Authors/Year	Objectives	Nb. participants	Studied P2Y12 inhibitors	Main results
Clinical studies on oral P2Y12 inhibitors in interventional neuroradiology				
Lee et al., 2008[2]	To present the authors' initial experience with the VerifyNow assay in neurointerventional procedures.	98	Clopidogrel	A high frequency of poor clopidogrel responses was observed in the neurointerventional setting (42.9% of patients, using the 40% cut-off). Greater body weight was observed in the poor-response group. All three cases of intraprocedural thromboses occurred in the poor-response group.
Lee et al., 2018[33]	To investigate changes in the value of P2Y12 resistance unit when prasugrel was administered to patients with clopidogrel resistance.	98	Prasugrel, clopidogrel	In patients resistant to clopidogrel, low-dose prasugrel (20 mg loading dose) seemed to be effective in keeping platelet inhibition in the target range (using the 20% cut-off). The mean P2Y12 reaction unit value reduced from 238 to 124, and the mean percentage of inhibition increased from 4.8% to 48.0%. No hemorrhagic or thromboembolic complication was observed in the 15-month follow-up period.
Muller-Schunck et al., 2008[3]	To analyze platelet function to determine the effects of antiplatelet treatment in neurologic patients and correlate results with clinical outcomes after stent placement.	100	Clopidogrel (n=50)	A significant rate of clopidogrel nonresponders was identified using impedance aggregometry (28%) and a cut-off of 52 aggregation units. The results also strongly suggested a correlation of insufficient clopidogrel-related platelet inhibition with the risk of thromboembolic events in supra-aortic stent placement. All five patients with adverse events (all ischemic) were nonresponders.
Pandya et al., 2010[4]	To assess the effect of aspirin and clopidogrel dose and duration on platelet inhibition in neurointerventional suite using a point of care assay.	216	Clopidogrel	Premedication with clopidogrel (different regimens) does not lead to adequate platelet inhibition in about two-thirds of patients (66%) using the 50% threshold. This figure was 13% with aspirin. Same day clopidogrel loading dose may be insufficient to achieve adequate inhibition.
Prabhakaran et al., 2008[5]	To assess the feasibility of monitoring antiplatelet drug effects in patients undergoing cerebrovascular stenting.	76	Clopidogrel (n=55/76)	Using the rapid platelet function assay (for aspirin) and the P2Y12 assay (for clopidogrel), aspirin resistance (more than 550 aspirin reaction units) was found to be relatively uncommon, whereas clopidogrel resistance (defined as a percentage of inhibition < 40%) was observed in half of the patients.
Maldonado et al., 2014[11]	To assess the possible association between low response (measured with VerifyNow) with adverse events, and the extent to which this association is influenced by the level of anti-aggregation using two different cut-offs of P2Y12 inhibition (20 % and 40 %).	245	Clopidogrel	The occurrence of poor response after a 300mg loading dose of clopidogrel was 61.3 % using a cut-off of 40 % and 43.9 % using a cut-off of 20 %. Thromboembolic events in the first 48h were associated to low response, with an overall incidence of 10.2 % (cut-off of 40 %) and 11.8 % (cut-off of 20 %). More than 90 % of thromboembolic events were in the group of poor responders using a 40 % cut-off and more than 75 % using 20 %.
Tan et al., 2015[12]	To investigate risk factors for thromboembolic events in patients undergoing placement of Pipeline embolization device.	74	Clopidogrel	Diffusion-weighted imaging changes were much more frequent than new neurological symptoms. Longer procedures and multiple Pipeline devices were associated with a higher risk of new neurological symptoms due to thromboembolism. Using VerifyNow, a (non-significant) trend for an increased risk of symptomatic thromboembolism was observed with P2Y12 reaction units <208. Reloading with 600mg of clopidogrel was safe.
Nordeen et al., 2013[14]	To assess clopidogrel resistance and whether "intensified" therapy guided by platelet inhibition tests would reduce ischemic complications.	81	Clopidogrel	21% of patients were identified as resistant to clopidogrel using VerifyNow and the 20% threshold after a loading dose. The rate of death after complication by day 30 and 90 was higher in the resistant group. Intensifying therapy to achieve ≥20% of inhibition did not increase ischemic or hemorrhagic events, but there was a (non significant) trend toward more death after complication in the resistant group.
