vessel coronary artery disease, predominantly involving the LAD territory. The background cardiovascular therapy included aspirin and clopidogrel (>99%) and statins (>80%), over half were on a beta-blocker, and about one-third received an ACE inhibitor.

The primary endpoint of TVF at 12 months did not differ significantly between the two groups (4.7% for 6-month therapy vs 4.4% for 12-month therapy; risk difference +0.3%, 97.5% CI +3.6%; p=0.43 for superiority; p=0.0031 for noninferiority).

However, there was a statistically significant interaction (p<0.001) with the presence of diabetes, with diabetics having less favorable results with 6 months of DAT (HR, 3.15; p=0.005) and nondiabetics having better results with 6 months of DAT (HR, 0.42; p=0.022). There was no evidence of interaction according to stent type.

There were no differences between 12- and 6-month DAT in the primary safety composite (3.1% vs 3.4%; p=0.76), major bleeding (0.6% vs 0.7%; p=0.42), or the secondary endpoint of stent thrombosis (0.4% vs 0.8%; p=0.33), which is of particular concern with shorter durations of DAT.

Although the primary endpoint of TVF at 12 months satisfied the study's noninferiority criteria, the trial had low power due to the unexpectedly low event rate (10% predicted vs 4.4% observed) and a wide noninferiority margin (+4% absolute difference). With such a low event rate (4.4%) in the group that was randomized to 12 months of DAT, the upper bound of the event rate in the 6-month DAT group would needed to have been nearly doubled (>8.4%) for it to have been declared inferior. The data are limited further by a very low rate of hard clinical endpoints and a statistically significant interaction that was dependent upon diabetic status. Although the findings suggest that treatment with a thienopyridine (in addition to aspirin) may be discontinued at 6 months for nondiabetic patients, more data are needed from a larger, appropriately powered trial that assesses hard clinical endpoints before clinical practice should change.

No Mortality Benefit from CABG When Added to Optimal Medical Therapy in Patients with CAD and LV Dysfunction: Results from the STICH Trial

Results from the Surgical Treatment of Ischemic Heart Failure STICH trial (NCT00023595) showed no mortality benefit from coronary artery bypass grafting (CABG) in addition to intensive guideline-based medical therapy compared with medical therapy alone. Results of the trial were presented by Eric J. Velazquez, MD, Duke University, Durham, North Carolina, USA.

The STICH trial comprised 1212 patients (median age 59 years) with coronary artery disease who were amenable to CABG and had an ejection fraction <35%. Subjects were randomly assigned to medical therapy alone (n=602) or medical therapy plus CABG (n=610). The primary study outcome was all-cause mortality. Major secondary outcomes included the rates of death from cardiovascular (CV) causes and death from any cause plus hospitalization for CV causes.

After a median follow-up of 56 months, there was no significant difference in the primary endpoint of death from any cause between those who were randomized to CABG compared with those who were randomized to medical therapy only (36% vs 41%; HR, 0.86; 95% CI, 0.72 to 1.04; p=0.12). CABG was associated with an early risk of death from any cause that persisted through 2 years. A significance level of p<0.04 was required to meet statistical significance for the primary outcome in order to compensate for interim treatment comparisons.

Secondary outcomes showed fewer deaths from CV causes in the combination group versus the medical therapy-only group (28% vs 33%; HR, 0.81; 95% CI, 0.66 to 1.00; p=0.05). Death from any cause or hospitalization for CV causes was also lower in the combination group (58% vs 68%; HR, 0.74; 95% CI, 0.64 to 0.85; p<0.001; Table 1).

Table 1. Secondary Outcomes.

Outcome	Medical Therapy (n=602)	CABG (n=610)	HR with CABG (95% CI)	p value
Death from any cause within 30 days of randomization				
Logistic regression	7 (1)	22 (4)	3.19 (1.35 to 7.52)‡	0.008
Cox proportional hazards	7 (1)	22 (4)	3.12 (1.33 to 7.31)	0.006
Death from any cause or hospitalization for CV causes*	411 (68)	351 (58)	0.74 (0.64 to 0.85)	<0.001
Death or hospitalization from any cause*	422 (73)	399 (65)	0.81 (0.71 to 0.93)	0.003
Death from any cause or revascularization with PCI or CABG*	333 (55)	237 (39)	0.60 (0.51 to 0.71)	<0.001

*Full follow-up (median 56 months); ‡This value is an odds ratio rather than a hazard ratio.

