Aventis, Eli Lilly, Daiichi Sankyo, The Medicines Company, AstraZeneca, Merck, Evolva, Abbott Vascular and PLx Pharma;
- b) Participation in review activities from Johnson & Johnson, St. Jude, and Sunovion.

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Role of Platelet Function Testing in PCI

Understanding the Pros and Cons

Platelet Function Testing – Pros

1. Many facets of platelet biology can be assessed (*many toys to play with to define “intermediate” phenotypes*)
2. Determines to what extent an antiplatelet drug is working or not (*responder vs non-responder; marker of efficacy*)
3. Prognostic value (*ischemic and bleeding events; therapeutic window*)
4. Potential for clinical guidance (*better patient care / improved outcomes/cost saving*)

Platelet Function Testing – Cons

1. Many facets of platelet biology can be assessed
(*many toys to play with to define “intermediate” phenotypes – Which is the best toy?*)

Platelet Function Tests

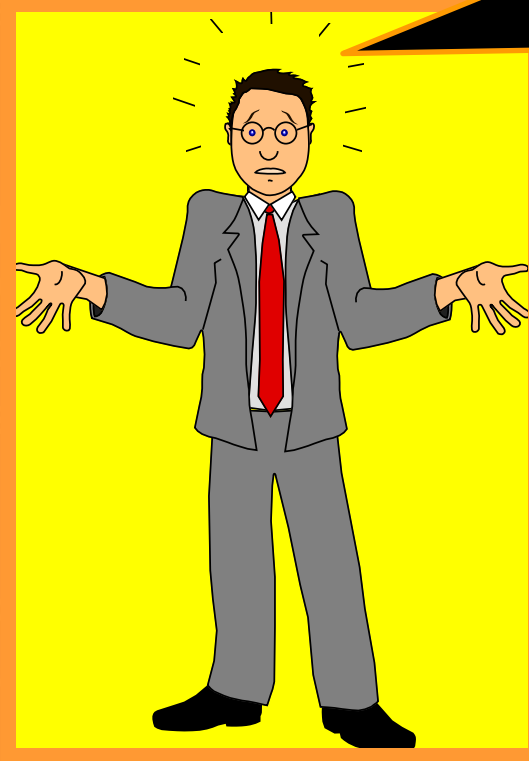
- **Platelet Aggregation**

Light transmittance aggregometry
Impedance platelet aggregometry

- **Flow Cytometry**

GPIIb/IIIa receptor
P-selectin expression
Monocyte-platelet interaction
Vasodilator-stimulated phosphoprotein (VASP)

Which test do I use?
Which cut-off value?
When to test?
Variability over time!



- **Point-of-care**

Ultegra rapid platelet reactivity analyzer (VerifyNow)
Thromboelastography
Plateletworks
Cone and plate(let) analyzer (IMPACT)