Drazin et al., 2011[15]	To evaluate the authors' experience using VerifyNow, to determine the prevalence of aspirin and clopidogrel resistance, and to identify predictors of inadequate platelet inhibition in patients undergoing cervical carotid or intracranial stenting.	52	Clopidogrel	Body weight and body mass index were identified as significant predictors of inadequate platelet inhibition by clopidogrel using the 20% threshold. One case of intraprocedural thrombosis was observed in the suboptimal group, which comprised 19 patients (36.5%).
Fifi et al., 2013[16]	To analyze the relationship between antiplatelet drug resistance and neurovascular complications in stent placement.	96	Clopidogrel	36.5% of patients were resistant to clopidogrel (platelet inhibition ≤ 20%) and 5.2% to aspirin (aspirin reaction units ≥ 550). Clopidogrel resistance was associated with periprocedural complications. Six of seven patients who had thromboembolic events within 30 days were clopidogrel resistant. A non significant decrease in thromboembolic complications was observed in patients whose clopidogrel dosage was tailored taking into consideration the results of the VerifyNow essay.
Flechtenmacher et al., 2015[17]	To correlate the results of light transmission aggregometry, VerifyNow, and Multiplate platelet-inhibition measurements and their relation to periprocedural thromboembolic complications in patients undergoing elective stenting.	97	Clopidogrel	Correlations among different testing methods were modest, varying from 66% to 77.7% in terms of classification of a patient as responsive or resistant to clopidogrel. Light transmission aggregometry seemed to be better correlated with thromboembolic complications (78% of sensitivity and 55% of specificity).
Asai et al., 2016[19]	To examine the influence of low response to clopidogrel on symptomatic ischemic events and new ischemic lesions with endovascular coil embolization.	181	Clopidogrel	Using VerifyNow, 34.9% of cases were considered to be low responders to clopidogrel (P2Y12 reaction units≥230). Low response had little effect on clinical outcome in this study, but increased asymptomatic large ischemic lesions. A total of 3.0% of low responders and 4.9% of responders presented ischemic complications. A new high-intensity spot >5mm was more frequent in low responders (39.4%) than in responders (21.2%).
Daou et al., 2016[20]	To investigate if values of P2Y12 reaction units are associated with hemorrhagic and thromboembolic complications after treatment with the Pipeline embolization device and to find an optimal preprocedural range of values.	231	Clopidogrel	A P2Y12 reaction unit value < 60 was a significant predictor of hemorrhagic complication, whereas a value>240 was a predictor of any thromboembolic complication and cerebral thromboembolic complication. The authors suggest that target values should be between 70 and 150.
Nishi et al., 2016[21]	To investigate the possible association between low platelet reactivity as measured with VerifyNow and hemorrhagic complications in elective neurointervention under dual antiplatelet therapy.	279	Clopidogrel	Using VerifyNow and receiver-operating characteristic curve analysis, the optimal cut-off of P2Y12 reaction value for major hemorrhagic complications was ≤ 175. Hemorrhagic complications occurred in 20% of patients in the low platelet reactivity group and in 8.9% in the non-low platelet reactivity group. Platelet reactivity was identified as an independent predictor for hemorrhagic complication.
Atallah et al., 2020[25]	To examine the safety and efficacy of prasugrel and ticagrelor in the management of clopidogrel-resistant patients treated for cerebral aneurysms.	437	Prasugrel (n=20), ticagrelor (n=2), clopidogrel (n=374)	Clopidogrel was not associated with aneurysm recurrence (follow-up: 15 months), increased thromboembolic, or hemorrhagic complications (two patients taking clopidogrel died from subarachnoid hemorrhage, and one from intraparenchymal hemorrhage). One patient under prasugrel presented thromboembolism with mild aphasia. The authors concluded that prasugrel (10mg/day) was a safe alternative to clopidogrel on allergic patients or nonresponders.
Choi et al., 2018[27]	To compare low-dose prasugrel (20 or 30mg) with clopidogrel in stent-assisted aneurysm coiling.	297	Prasugrel (n=207), clopidogrel (n=90)	Platelet inhibition was significantly higher (54% vs 20.8%) and thromboembolic events were less frequent (0.9% vs 6.4%) in the prasugrel group as compared to the clopidogrel group. Premedication with low-dose prasugrel was considered to be quick, effective, and safe in stent-assisted embolization of unruptured aneurysms. Prasugrel lowered the frequency of thromboembolic events without increasing the risk of hemorrhage.
