point-of-care (POC) genetic test. After 1 hour, nurses were able to determine a patient's *CYP2C19*2* carrier status and whether the patient was heterozygous or homozygous by utilizing the new technology.

The primary objective of the Reassessment of Antiplatelet Therapy using an Individualized Strategy Based on Genetic Evaluation (NCT01184300; RAPID GENE) study, presented by Derek So, MD, University of Ottawa Heart Institute, Ottawa, Ontario, Canada, was to evaluate the feasibility and test characteristics of a nurse-operated POC genetic test to determine *CYP2C19*2* carrier status.

PCI patients with non-ST elevation acute coronary syndrome (ACS) or stable coronary artery disease (CAD) were pretreated with a minimum of 600 mg clopidogrel. Following baseline platelet function testing, the patients were randomized 1:1 to rapid genotyping (RG; n=102) using the new POC technology or to no POC testing and standard therapy (ST; n=98) with clopidogrel 75 mg daily. In the RG group, *CYP2C19*2* carriers were treated with prasugrel 10 mg daily, and noncarriers were treated with clopidogrel 75 mg daily. At 1 week, all patients underwent platelet function testing and DNA sequencing. Patients in the ST arm also underwent POC rapid genotyping after 1 week.

The primary endpoint was the proportion of *CYP2C19*2* carriers with a P_2Y12 reaction unit (PRU) >234 (consistent with high on-treatment platelet reactivity) after 1 week of dual antiplatelet therapy.

In the RG arm, POC genotyping identified 25.3% (n=23) of patients as *CYP2C19*2* carriers, with 20.9% heterozygous and 4.4% homozygous. In the ST group after 1 week, POC genotyping identified a similar proportion of patients as *CYP2C19*2* carriers (24.0%; n=23), with 20.8% heterozygous and 3.1% homozygous. Compared with direct DNA sequencing, POC genotyping had a sensitivity of 100%, specificity of 99.4%, and a conclusive rate of 93.6%.

The proportion of *CYP2C19*2* carriers with high on-treatment platelet reactivity (PRU >234) was significantly lower in the RG group (prasugrel-treated) compared with the ST group (clopidogrel-treated; 0% vs 30.4%; p=0.009). *CYP2C19*2* carriers who were treated with prasugrel as compared with clopidogrel had a significantly lower PRU at 7 days (75.6 vs 207.3 PRU; p<0.001) and greater platelet inhibition after 7 days (73.3 vs 27.0 PRU; p<0.001), demonstrating the superior antiplatelet efficacy of prasugrel in this population. No MACE occurred in either group at 7 and 30 days.

POC genetic testing at the bedside, performed by nurses, is feasible and can accurately identify *CYP2C19*2* carriers. This novel, rapid genetic test facilitates rapid personalization of antiplatelet therapy. Administration of prasugrel to *CYP2C19*2* carriers decreased the rate of high on-treatment platelet reactivity relative to standard therapy with clopidogrel. These findings represent the validation and proof-of-concept of the first POC genetic test in clinical medicine. The results of the RAPID GENE trial will hopefully lead to larger-scale studies that can establish the role of pharmacogenomic tailored antiplatelet therapy after PCI.

Bioabsorbable Polymer Stent Noninferior to Permanent Polymer Stent

Durable polymer coatings on drug-eluting stents are associated with chronic inflammation and impaired healing. The reduced polymer load and short-term polymer exposure of bioabsorbable polymer stents may reduce duration of dual antiplatelet therapy (DAPT), reduce risk with DAPT interruption, and decrease stent thrombosis.

The SYNERGY stent has a PLGA bioabsorbable polymer coating plus everolimus that is applied only to the abluminal surface of a thin-strut platinum chromium stent. Once implanted, the polymer coating completely resorbs within 4 months. The Randomized Evaluation of a Novel Bioabsorbable Polymer-Coated, Everolimus-Eluting Coronary Stent (EVOLVE) trial, presented by Ian Meredith, MBBS, PhD, Monash Medical Centre and Southern Health, Melbourne, Australia, compared the bioabsorbable polymer SYNERGY Everolimus-Eluting Coronary Stent System with the permanent polymer PROMUS Element Stent for the treatment of *de novo* atherosclerotic lesions.

Two SYNERGY bioabsorbable stents were compared with the PROMUS Element permanent polymer stent. One SYNERGY stent had an everolimus dose and release profile that was similar to that of the PROMUS Element. The SYNERGY ½ Dose had half the dose of everolimus and a similar release profile to the PROMUS Element. Patients with *de novo* native coronary lesions (≤28 mm in length, reference vessel diameter ≥2.5 mm and ≤3.5 mm, %DS >50) were randomized to receive the PROMUS Element (n=98), SYNERGY (n=94), or SYNERGY ½ Dose (n=99). The primary clinical endpoint was target lesion failure (TLF) at 30 days, defined as target vessel cardiac death, target vessel myocardial infarction (MI), or target lesion revascularization. The primary angiographic

endpoint was in-stent late loss at 6 months. The study was designed to demonstrate that the SYNERGY stent was noninferior to the PROMUS Element.