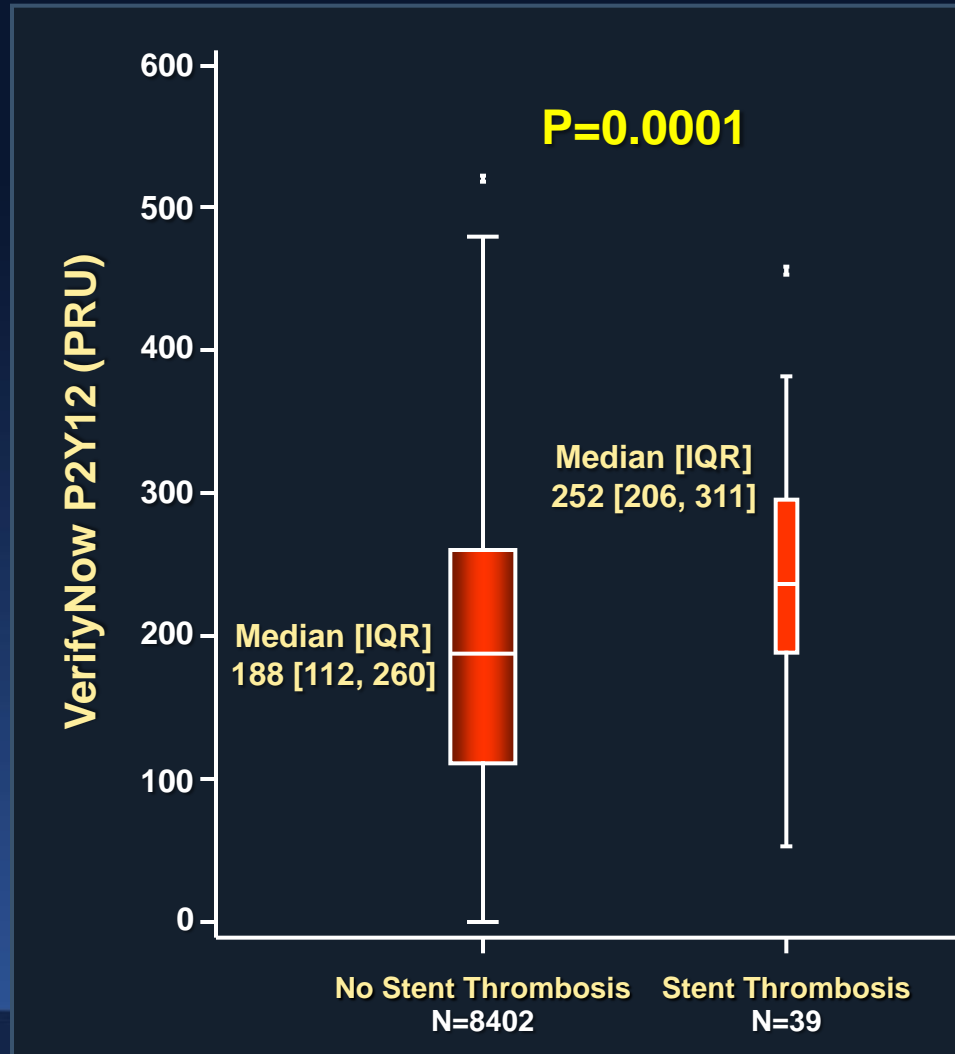
- **Genetic testing**

adapted from Angiolillo DJ et al. *J Am Coll Cardiol.* 2007.

Platelet Function Testing – Cons

1. Many facets of platelet biology can be assessed (*many toys to play with to define “intermediate” phenotypes – Which is the best toy?*)
2. Determines to what extent an antiplatelet drug is working or not (*responder vs non-responder; marker of efficacy – Does it really matter?*)