Delgado Almandoz et al., 2013[28]	To identify an optimal range of pre-procedure P2Y12 reaction unit values and determine the independent predictors of thromboembolic and hemorrhagic perioperative complications after procedures with the Pipeline embolization device.	44	Clopidogrel, prasugrel, ticagrelor (tailoring protocol)	Using VerifyNow, 26% of subjects were considered hyporesponders to clopidogrel using the PRU>200 cut-off and 21% using the PRU>240 cut-off. The strongest independent predictor of all and major perioperative thromboembolic and hemorrhagic complications after an endovascular procedure with a Pipeline embolization device was a pre-procedure P2Y12 reaction unit value of <60 or >240.
Delgado Almandoz et al., 2014[29]	To determine whether a last-recorded value of P2Y12 reaction units of less than 60 or more than 240 predicts thromboembolic and hemorrhagic complications up to 6 months of aneurysm treatment with the Pipeline embolization device.	44	Clopidogrel, prasugrel, ticagrelor (tailoring protocol)	Four of the five major complications occurred in patients with markedly elevated (for thromboembolic complications) or decreased (for hemorrhagic complications) values of P2Y12 reaction units. A last-recorded value of P2Y12 reaction units of less than 60 or more than 240 was the only independent predictor of all and major complications up to 6 months.
Ha et al., 2016[30]	To compare the efficacy of low-dose prasugrel and clopidogrel in patients undergoing endovascular treatment of unruptured aneurysms.	194	Prasugrel, clopidogrel	More effective and consistent platelet inhibition was observed in the prasugrel group. The mean P2Y12 reaction unit values were 242.7 for clopidogrel (20 mg or 30 mg loading dose) and 79.4 for prasugrel (300 mg loading dose), and the mean percentages of inhibition were 22.1% and 60.2% respectively. The authors suggest that the antiplatelet assay response assay may be omitted with the low-dose prasugrel premedication.
Higashiguchi et al., 2021[31]	To assess the stratified use of clopidogrel in patients undergoing endovascular treatment of unruptured aneurysms.	217	Clopidogrel (n=50), prasugrel (n=167, tailoring protocol)	The stratified use of thienopyridines in dual antiplatelet therapy by tailored administration under P2Y12 reaction units monitoring reduced thromboembolic complications during endovascular therapy (6.6% vs 16% with non-tailored therapy) without increasing hemorrhagic complications. P2Y12 reaction unit monitoring revealed more stable platelet inhibition with prasugrel than with clopidogrel.
Kurniawan et al., 2020[32]	To evaluate the efficacy and safety of tailoring medications in resistant or hyper-responsive patients to antiplatelet medications.	223	Clopidogrel, prasugrel (n=56, tailoring protocol)	Switching to prasugrel enabled a greater decrease of P2Y12 reaction units (PRU) in clopidogrel-resistant patients (from 223 to 131) than with clopidogrel reloading (from 238 to 209, n=17). In clopidogrel hyper-responders, PRU values increased with dose adjustment (from 49 to 94). There were five ischemic events and no hemorrhage after a mean follow-up of 8 months. The authors concluded that low-dose prasugrel was effective for obtaining appropriate P2Y12

Oran et al., 2019[34]	To determine whether 30mg of prasugrel is sufficient to achieve adequate platelet inhibition, and whether such a loading dose together with aspirin followed by a 10mg/day prasugrel maintenance could serve as a first-line antiplatelet strategy for patients undergoing implantation of flow diverters.	138	Prasugrel	Effective platelet P2Y12 receptor inhibition was achieved in more than 98% of patients with half-dose (30mg) prasugrel loading. There was one case of fatal hemorrhage, one case of ischemic morbidity, six ischemic transient attacks, and one symptomatic hemorrhagic without permanent deficit. The authors considered that dual antiaggregant loading with half-dose prasugrel followed by prasugrel maintenance (10mg/day) may be feasible as first-line therapy.
Parthasarathy et al., 2018[35]	To report the use of prasugrel loading dose for endovascular treatment of blister-like ruptured aneurysms with the Pipeline embolization device.	9	Prasugrel	Thromboembolic or hemorrhagic complications related to treatment were not observed in this series after placement of a single Pipeline device and a loading dose of 50mg of prasugrel two hours before stent delivery.
Stetler et al., 2012[36]	To examine whether prasugrel is safe and effective as an alternative to clopidogrel for neurointerventional procedures, especially in patients who are either nonresponders or allergic to clopidogrel.	16	Prasugrel	Prasugrel is a viable alternative to clopidogrel for patients undergoing neurointerventional procedures who are nonresponders to clopidogrel. No complication related to ischemic or intracranial hemorrhage was observed. All 13 patients who had additional P2Y12 assays were shown to have therapeutic inhibition with the loading dose of 40mg of prasugrel, ten of them with at least 50% inhibition.
