

## ACUTE CORONARY SYNDROMES

## Complete revascularization for STEMI

“ current guidelines recommend the treatment of the infarct-related artery only ”

In patients with ST-segment elevation myocardial infarction (STEMI) and multivessel disease, complete revascularization of both infarct-related and non-infarct-related coronary arteries reduces the risk of adverse cardiovascular outcomes compared with revascularization of the infarct-related (culprit) artery only. These findings come from a prospective, multicentre, randomized trial conducted by the Compare-Acute investigators, and were presented at ACC.17 and published in *The New England Journal of Medicine*.

Patients with acute STEMI are treated with revascularization of the affected artery using percutaneous

coronary intervention (PCI) and the implantation of stents. Of these patients, 50% also have severe stenotic lesions in non-infarct-related coronary arteries, known as multivessel disease. These patients have worse survival than patients without multivessel disease, probably owing to persistent ischaemia. Despite the prevalence and associated risks of multivessel disease, current guidelines recommend the treatment of the infarct-related artery only, and an evidence-directed treatment strategy for lesions in non-infarct-related coronary arteries is still required.

In the Compare-Acute trial, 885 patients aged 18–85 years who presented with STEMI and multivessel disease within 12 h of symptom onset and who had non-infarct-related arteries with stenosis of  $\geq 50\%$  were included. After successful PCI of the infarct-related artery, patients were randomly assigned to receive either complete revascularization using fractional flow reserve (FFR)-guided PCI at the time of primary PCI (295 patients) or treatment of the infarct-related artery only (590 patients). The trial end point was a composite of major adverse cardiac and cerebrovascular events (MACCE), comprising all-cause death, nonfatal myocardial infarction, any revascularization, and cerebrovascular events at 12 months.

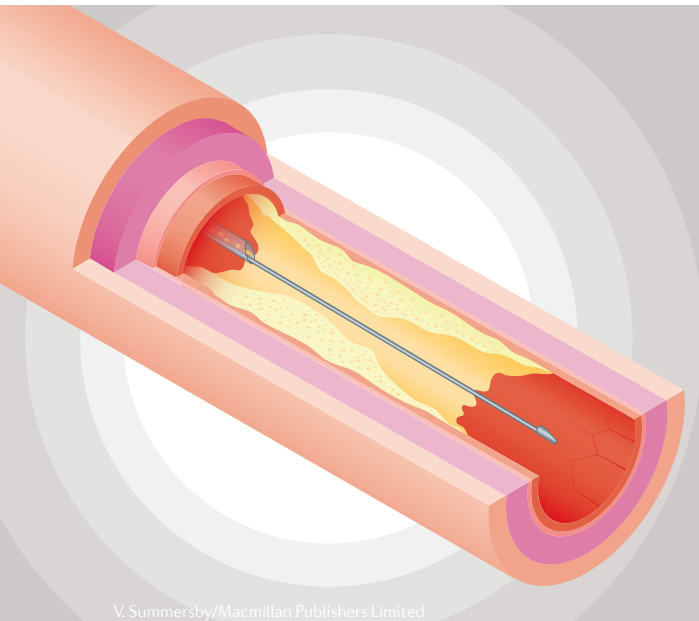
The rate of MACCE was significantly higher in the group who received revascularization of the

infarct-related artery only than in the complete revascularization group (20.5% versus 7.8%; HR 0.35, 95% CI 0.22–0.55,  $P < 0.001$ ). This difference might be attributable to the increased rate of revascularizations performed in the group that received PCI of the infarct-related artery only (17.5% versus 6.1%; HR 0.32, 95% CI 0.20–0.54,  $P < 0.001$ ). Mortality was similarly low in both groups. Furthermore, measurement of FFR was well tolerated, added little time to the treatment procedure, and only 0.2% of patients had a serious adverse effect associated with this procedure.

Other studies have also reported a reduction in major adverse cardiac events following complete revascularization in patients with STEMI, suggesting that this option might be suitable to reduce the risk of subsequent adverse cardiovascular outcomes in these patients. Indeed, the Compare-Acute investigators state that the use of FFR-guided revascularization during primary PCI limits the need for sequential catheterizations and could limit costs, given the lower frequency of recurrent hospital admissions for chest pain and heart failure in patients in this treatment group.

Louise Adams, Associate Editor  
*Nature Reviews Disease Primers*

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