ADAPT-DES: ADP Platelet Responsiveness in Pts with and without Definite/Probable Stent Thrombosis within 30 Days



Does Genetic Testing or Platelet Function Testing Fulfill the Criteria For a Screening Tool?

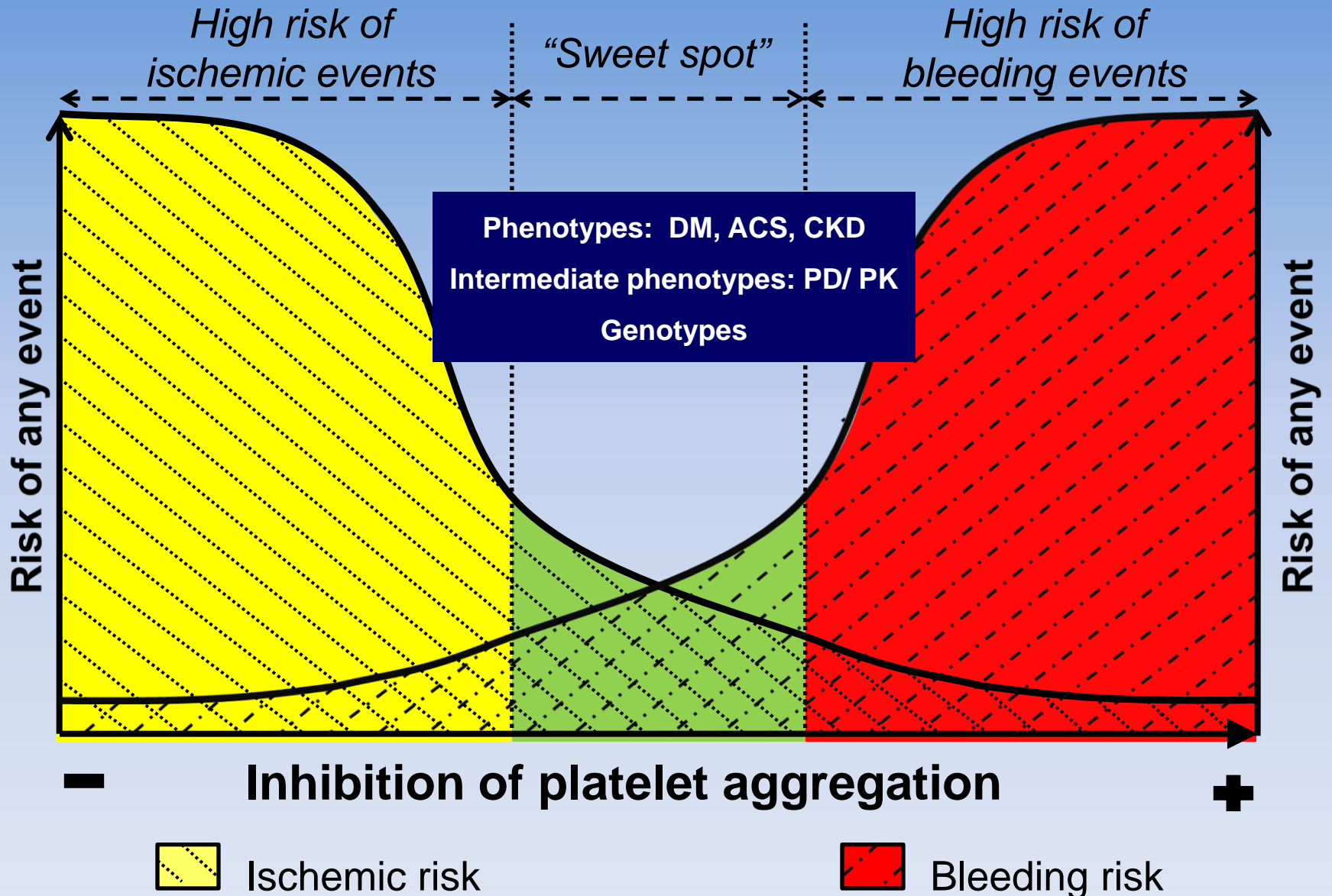
Test	Practical clinical use (POC)	Risk prediction accuracy	Improved outcomes	Cost effective
CYP2C19	No	PPV = 10-21% NPV = 90-92% AUC = 0.45-0.57	?	?
LTA	No	PPV = 12% NPV = 94% AUC = 0.62	?	?
VerifyNow	Yes	PPV = 13% NPV = 94% AUC = 0.62	?	?
VASP	No	PPV = 10-12% NPV = 96-99% AUC = 0.85	?	?