Almost all (91%) of the patients who were assigned to the combination group underwent CABG, and 17% of patients in the medical therapy-only group crossed over and also underwent CABG, primarily due to progressive symptoms (40%), followed by acute decompensation (27%), patient's or family's decision (28%), and physician's decision (5%).

Two exploratory analyses were performed—one using the as-treated population (592 with medical therapy-only and 620 patients who underwent CABG during year 1 of follow-up) and the other using the per-protocol population, excluding patients who crossed over during the first year (537 medical therapy-only patients who did not cross over to CABG during the first year of follow-up and the 555 patients who were assigned to the combination group who actually underwent CABG). Results of these analyses showed a reduction in mortality in the patients who received CABG (as-treated HR, 0.70; 95% CI, 0.58 to 0.84; p<0.001; per-protocol HR, 0.76; 95% CI, 0.62 to 0.92; p=0.005). The as-treated comparison was analyzed using the Cox model, in which CABG was treated as a time-dependent covariate.

The STICH trial was originally designed with a sample size of approximately 2000 patients with an anticipated follow-up of approximately 3 years. With this design, the study would have had 90% power to detect a 25% reduction in mortality with CABG as compared with medical therapy-alone, assuming a 3-year mortality of 25% in the medical therapy-only group. Because enrollment was slower than expected, the design was modified, with a reduced sample size of 1200 and an extended follow-up of 5 years.

Overall, this important randomized trial showed no significant difference between CABG with medical therapy versus medical therapy alone. This neutral result may be in part due to inadequate power to detect differences within the range that was observed (16% reduction in hazard). While secondary and exploratory analyses suggest a benefit with CABG, these results must be interpreted with caution in this overall neutral trial.

Further reading: Velazquez EJ et al. *New Engl J Med* 2011.

Myocardial Viability Does Not Predict Survival Benefit After CABG

Myocardial viability did not predict a survival benefit from surgical revascularization among patients with ischemic heart disease and left ventricular (LV) dysfunction, according to the findings of a substudy of the Surgical Treatment for Ischemic Heart Failure Trial (STICH). Robert O. Bonow, MD, Northwestern University, Chicago, Illinois, USA, reported the results of the study, which is the largest report to date that relates myocardial viability to clinical outcomes in this population and the first to do so in the setting of a prospective randomized trial of coronary artery bypass grafting (CABG) versus medical therapy.

The study included 601 of the 1212 patients who were enrolled in the STICH trial in whom myocardial viability was assessed. Viability assessment was done by single-photon emission computed tomography (SPECT) in 471 patients and by low-dose dobutamine echocardiography in 280 patients, with 150 patients undergoing both tests. Assessment was optional and was done at the discretion of the recruiting investigators. The patients were randomly assigned to receive aggressive medical therapy alone (n=303) or CABG (n=298).

There were 487 (81%) patients with viable myocardium. The primary endpoint of all-cause mortality was less frequent in patients with myocardial viability in the unadjusted analysis (5-year mortality 37% vs 51%; p=0.003); however, myocardial viability was not significantly related to mortality (p=0.21) in a multivariable analysis that adjusted for other markers of risk, including LV ejection fraction, LV end-systolic and end-diastolic volume indexes, and a "risk at randomization" score (calculated with variables of age, renal disease, heart failure, ejection fraction, Duke coronary artery disease index, mitral insufficiency, and cerebrovascular disease).

Similarly, the secondary endpoint of cardiovascular (CV)-related mortality was significantly lower in patients with viability on univariate analysis (5-year mortality 29% vs 43%; p=0.003) but not on multivariable analysis (p=0.34). The secondary combined endpoint of mortality plus CV-related hospitalization occurred less frequently in patients with viability (5-year events 63% vs 82%), even after adjustment (p< 0.001).

These findings indicate that assessment of myocardial viability does not provide incremental independent information in identifying patients with coronary artery disease and LV dysfunction who will have the greatest survival benefit from adding CABG. The researchers suggest that the assessment of myocardial viability should not be the sole deciding factor in selecting the best therapy for patients in this population.

The study has several limitations, including the lack of randomization for viability testing, the small number of patients, and the small proportion of patients who were judged not to have substantial viability. Although viability assessment using other modalities (eg, MRI and PET) was not evaluated in this study, current meta-analyses and reviews indicate that the potential of SPECT and dobutamine echocardiography does not differ from PET in predicting survival in patients with LV dysfunction.

Further Reading: Bonow R et al. *N Engl J Med* 2011.