cost that was associated with standard therapy was offset slightly by higher costs for rehabilitation and skilled nursing facilities that are associated with TAVR (total 12-month cost difference, $23,372; p<0.001).

Using parametric survival models to extrapolate life expectancy beyond the observed follow-up period, the researchers estimated a 1.9-year-longer life expectancy for TAVR compared with standard care (3.1 vs 1.2 years). The lifetime incremental cost of TAVR was $79,837, with a lifetime incremental gain in life expectancy of 1.59 years (TAVR-control) after applying a standard economic discount rate of 3% per year to both future costs and benefits. The resultant incremental cost-effectiveness ratio was $50,212/LGY. Bootstrap resampling demonstrated that the probability of cost-effectiveness was 47% for a threshold of $50,000 per LYG and 95% for a threshold of $60,000/LYG.

When the effectiveness measure was changed from LYG to QALYs gained for the secondary analysis, the incremental benefit decreased slightly (1.29 QALYs).

The authors note that these results compare favorably with the costs of other currently used CV treatments, including implantable cardiac defibrillators and atrial fibrillation ablation, and cost less than hemodialysis, percutaneous coronary intervention for stable disease, and left ventricular assist devices.

The study has several limitations. Because the experience with TAVR is still early, care may become more efficient in the future. In addition, care of the control group in the trial may have differed from that for similar patients in community practice. There is also some uncertainty about the lifetime analysis in the study—particularly the cost projections beyond the trial period. Lastly, the patient population of Cohort B was old and at high risk, and the results can not be extrapolated to other patient groups.

Still to be determined is the cost-effectiveness of TAVR compared with surgical AVR, an important point, given the most recent PARTNER data that showed similar clinical outcomes for these two procedures.

One-Year Data from the RESOLUTE US Trial

Drug-eluting stents (DES) are commonly used to treat coronary artery disease (CAD), because they reduce in-stent thrombosis and the need for repeat revascularization compared with bare-metal stents. However, there are safety concerns regarding the infrequent but life-threatening complication of stent thrombosis. Further development of DES with sustained drug release is hypothesized to represent an even safer alternative.

One-year data from the RESOLUTE US trial (NCT00726453), a comparison of a new zotarolimus DES with a hydrophilic biocompatible polymer that provides prolonged drug release (180 days compared with 14 days in the older generation), suggest that the RESOLUTE zotarolimus-eluting stent (R-ZES) is noninferior to historical results of the ENDEAVOR zotarolimus-eluting stent (E-ZES) in rates of clinical restenosis, death, myocardial infarction (MI), and stent thrombosis at 1 year. The results were presented by Martin B. Leon, MD, Columbia University, New York, New York, USA.

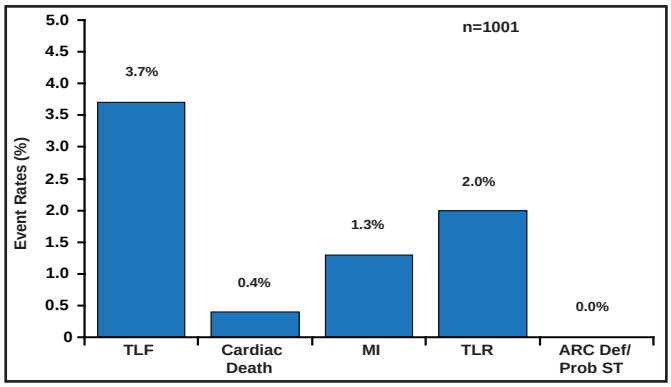
RESOLUTE US was a prospective, observational study that evaluated the clinical effectiveness of the R-ZES in a US population. The study comprised patients (n=1402) with *de novo* native coronary lesions that were suitable for 1- or 2-vessel treatment with stents from 2.25 to 4.0 mm in diameter. Subjects were enrolled with clinical follow-up only (n=1242) or with angiographic follow-up (n=160). The primary endpoint was 12-month target lesion failure (TLF; defined as a composite of cardiac death, MI, and clinically driven target lesion revascularization [TLR]) compared with historical data from the E-ZES clinical trials. The primary analysis consisted of data from the patients in the clinical cohort who underwent only single lesion revascularization with a 2.5-mm–3.5-mm stent (n=1001). The other 241 patients either had 2 lesions that were treated and/or received a 2.25-mm stent. Completeness of follow-up at 1 year was analyzable in 982 of the 1001 patients.

A total of 1402 subjects were enrolled in this observational cohort. The mean age was 64 years, most were men (68%), one-third were diabetic, the mean target vessel diameter was relatively small at 2.59±0.47 mm, and dual antiplatelet therapy use was 93% at 1 year. At 1 year, TLF occurred in 36 of the 982 patients with complete follow-up, which is a rate of 3.7% versus 6.5% (70/1076) in the E-ZES historical controls (ie, a risk difference of -2.8%, p<0.001 for noninferiority). The development of secondary endpoints was also low (Figure 1). The TLF rate in the overall clinical cohort (n=1402) was 4.7%. The 12-month rate of stent thrombosis was 0.1%, which occurred exclusively in subjects with small-vessel, 2.25-mm stents.