Courtesy of Sanjay Kaul (adapted from TCT 2010)

Platelet Function Testing – Cons

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Balancing Safety and Efficacy



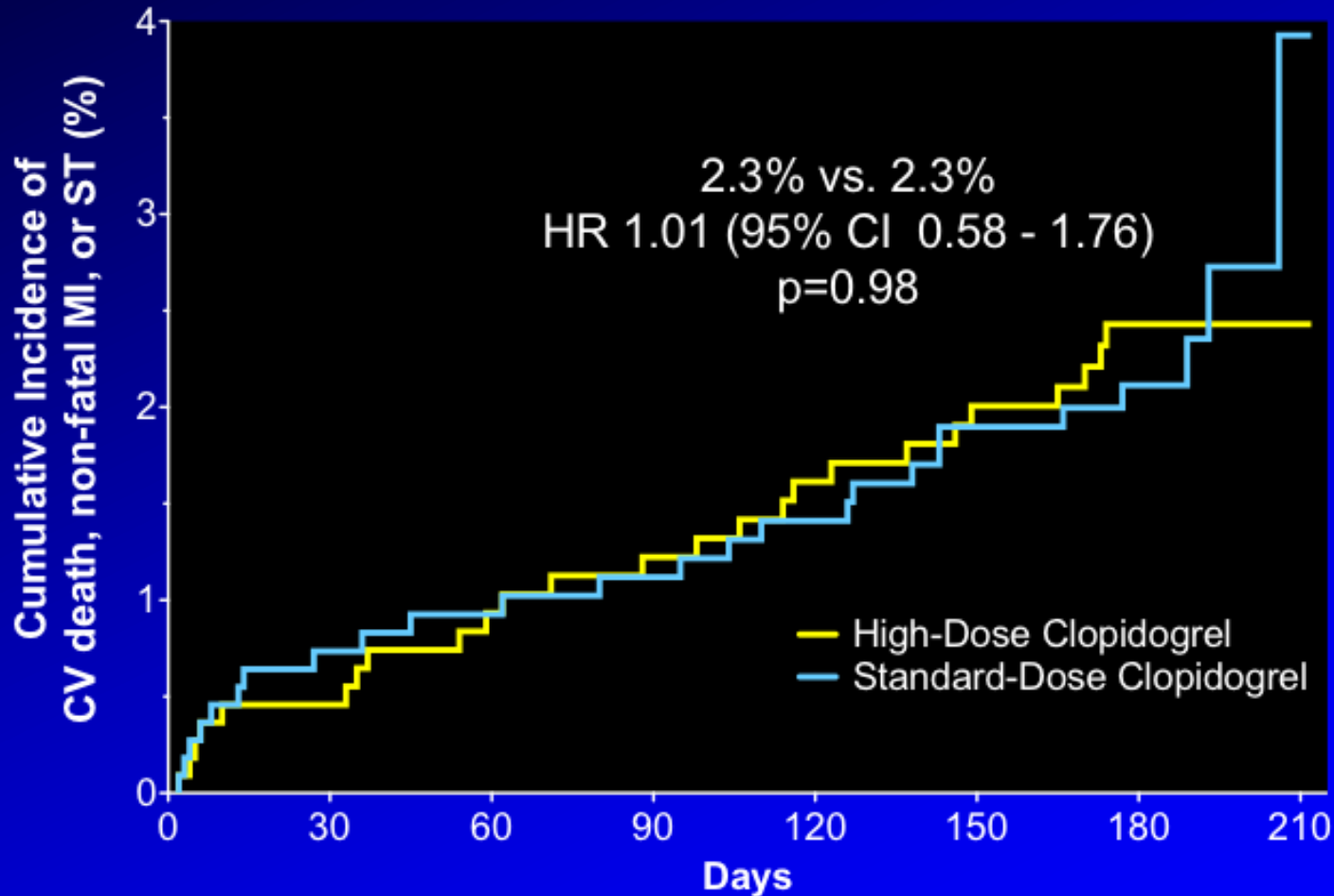
Platelet Function Testing – Cons

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2. Determines to what extent an antiplatelet drug is working or not (*responder vs non-responder; marker of efficacy – Does it really matter?*)
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4. Potential for clinical guidance (*better patient care/ improved outcomes/cost saving – Still a long road!*)

Limitations of Clopidogrel Platelet Inhibition: Therapeutic Options



Primary Endpoint: CV Death, MI, Stent Thrombosis



No. at Risk

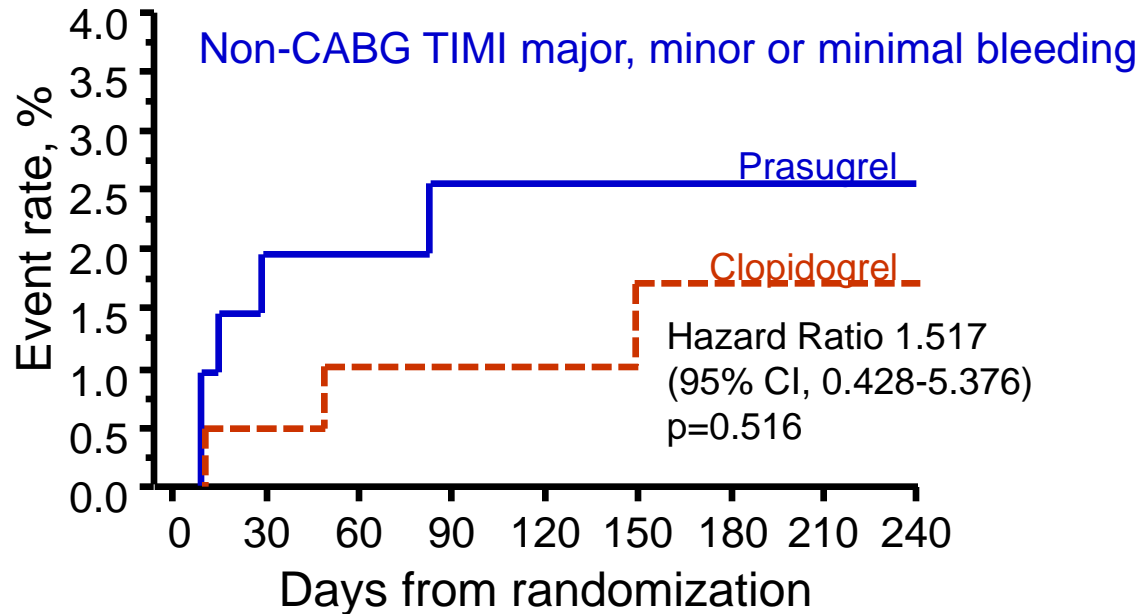
High Dose Clopidogrel	1109	1056	1029	1017	1007	998	747	54
Standard Dose Clopidogrel	1105	1057	1028	1020	1015	1005	773	53

Observed event rates are listed; P value by log rank test. *Price MJ et al. JAMA 2011*



Early termination of TRIGGER-PCI at March 18, 2011

- 236 patients completed 6 months follow-up
- Only 1 clinical endpoint (peri-procedural MI) observed
→ rate 0.4%