Sedat et al., 2017[37]	To determine whether prasugrel would be more effective than clopidogrel in reducing procedural events in patients with unruptured aneurysms treated with coils and stent.	200	Prasugrel, clopidogrel	Prasugrel (60mg loading dose followed by a 10m/day maintenance dose) reduces the clinical consequences of thromboembolic complications of stenting and coiling of unruptured aneurysms. The number of thromboembolic events in the two groups did not differ significantly, but the prasugrel group included more wide-neck aneurysms and more flow-diverters. Complications in the prasugrel group were more benign.
DeGrote et al., 2018[38]	To describe safety and efficacy outcomes for ticagrelor after placement of Pipeline embolization device, and measurements of platelet function.	29	Ticagrelor	Using dual antiplatelet therapy with ticagrelor and aspirin, the mean P2Y12 reaction unit value was 65. One patient presented stroke 226 days after placement of the Pipeline device. No cases of intracranial hemorrhage were observed. Three patients died during the 1-year follow-up due to unrelated causes.
Hanel et al., 2014[39]	To describe the authors' clinical experience with ticagrelor for neuroendovascular procedures as an alternative in clopidogrel P2Y12 platelet resistant patients.	18	Ticagrelor	Ticagrelor offers an effective alternative to clopidogrel non-responders. All patients showed immediate platelet inhibition after a 180 mg loading dose of ticagrelor. All but one patient showed an initial P2Y12 above 60%, with no adverse effects related to the drug. The cost of ticagrelor compared with clopidogrel is higher and should be taken into consideration when prescribing it.
Kang et al., 2010[40]	To elucidate clinical implications of pre-interventional clopidogrel response variability in patients undergoing aneurysm coiling.	186	Clopidogrel	Using VerifyNow, thromboembolic events were more frequent in patients with higher values of P2Y12 reaction units. They occurred in 17% and procedure-related events occurred in 21.3% of the patients in the 4th quartile (>332 units).
Kim et al., 2020[41]	To compare an aspirin plus clopidogrel with ticagrelor using diffusion-weighted imaging after stent-assisted coiling of unruptured aneurysms.	72	Clopidogrel, ticagrelor	After stent-assisted coiling for unruptured aneurysms, infarction was observed on diffusion-weighted imaging more frequently in the ticagrelor group than in the aspirin plus clopidogrel group. Nevertheless, the results of the study suggested that postprocedural infarction was more associated with aneurysm type (aneurysm with incorporated branches) than antiplatelet medication.
Mohammaden et al., 2020[42]	To evaluate the safety and efficacy of ticagrelor as a single antiplatelet therapy for the prevention of thromboembolic events following flow diversion for complex aneurysm treatment.	24	Ticagrelor	Procedural in-stent thrombosis occurred in two cases and was successfully treated with tirofiban. Aneurysm rebleeding occurred in one patient. Three patients discontinued ticagrelor due to systemic side effects (two reported shortness of breath and one reported subcutaneous bruising) The authors concluded that ticagrelor was safe and effective as a single antiplatelet therapy for prevention of thromboembolic events after flow diversion.
Moore et al., 2017[43]	To compare the safety, efficacy, and cost of ticagrelor and clopidogrel.	103	Ticagrelor (n=50), clopidogrel (n=53)	The rate of thromboembolic and hemorrhagic complications, angiographical, and functional outcomes did not differ between groups. Ticagrelor was more expensive when compared to clopidogrel ($396 versus $149 of cumulative monthly cost for non-insured patients).
Park et al., 2021[44]	To evaluate the efficacy and safety of ticagrelor versus clopidogrel for stent-assisted coiling or flow-diversion for treatment of unruptured cerebral aneurysms.	201	Ticagrelor, clopidogrel	At 90 days, the ticagrelor/aspirin and clopidogrel/aspirin groups had rates of ischemic stroke (7.0% and 7.5%), disabling stroke (2.8% and 4.3%), death (2.1% and 1.1%), and any bleeding (9.2% and 6.5%, respectively) that did not differ statistically. The authors concluded that ticagrelor appeared to be as effective and safe as clopidogrel for stent-assisted coiling or flow diversion for the treatment of unruptured aneurysms.
