cause of the influence of unmeasured confounders even after appropriate adjustment. To confirm the present results and more accurately assess the effect of statins on AAA expansion, a large randomized trial is needed.

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Regarding “Effect of gender on long-term survival after abdominal aortic aneurysm repair based on results from the Medicare national database”

Egorova et al compared long-term survival of propensity score-matched cohorts of endovascular (EVAR) and open aneurysm repair (OAR) for abdominal aortic aneurysm (AAA) from the Medicare Beneficiary Database. The survival benefit of EVAR for elective AAA was sustained for the 6-year follow-up in both men (hazard ratio 0.96; 95% CI 0.93-0.99; P = .0049) and women (HR 0.88; 95% CI 0.83-0.93; P < .0001). In a recent meta-analysis by Lovegrove et al of three randomized controlled trials (RCTs) and eight observational comparative studies, however, EVAR for elective AAA was not associated with a reduction in long-term all-cause mortality (HR 0.94; 95% CI 0.79-1.13; P = .52). The authors extracted unadjusted HRs from crude Kaplan-Meier survival curves in observational studies except for two studies (reporting an unadjusted HR in one and an adjusted odds ratio in another). We performed herein a meta-analysis of RCTs and risk-adjusted observational studies (providing adjusted-risk estimates for follow-up all-cause death) of elective EVAR versus OAR for unruptured AAAs.

The MEDLINE and EMBASE databases and the Cochrane Library and Central Register of Controlled Trials were searched using PubMed and OVID. Text keywords included elective, electively, nonacute, nonurgent, nonemergent, unruptured, or intact; endovascular, endovascularly, stent, endograft, or endoprosthesis; open, conventional; conventionally, surgical, surgically; abdominal aortic aneurysm; randomized, randomly, or randomization; and adjusted, adjustment, multivariate, multivariable, multiple, Cox, hazard, logistic, regression, or propensity. Studies considered for inclusion met the following criteria: the design was an RCT or risk-adjusted observational comparative study; acceptable risk-adjustment methods included propensity score analyses, multivariate Cox proportional hazards regression models, and multivariate logistic regression models; the study population was patients with unruptured AAAs; patients were assigned to elective EVAR versus OAR, and main outcomes included follow-up (>1 year) all-cause mortality.

Our search through April 2011 identified five RCTs and nine risk-adjusted observational studies. Risk-adjustment methods were propensity score analyses in five, multivariate Cox proportional hazards regression models in three, and multivariate logistic regression models in...
Instead of HRs, Bush et al. provided an adjusted odds ratio, and we generated a risk ratio from an RCT by Becquemin et al. Pooled analysis of all the 14 studies (146,778 patients) demonstrated no statistically significant difference in all-cause death between EVAR and OAR (random-effects HR, 0.97; 95% CI, 0.90-1.04; $P = .32$; Fig). When data from RCTs and risk-adjusted observational studies were pooled separately, there were no statistically significant differences in both subgroups of RCTs (2823 patients; random-effects HR, 1.00; 95% CI, 0.86-1.16; $P = 1.00$) and risk-adjusted observational studies (143,955 patients; random-effects HR, 0.96; 95% CI, 0.89-1.04; $P = .32$). Exclusion of any single study from the analysis did not substantively alter the overall result of our analysis.

Despite the findings by Egorova et al., we found, based on a meta-analysis of RCTs and risk-adjusted observational studies, no difference in follow-up all-cause mortality between elective EVAR and OAR for AAA.

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Reply

We would like to thank Dr. Takagi for his interest in our publication. His meta-analysis is both thoughtful and raises some methodological and substantive issues. Meta-analyses of published data present a number of challenges that are amplified in the current case. In particular, studies to be collated may have differing lengths of follow-up, or that the time span being covered by these studies may capture the technical evolution of the intervention or a learning curve of its performance. Thus, greater selectivity of studies or the introduction of a weighting scheme that discounts the weight of older studies when collating studies that span a significant time horizon are important considerations. Another concern in the selection of studies is whether different publications report the results of the same group of patients (i.e., investigators must ensure that the same data are not duplicated and consequently over-weighted in the meta-analysis). Finally, when patient subgroups are found to have different outcome risks, investigators need to either adjust for the differing proportion of such subgroups or stratify the analysis to avoid the imposed bias. Hence, Dr. Takagi’s intriguing aggregation of 14 studies performed from 1995 to 2007, which have varying lengths of follow-up (from 1 to 8 years), includes studies that have different proportions of men and women without appropriate adjustment or consistent stratification and includes publications of the outcome of the same set of Medicare patients cannot necessarily be expected to find the same outcome differences between endovascular aneurysm repair...