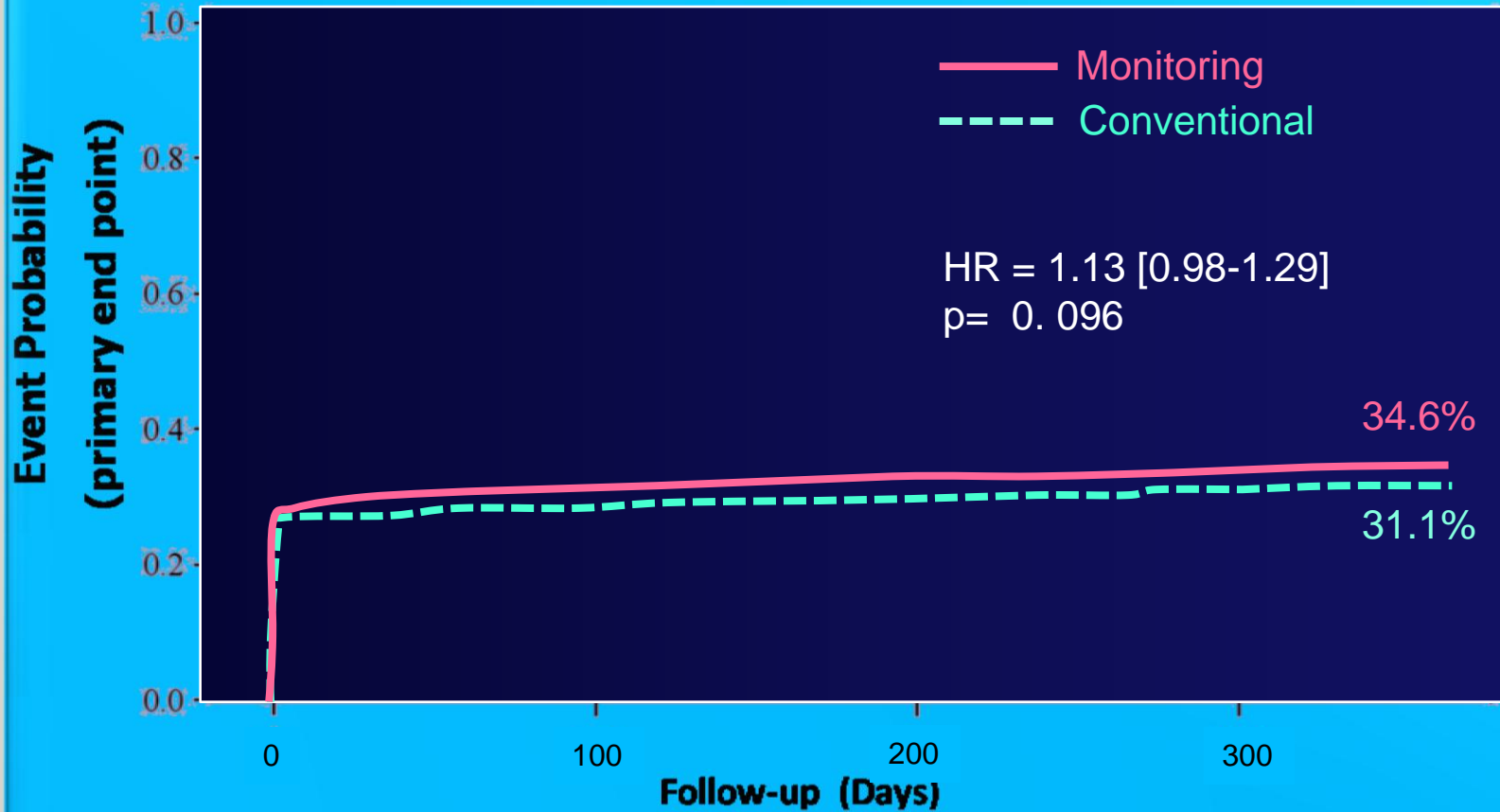




Primary Endpoint to 1 year



Death, MI, stroke, stent thrombosis, urgent revascularization



N at risks

Conventional	1227	835	801	767
Monitoring	1213	790	762	730

2011 ACCF/AHA/SCAI Guideline for PCI Platelet Function Testing



Platelet function testing may be considered in patients at high risk for poor clinical outcomes.



In clopidogrel-treated patients with high platelet reactivity, alternative agents, such as prasugrel or ticagrelor, might be considered.



The routine clinical use of platelet function testing to screen clopidogrel-treated patients undergoing PCI **is not recommended.**

No Benefit



Helping Cardiovascular Professionals
Learn. Advance. Heal.



Role of Platelet Function Testing

It's time to Forget.....