Soize et al., 2019[45]	To compare dual antiplatelet therapy regimens – aspirin with clopidogrel or ticagrelor – on morbid-mortality, safety, and efficacy of unruptured aneurysm embolization with flow diverter/disrupter.	80	Clopidogrel, ticagrelor	There was no statistically significant difference in morbidity, thromboembolic complications, or hemorrhagic complications between the ticagrelor and clopidogrel groups. Ticagrelor was considered to be safe and effective in replacing clopidogrel in dual antiplatelet therapy for unruptured aneurysms.
Narata et al., 2019[46]	To evaluate the frequency of ischemic and hemorrhagic events in patients treated with aspirin and ticagrelor associated with heparin bolus for treatment of unruptured aneurysms with intracranial stents.	154	Ticagrelor	Symptomatic complications were observed in 9 patients: 3 ischemic and 6 hemorrhagic. All deaths (n=4) were related to intracranial hemorrhage. The number of neurological complications was lower when a lower dose of heparin was administered (50 U/Kg instead of 70 U/Kg). This study did not find more neurological complications than in previous neurointerventional reports with aspirin/ticagrelor or aspirin/clopidogrel.
Koerner et al., 2012[51]	To correlate new periprocedural on diffusion-weighted imaging lesions in supra-aortal stenting with the level of platelet inhibition.	44	Clopidogrel	No significant correlation between the prevalence of lesions on diffusion imaging and platelet function was observed in this study using impedance aggregometry. Clopidogrel did not have a protective effect against periprocedural complications in this study and did not decrease the number of silent lesions in diffusion-weighted imaging after the procedure.
Karan et al., 2019[53]	To present the authors' experience using ticagrelor in combination with aspirin in Indian patients with clopidogrel resistance undergoing elective neuroendovascular procedures.	32	Ticagrelor	After a loading dose of 180 mg followed by 90 mg bid, no patient presented adverse effects in the postoperative period in this series.
Goh et al., 2013[55]	To examine the correlation between antiplatelet hyper-response and the risk of hemorrhagic complications.	47	Clopidogrel	Hyper-response to clopidogrel is associated with an increased risk of hemorrhagic complication. Clopidogrel response was higher in patients with major bleeding than in those with minor or no bleeding (median 94% versus 24%). Three of seven patients (42.8%) defined as hyper-responders (≥72% of platelet inhibition) had a major bleeding complication.
Nakagawa et al., 2015[56]	To evaluate the influence of diabetes mellitus and cigarette smoking on clopidogrel reactivity.	71	Clopidogrel	Age, diabetes mellitus, and smoking influence the reactivity to clopidogrel. Age and diabetes mellitus were independent predictors of clopidogrel hyporesponse (odds ratio 1.1 and 7.2 respectively), whereas smoking was an independent predictor of clopidogrel hyper-response (odds ratio 5.5).
Wong et al., 2015[74]	To compare outcomes in patients undergoing neurointerventional procedures on either standard clopidogrel or tailored clopidogrel regimens.	130	Clopidogrel	Using VerifyNow to guide clopidogrel therapy did not significantly decrease the incidence of postoperative thromboembolic complications (1.1% in the standard group and 2.5% in the tailored group). There was also no significant difference in the incidence of hemorrhagic complication (17.8% in the standard group and 15% in the tailored group) or death (3.0% and 0%, respectively).
Akbari et al., 2013[24]	To detail the experience with the use of dual antiplatelet therapy with aspirin and prasugrel in patients undergoing neuroendovascular procedures.	76	Prasugrel (n=25), clopidogrel (n=51)	Results suggest that dual antiplatelet therapy with aspirin/prasugrel may predispose to a higher risk of hemorrhage during neurointerventional surgery compared with dual antiplatelet therapy with aspirin/clopidogrel. Two of these complications were observed in the clopidogrel group and six in the prasugrel group (60mg loading dose and 10mg/day maintenance dose). No difference was observed in the occurrence of thrombotic complications.
Cho et al., 2018	To compare low-dose prasugrel and clopidogrel-based tailored therapy in terms of platelet function and procedure-related complications.	411	Prasugrel, clopidogrel	Prasugrel was associated with lower values of P2Y12 reaction units (125.7 vs 251.0) and higher levels of platelet inhibition (57.8% vs 18.7%). Prasugrel (20 mg loading dose and 5 mg/day maintenance dose) was more effective than clopidogrel (300 mg loading dose and 75 mg/day maintenance dose) in reducing periprocedural thromboembolism (7 cases vs 1 case), without significant difference in the risk of bleeding.
