41667. Randomized Controlled Trials are Unlikely to Change Carotid Surgery

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Disclosures

- None
Introduction

- All physicians are Bayesian theorists. This is most obvious in diagnosis, where a “hunch” (pre-test probability) is iteratively reinforced or rejected (post-test probability) based on serial diagnostic tests.
- Bayesian logic is also apparent in therapeutic interventions. An initial level of conviction about the efficacy of a given treatment is continuously modified based on the results of clinical trials.
- In the present study, we applied Bayesian logic to the question of endarterectomy (CEA) versus stenting (CAS) for symptomatic carotid stenosis.
- We quantified the power of clinical trials to shift opinion, and we calculated how large a trial would be needed to change practice.
Methods

• Six high-quality randomized controlled trials (RCTs) comparing CEA to CAS were identified.
• We sequentially applied Bayesian logic for each of three initial levels of conviction – strong advocate (80%), true equipoise (50%), strong skeptic (30%) – with respect to the value of CAS over CEA.
• We applied the results to calculate how large a trial would be needed to change a surgeon’s conviction.
Results

• Regardless of initial conviction, by 2010 the Bayesian clinician had become considerably more skeptical of CAS.
• In order to shift the strong skeptic’s conviction to simple equipoise, a high quality RCT with more than 4,000 patients per treatment arm would be required.
Summary

• All physicians operate reflexively on Bayesian logic. Application of this process to the question of CEA versus CAS for symptomatic stenosis suggests CEA is superior to CAS.
• According to this analysis, further RCTs are highly unlikely to alter this conviction.
• Other widely debated therapeutic questions can be analyzed by this method, and the power of past and future clinical trials to shift opinion and change practice can be quantified.