

termine this percentage according to the device calculation. Because device will show total percentage of both RV and LV pacing (only one manufacture shows RV and LV separately), however only 12-lead ECG will ensure biventricular pacing. As far as we know that industry representatives do not check 12-lead ECG in patients with CRT during the interrogation. This issue needs to be solved only by cardiac electrophysiologists and/or device specialists.

5. Another unmentioned issue is device recalls. Unfortunately, device recalls and advisories are not taken seriously in our country. Both companies and physicians should act together and keep the patients informed regarding device recalls (4).

Finally, we would like to provide solutions to improve device follow-up in developing countries:

a) Specialists specializing in rhythm disorders: Unfortunately, in developing countries, there are no fellowship programs; however, in North America (USA and Canada) and European countries, cardiac electrophysiology training (1–2 years) is essential to perform in- and outpatient arrhythmia service.

b) Dedicated Cardiac Rhythm and Device Management clinics (electrophysiologists and/or device technicians)

c) Implantation of more technologically advanced devices is also very useful because it will improve follow-up of patients with pacemakers and ICD/CRTD. Due to economic issues in developing countries, there are still big public centers that implant basic devices instead of new, smarter, MRI-compatible devices.

d) Trainings and educational courses offered by companies to health-care workers may prove invaluable.

In conclusion, we congratulate Üreyen et al. (1) for their insightful study. As a cardiac electrophysiologist trained in Canada, I am proud of my colleagues that they increased awareness of this important issue.

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## References

1. Üreyen ÇM, Baş CY, Yüksel İÖ, Kuş G, Çağırıcı G, Arslan Ş. Should physicians instead of industry representatives be the main actor of cardiac implantable electronic device follow-up? (Super Follow-up). *Anatol J Cardiol* 2017; 18: 23-30.
2. Boriani G, Glotzer TV, Santini M, West TM, De Melis M, Sepsi M, et al. Device-detected atrial fibrillation and risk for stroke: an analysis of >10 000 patients from the SOS AF project (Stroke prevention Strategies based on Atrial Fibrillation information from implanted devices). *Eur Heart J* 2014; 35: 508-16.
3. Silver JS, Gray ME, John RM. Strategy to eliminate inappropriate shocks secondary to T-wave oversensing in a biventricular ICD. *Pacing Clin Electrophysiol* 2009; 32: 134–6.
4. Zhang S, Kriza C, Schaller S, Kolominsky-Rabas PL; National Leading-Edge Cluster Medical Technologies Medical Valley EMN. Recalls of cardiac implants in the last decade: what lessons can we learn? *PLoS One* 2015; 10: e0125987.

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DOI:10.14744/AnatolJCardiol.2017.8027



## Author's Reply

To the Editor,

We would like to thank to the authors for commenting on our article titled "Should Physicians Instead of Industry Representatives Be The Main Actor of Cardiac Implantable Electronic Device Follow-up?" for their valuable and beneficial contributions (1).

Firstly, the authors emphasized the importance of AF detection algorithms to preclude AF-related embolic complications in patients with high CHA2DS2VASc score. Moreover, they mentioned that industry representatives may not be aware of indications for stroke prevention in patients with cardiac devices and paroxysmal AF, a limitation that can leave patients at risk. In our study, we only evaluated the efficiency of cardiac implantable electronic device (CIED) programming and follow-up by industry representatives. Industry representatives are not supposed to have clinical knowledge (as CHA2DS2VASc score and stroke risk) during their follow-up. On the other hand, this excellent example stated by the authors again demonstrates why industry representatives alone should not follow-up the patients with CIEDs because not only the CIEDs but also the patients should be assessed together.

The authors mentioned that it is not always easy to follow the technological improvements in CIEDs; thus, collaboration among physicians and industry representatives gains more importance. As we emphasized in our article, the role of industry representatives is to provide technical support to the implant as well as technical assistance of their companies' programmers in the follow-up clinics. Furthermore, we also emphasized in our article that follow-up of patients with CIEDs should be performed by physicians or a team including physicians and clinically employed allied professionals. On the other hand, as we mentioned in the article, it is not acceptable to allow industry representatives alone to follow-up patients with CIEDs.

We agree with the authors to act together and keep the patients informed regarding device recalls. Moreover, we thank the authors for their smart and educatory recommendations to improve device follow-up in developing countries.

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## References

1. Üreyen ÇM, Baş CY, Yüksel İÖ, Kuş G, Çağırıcı G, Arslan Ş. Should physicians instead of industry representatives be the main actor of cardiac implantable electronic device follow-up? (Super Follow-up). *Anatol J Cardiol* 2017; 18: 23-30.

