

# Recent Advancement in the Management of Diabetes in Patients with coronary artery disease

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Cardiovascular disease remains the principal cause of death and disability among patients with diabetes mellitus. Diabetes mellitus exacerbates mechanisms underlying atherosclerosis and heart failure. Unfortunately, these mechanisms are not adequately modulated by therapeutic strategies focusing solely on optimal glycemic control with currently available drugs or approaches. In the setting of multifactorial risk reduction with statins and other lipid-lowering agents, antihypertensive therapies, and antihyperglycemic treatment strategies, cardiovascular complication rates are falling, yet remain higher for patients with diabetes mellitus than for those without. The long-term treatment of diabetes mellitus is challenging because of diverse goals: to address metabolic derangements and to reduce risks for macrovascular adverse outcomes. Management of hyperglycemia has resulted in substantial reductions in risks for retinopathy with associated preservation of vision, and nephropathy with prevention of end-stage renal disease when combined with aggressive blood pressure control. Progress in prevention and amelioration of these microvascular complications has conversely resulted in a shift in the major causes of long-term morbidity and mortality in diabetes mellitus, which now consists of cardiovascular risk with associated ischemic heart disease, ischemic stroke, peripheral artery disease, and congestive heart failure. Diabetes mellitus clearly exacerbates mechanisms of atherosclerosis and heart failure. Unfortunately, these mechanisms are not adequately fully modulated or addressed by focusing solely on optimal glycemic control. Fortunately, aggressive management of cardiovascular risk factors, particularly lowering of LDL cholesterol concentration and blood pressure along with glycemic management, provides substantial improvements in cardiovascular outcomes. Potential cardiovascular benefits versus risks of new glucose-lowering agents and timing of (early or prolonged) glucose-targeting interventions are incompletely understood. Evidence for a more effective antiplatelet regimen than aspirin in moderate to high risk patients with diabetes mellitus without ischemic heart disease is necessary. Recommended blood pressure goals are also not fully evidence-based, and the role of new potent lipid-lowering therapies (PCSK9 inhibitors) and lipid-lowering drugs that target triglycerides and HDL cholesterol needs further study. Another unaddressed issue is the ultimate risk–benefit ratio for prolonged use of dual

antiplatelet therapy in diabetes. In late-breaking clinical trial results presented in a Hot Line Session today at the European Society of Cardiology Congress 2019, the results from The Effect of Ticagrelor on Health Outcomes in Diabetes Mellitus Patients Intervention Study (THEMIS), a clinical trial that evaluated whether adding ticagrelor to aspirin improves outcomes for patients with stable coronary artery disease and diabetes mellitus but without a history of heart attack or stroke. Taking ticagrelor in addition to aspirin reduced the risk of a composite of cardiovascular death, heart attack, or stroke. Patients on this dual-antiplatelet therapy also experienced greater risk of major bleeding. In THEMIS-PCI, a study that specifically looked at THEMIS patients with a history of previous percutaneous coronary intervention (PCI) that includes stenting, versus the overall THEMIS population, investigators found even more favorable results for patients taking ticagrelor plus aspirin.