Both SYNERGY and SYNERGY ½ Dose stents were noninferior to the PROMUS Element with respect to late loss at 6 months (0.10 vs 0.13 vs 0.15; p=0.19 and p=0.13, respectively, for the SYNERGY and SYNERGY ½ Dose stents compared with PROMUS). Similarly, at 30 days, the SYNERGY and SYNERGY ½ Dose stents were both noninferior compared with the PROMUS Element with respect to TLF (1.1% vs 3.1% vs 0%; p=0.49 and p=0.25, respectively).

Clinical events were infrequent (Table 1) and did not differ between stent types.

Table 1. Clinical Events at 6 Months.

	PROMUS Element (n=98)	SYNERGY (n=94)	SYNERGY ½ Dose (n=99)
TVR	6.1%	3.2%	2.1%
TLR	3.1%	1.1%	1.0%
Non-TLR TVR	3.1%	2.2%	1.0%
Stent thrombosis	0%	0%	0%
MI	0%	1.1%	3.1%
Cardiac Death	0%	0%	0%
Non-cardiac Death	0%	1.1%	0%

All p=NS; TVR=target vessel revascularization; TLR=target lesion revascularization; MI=myocardial infarction.

This study was limited by the small sample size, and therefore, the study lacked the power to detect differences in low-frequency clinical endpoints, such as stent thrombosis, death, and MI. This study population was a relatively low-risk cohort, limiting generalizability. Two future studies are planned that are powered to assess clinical event rates and optimal duration of DAPT.

The results of this trial show that the 2 dose formulations of the SYNERGY stent were noninferior to the PROMUS Element stent for both the primary clinical endpoint of TLF at 30 days and the primary angiographic endpoint of in-stent late loss at 6 months. Clinical events were low overall, with no stent thrombosis in any group. These results support the safety and potential efficacy of the novel, abluminal, bioabsorbable polymer SYNERGY everolimus-eluting stent for the treatment of patients with *de novo* coronary artery disease. Additional research is needed to evaluate clinical event rates and the potential for DAPT reduction with this novel stent.

BRIDGE Study Demonstrates Feasibility and Safety of Cangrelor

Oral P_2Y_{12} inhibitor therapy for up to 12 months is recommended following acute coronary syndrome (ACS) that is treated medically or after percutaneous coronary intervention (PCI). However, continuation of therapy puts patients at a 35% risk of bleeding, while preoperative discontinuation of antiplatelet therapy is associated with an increased risk of ischemic events. There is no currently established therapy with which a patient can be safely bridged during interruption of oral P_2Y_{12} inhibitor therapy while the patient awaits surgery.

Cangrelor is a rapid-acting, reversible, intravenous (IV) ADP-P_2Y_{12} receptor antagonist with a plasma half-life of 3 to 6 minutes. Dominick Angiolillo, MD, PhD, University of Florida-Shands, Jacksonville, Florida, USA, presented the Maintenance of Platelet Inhibition With Cangrelor After Discontinuation of Thienopyridines in Patients Undergoing Surgery (BRIDGE; NCT00767507) study results, which evaluated the use of cangrelor for bridging thienopyridine-treated patients to coronary artery bypass graft (CABG). The investigators hypothesized that cangrelor infusion would provide a level of platelet inhibition that was equivalent to that expected if oral thienopyridine was not discontinued. The objective of the study was to demonstrate that cangrelor would maintain levels of platelet reactivity <240 P_2Y_{12} reaction units (PRUs).

The study was conducted in two stages. Stage I comprised the dose-finding phase of the study, in which the effective infusion dose of cangrelor was identified. For this stage, cangrelor was administered to cohorts of 5 patients at a time in a stepwise fashion at predetermined doses of 0.5 µg/kg/minute, 0.75 µg/kg/minute, 1.0 µg/kg/minute, and 1.5 µg/kg/minute until platelet inhibition was >60% in 80% of daily samples or a dose of 2.0 µg/kg/minute was reached.

In Stage II, patients with ACS or who were post-PCI on a thienopyridine and awaiting CABG were randomized to continuous IV cangrelor (n=106) or placebo (n=104) <72 hours after thienopyridine discontinuation. The patients received study treatment for at least 48 hours and up to 7 days, which was discontinued 1 to 6 hours before CABG. The primary endpoint was the percentage of patients with PRU <240, as measured by the VerifyNow P_2Y_{12} test for all on-treatment samples. Verify*Now*-P_2Y_{12} is a rapid assay that tests platelet