Selected randomized clinical trials with stroke patients				
Wang et al., 2013[8]	To test the hypothesis that 3-months of treatment with clopidogrel and aspirin would reduce the risk of recurrent stroke, as compared to aspirin alone, among patients with acute high-risk transient ischemic attack or minor ischemic stroke (the CHANCE trial).	5170	Clopidogrel	A total of 8,2% of patients in the clopidogrel/aspirin group and 11.7% in the aspirin group had a new stroke event. Moderate or severe hemorrhage occurred in 0.3% of subjects in each group. The authors conclude that in patients with transient ischemic attack or minor stroke treated within 24 hours after the onset of symptoms, the combination of clopidogrel and aspirin is superior to aspirin alone for reducing the risk of stroke in the first 90 days and does not increase the risk of hemorrhage.

Johnston et al., 2018[9]	To compare combination clopidogrel/aspirin to aspirin alone in transient ischemic attack or minor ischemic stroke to protection against subsequent stroke (the POINT trial).	4881	Clopidogrel	The combination of clopidogrel and aspirin was associated with a lower risk of major ischemic events (5.0%) than aspirin alone (6.5%) in patients with minor ischemic stroke or high-risk transient ischemic attack at 90 days, with most events occurring in the first week after the initial event. A higher risk of major hemorrhage was observed (0.9% vs 0.4%). The trial was halted after 84% of the anticipated number of patients.
Ogawa et al., 2109[85]	To investigate the non-inferiority of prasugrel to clopidogrel for the prevention of ischemic stroke, myocardial infarction, and death from other vascular causes in Japanese patients with non-cardioembolic stroke (the PRASTRO-I trial)	3747	Prasugrel, clopidogrel	Since the upper limit of the 95% confidence interval of relative risk exceeded the predefined non-inferiority margin for the primary endpoint, this study did not confirm the non-inferiority of prasugrel 3.75 mg to clopidogrel 75 mg for the prevention of ischemic stroke, myocardial infarction, and death from other vascular causes. A total of 4% of patients in each group reached the primary endpoint. The incidence of bleeding was 1% in each group.
Kitagawa et al., 2019[86]	To investigate the safety of long-term monotherapy with prasugrel compared with clopidogrel for stroke prevention in elderly and/or low body weight Japanese patients with non-cardioembolic ischemic stroke (the PRASTRO-II trial).	654	Prasugrel, clopidogrel	Long-term therapy with 3.75mg of prasugrel or 50mg of clopidogrel was associated with a similar occurrence of life-threatening, major, and other clinically relevant bleeding. There was a nonsignificant numerically lower incidence of ischemic stroke, myocardial infarction, and death from other vascular causes in elderly and/or low body weight patients.
Johnston et al., 2016[96]	To compare ticagrelor to aspirin in the prevention of major vascular events (ischemic or hemorrhagic stroke, myocardial infarction, or death) in patients with acute cerebral ischemia (the SOCRATES trial).	13199	Ticagrelor	Ticagrelor was not found to be superior to aspirin in reducing the rate of stroke, myocardial infarction, or death at 90 days in this study on patients with acute ischemic stroke or transient ischemic attack. The rate of ischemic stroke was 5.8% in the ticagrelor group and 6.7% in the aspirin group, whereas the rate of major bleeding was 0.5% and 0.6% respectively, with 0.1% of fatal bleeding in each group.
Johnston et al., 2020[97]	To test the hypothesis that ticagrelor and aspirin would be superior to aspirin alone in the prevention of subsequent stroke or death in patients with acute noncardioembolic cerebral ischemia who were not undergoing thrombolysis or thrombectomy (the THALES trial).	11016	Ticagrelor	The risk of stroke or death within 30 days was lower with ticagrelor/aspirin (5.5%) than with aspirin alone (6.6%), but the incidence of disability did not differ significantly between the two groups. The incidence of ischemic stroke was respectively 5.0% and 6.3%. Severe bleeding was more frequent with ticagrelor (0.5% vs 0.1%).
Godier et al., 2015[98]	To report a case that showed the inefficacy of platelet transfusion in reversing the effects of ticagrelor.	1	Ticagrelor	Using VerifyNow and a vasodilator-stimulated phosphoprotein assay, the authors observed that platelet transfusion was ineffective in reversing ticagrelor-induced platelet inhibition, whereas it was effective in reversing the effect of aspirin.