In summary, RESOLUTE US reported a similar rate of events with the R-ZES next-generation DES compared with earlier E-ZES trials. The low 1-year incidence of in-stent thrombosis and the low need for repeat revascularization that was achieved with very high compliance of dual antiplatelet therapy are reassuring in challenging patients with diabetes mellitus and small-sized vessels. Further

follow-up is required to demonstrate long-term efficacy and safety.

Figure 1. Main Analysis Cohort: 12-Month TLF, Cardiac Death, MI, and TLR.



Further reading: Yeung AC et al. *J Am Coll Cardiol* 2011; Mauri L et al. *Am Heart J* 2011.

The PLATINUM Trial: New Metal Alloy DES is Similar to a Predicate DES for Uncomplicated Elective PCI

A novel platinum-chromium everolimus-eluting stent (PtCr-EES) proved to be as safe and effective as the cobalt-chromium everolimus-eluting stent (CoCr-EES) in the 12-month Prospective, Randomized, Multicenter Trial to Assess an Everolimus-Eluting Coronary Stent System [PROMUS Element] for the Treatment of up to Two De Novo Coronary Artery Lesions Trial (PLATINUM; NCT00823212), the first large-scale, international, multicenter, prospective, single-blind, randomized trial of the novel stent [Stone GW et al. *J Am Coll Cardiol* 2011]. The PROMUS Element drug-eluting stent (DES) uses the same biocompatible, inert fluorocopolymer and antiproliferative agent as an earlier-generation CoCr-EES (PROMUS) but has a modified scaffold that is designed to improve delivery, vessel conformability, side branch access, radiopacity, radial strength, and fracture resistance.

In PLATINUM, 1530 patients who were undergoing percutaneous coronary intervention (PCI) of one or two *de novo* native lesions were randomized to receive CoCr-EES (n=762) or a PtCr-EES (n=768). The primary endpoint was the 12-month rate of target lesion failure (TLF), the composite of target vessel-related cardiac death, target vessel-related myocardial infarction (MI), or ischemia-driven target lesion revascularization (TLR) in patients who received at least one assigned study stent. The trial was powered to test for a noninferiority risk difference within 3.5%. Secondary endpoints included individual components of the primary endpoint, stent thrombosis, successful delivery and deployment of the stent without balloon rupture or stent embolization, and clinical procedural success, defined as a final lesion diameter <30% with TIMI 3 flow.

Among the 1530 patients who were enrolled and randomized, the mean age was 63 years, 28% was female, 23% had diabetes, and 24% had unstable angina. A total of 27 of the 762 patients (3.5%) who received CoCr-EES and 23 of the 768 patients (3.0%) who received PtCr-EES were lost to follow-up or withdrew consent. At 12 months, the primary outcome of TLF had occurred in 2.9% (21 out of 714) of the CoCr-EES versus 3.4% (25/731 patients) of the PtCr-EES group (risk difference +0.5%; 95% CI, -1.3 to 2.3%; p for noninferiority=0.001). Results were similar in the intention-to-treat analysis: 3.2% (23/737) of the CoCr-EES versus 3.5% (26/742) of the PtCr-EES group (risk difference +0.3%; 95% CI, -1.5% to 2.2%; p for noninferiority=0.0009). TLR and stent thrombosis rates were very rare and occurred equally with both stents (1.9% and 0.4%, respectively).

Findings from PLATINUM indicate that along with stainless steel and cobalt chromium, platinum chromium may now be considered an acceptable metal alloy for use in DES. Of note, however, the event rates were less than expected (and similar to the number that was lost to follow-up); thus, while statistical noninferiority was demonstrated, small differences between the stents can not be excluded. Longer-term follow-up and additional multicenter studies are indicated in patients with acute coronary syndromes and/or complex coronary anatomy to further assess stent deliverability and clinical outcomes in these important patient populations.

The RAPS Trial: Radial Artery Grafts are Associated with Greater Longer-Term Patency than SVGs

Aorta-to-coronary saphenous vein grafts (SVGs) are the most widely used technique in patients who undergo coronary artery bypass graft (CABG) surgery, but data from the Randomized Multicenter Radial Artery Patency Study (RAPS; NCT00187356) demonstrate that radial artery grafts have better long-term angiographic patency. Stephen Fremes, MD, MSc, University of Toronto and Sunnybrook Health Sciences Centre, Toronto, Ontario, Canada, presented findings from the 5-year analysis of RAPS, a