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## Individualized intensified antiplatelet therapy based on platelet reactivity testing reduces the incidence of cardiovascular events in patients undergoing percutaneous coronary intervention

To the Editor,

We read with great interest the article by Jeong et al. (1) titled "Impact of high on-treatment platelet reactivity on long-term clinical events in AMI patients: a fact or mirage?" published in *Anatol J Cardiol* 2016 Nov 16. Epub ahead of print. The authors stated that it is unclear whether platelet function testing (PFT)-based treatment modification influences the outcomes of the antiplatelet therapy. They mentioned that recent prospective randomized trials using the current PFT did not demonstrate any clinical benefit (1). However, is this true?

We performed a thorough search of the literature that revealed a substantial number of recent studies demonstrating the safety and efficacy of PFT guidance in patients undergoing percutaneous coronary intervention (PCI) (2-5). A recent meta-analysis that included 13 clinical studies and a total of 7290 patients concluded that the PFT-based intensified protocol is associated with a significant reduction in major adverse cardiovascular events, stent thrombosis, cardiovascular death, and target vessel revascularization without increasing the risk of major bleeding (2).

The authors claimed that there is little evidence to support the VerifyNow assay and Multiplate Analyzer as clinical, reliable PFT systems (1). A study involving 671 myocardial infarction patients treated with PCI in the TRANSLATE-ACS Registry who had undergone VerifyNow PFT concluded that intensification of the antiplatelet therapy is associated with low risk of ischemic events at 1 year among patients with high platelet reactivity (3). Aradi et al. (4) in their study involving 741 patients verified the clinical impact of treatment with prasugrel in patients with acute coronary syndromes who have high platelet reactivity using PFT with the Multiplate Analyzer.

Furthermore, current European Society of Cardiology (ESC) guidelines have clearly stated that PFT should be considered in specific high-risk situations (compliance issue, history of stent thrombosis, suspicion of resistance, and high bleeding risk) and has a Class IIb indication (5). In the Assessment of Dual Anti-Platelet Therapy with Drug-Eluting Stents trial, the largest observational PFT study conducted to date, approximately 50% of 30-day post-PCI stent thrombosis is attributable to high platelet reactivity (5). Based on the currently available evidence, the ESC guidelines recommend the Verify Now assay, the Multiplate Analyzer, and the VASP assay for monitoring platelet inhibition during P2Y12 inhibitors administration (5).

The authors refer to studies that have methodological flaws, such as the periprocedural use of glycoprotein IIb/IIIa receptor inhibitors and the use of high-dose clopidogrel instead of potent P2Y12 inhibitors, such as prasugrel and ticagrelor, to intensify platelet inhibition; these studies do not include patients at high risk of stent thrombosis.

Several prospective observational studies involving large patient populations have demonstrated that high platelet reactivity is an independent and strong predictor of post-PCI ischemic events. In patients with high platelet reactivity who are undergoing PCI, the intensification of dual antiplatelet therapy using PFT reduces the incidence of ischemic events without increasing the risk of major bleeding.

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## References

1. Jeong YH, Ahn JH, Shin ES. Impact of high on-treatment platelet reactivity on long-term clinical events in AMI patients: a fact or mirage? *Anatol J Cardiol* 2016 Nov 16. Epub ahead of print.
2. Zhou Y, Wang Y, Wu Y, Huang C, Yan H, Zhu W, et al. Individualized dual antiplatelet therapy based on platelet function testing in patients undergoing percutaneous coronary intervention: a meta-analysis of randomized controlled trials. *BMC Cardiovasc Disord* 2017; 17: 157.
3. Bagai A, Peterson ED, McCoy LA, Efron MB, Zettler ME, Stone GW, et al. Association of measured platelet reactivity with changes in P2Y12 receptor inhibitor therapy and outcomes after myocardial infarction: Insights into routine clinical practice from the TREATMENT with ADP receptor iNhibitorS: Longitudinal Assessment of Treatment Patterns and Events after Acute Coronary Syndrome (TRANSLATE-ACS) study. *Am Heart J* 2017; 187: 19-28.
4. Aradi D, Tornycos A, Pintér T, Vorobcsuk A, Kónyi A, Faluközy J, et al. Optimizing P2Y12 Receptor Inhibition in Patients With Acute Coronary Syndrome on the Basis of Platelet Function Testing: impact of prasugrel and high-dose clopidogrel. *J Am Coll Cardiol* 2014; 63: 1061-70.
5. Authors/Task Force members, Windecker S, Kolh P, Alfonso F, Collet JP, Cremer J, et al. 2014 ESC/EACTS Guidelines on myocardial revascularization: The Task Force on Myocardial Revascularization