were analyzed by binary logistic regression for each health-care system, after adjustment for age, sex, year, and Charlston comorbidity index. The study included 11,799 patients with rAAA in England and 23,838 patients with rAAA in the USA. In-hospital mortality was lower in the USA than in England (53.05% [95% CI, 51.26-54.85] vs 65.9%; $P < .0001$). Intervention (open or endovascular repair) was offered to a greater proportion of cases in the USA than in England (19,174 [80.43%] vs 6897 [58.45%]; $P < .0001$). Endovascular repair was more common in the USA than in England (4003 [20.88%] vs 589 [8.54%]; $P < .0001$). Postintervention mortality was similar in both countries (41.77% for England and 41.65% for USA). Observations were no different in age-matched and sex-matched comparisons. In both countries reduced mortality was associated with increased use of endovascular repair, increased hospital caseload (volume) for rAAA, high hospital bed capacity, hospitals with teaching status, and admission on a weekday.

Comment: The data demonstrate that in-hospital mortality for patients with rAAA is lower in the USA than England with the difference mainly attributed to the fact that in the U.S. patients were less likely to be managed by non-corrective measures and aneurysm repair was offered for a greater proportion of patients with rAAA. Even though endovascular repair was more common in the USA, overall operative mortality was similar in the two countries. In both countries, outcomes are better in hospitals with larger volumes, teaching hospitals, and when patients are admitted during regular working hours. It is unclear if these are independent correlates or whether hospital capacity, teaching status and admission on a week day as well as rAAA caseload are all basically interrelated surrogate markers for the immediacy with which patients with rAAA have access to a full range of technology and care by a specialized multi-disciplinary team. However, the authors conclude that "service configuration should focus on insuring that patients with rAAA are treated in a teaching hospital with a high aortic workload, offering both conventional and endovascular repair".

A Controlled Trial of Renal Denervation for Resistant Hypertension

Bhatt DL, Kandzari DE, O'Neill WW, and the SYMPLICITY HTN-3 Investigators, et al. N Engl J Med 2014;370:1393-401.

Conclusions: Six months following renal-artery denervation in patients with resistant hypertension there is no significant reduction of systolic blood pressure.

Summary: Resistant hypertension is defined as a systolic blood pressure of ≥140 mm Hg despite adherence to at least three maximally tolerated doses of antihypertensive medications from complimentary classes, including a diuretic at an appropriate dose (Smith SM et al, J Hypertens 2013; 32:635-43). Approximately 10% of patients with hypertension have resistant hypertension. Cross-talk between the kidneys and the brain mediated by the sympathetic nervous system appears to play an important role in resistant hypertension (Bakris G et al, J Am Coll Cardiol 2013 November 25 [Epub ahead of print]). Recently, catheter-based radiofrequency denervation of the renal arteries has emerged as a potential treatment for resistant hypertension and is already in clinical use in more than 80 countries including parts of Europe, South America, Australia, and Canada. Initial nonrandomized studies and randomized, unblinded trials have shown significant reductions in blood pressure, as measured at office visits, after renal denervation (Krum H et al, Lancet 2009; 373:1275-81). However, initial studies have included small sample sizes, and limited assessment of ambulatory blood pressure, and had not utilized blinding, or a sham procedures. These drawbacks have limited broad application of the findings as potentially unreliable. In this trial the authors performed a prospective, single-blind, randomized, sham-controlled trial, to try and overcome many of the previous methodology limitations of previous smaller studies. Patients with severe resistant hypertension were randomly assigned in a 2 to 1 ratio to undergo renal-denervation or a sham procedure. Prior to randomization patients received a stable antihypertensive regimen involving maximally tolerated doses of at least three drugs, including a diuretic. The primary efficacy end point of the trial was the change in office systolic blood pressure at 6 months; a secondary efficacy end point was the change in mean 24-hour ambulatory systolic blood pressure. The primary safety end point was a composite of death, end-stage renal disease, embolic events resulting in end-organ damage, renovascular complications, or hypertensive crisis at 1 month or new renal-artery stenosis of more than 70% at 6 months. There were a total of 535 patients who underwent randomization. The mean (±SD) change in systolic blood pressure at 6 months was −14.13 ± 23.93 mm Hg in the denervation group as compared with −11.74 ± 25.94 mm Hg in the sham-procedure group ($P < .001$ for both comparisons of the change from baseline), for a difference of −2.39 mm Hg (95% CI, −6.89 to 2.12; $P = .26$ for superiority with a margin of 5 mm Hg). The change in 24-hour ambulatory systolic blood pressure was −6.75 ± 15.11 mm Hg in the denervation group and −4.79 ± 17.25 mm Hg in the sham-procedure group, for a difference of −1.96 mm Hg (95% CI, −4.97 to 1.06; $P = .98$ for superiority with a margin of 2 mm Hg). There were no significant safety differences between the two groups.

Comment: These findings contradict previously published clinical data regarding renal denervation which showed large reductions in blood pressure 6 months after denervation, and in the unblinded SIMPLICITY HTN-2 Trial. Clearly it is important to conduct blinded trials with sham controls in the evaluation of new medical devices before clinical adoption of these devices occurs. Prior unblinded randomized trials may represent a placebo effect as a treatment effect. Indeed, a placebo effect was demonstrated in this trial with the sham procedure. While there was no direct measurement to confirm renal nerves were in fact de-enervated by the SIMPLICITY catheter system, at this point it does not appear that there is sufficient evidence to promote wide spread adoption of renal denervation in the treatment of resistant hypertension.

Safety and Feasibility of a Diagnostic Algorithm Combining Clinical Probability, D-Dimer Testing, and Ultrasonography for Suspected Upper Extremity Deep Venous Thrombosis: A Prospective Management Study

Kleinjan A, Di Nisio M, Beyer-Westendorf J, et al. Ann Intern Med 2014;160:451-7.

Conclusions: A combination of D-dimer testing and clinical probability assessment can improve the efficiency of diagnosis of upper extremity DVT.

Summary: There are diagnostic algorithms combining clinical probability assessment, D-dimer testing, and ultrasonography that are widely advocated for suspected DVT of the leg (Gibson NS et al, J Thromb Haemost 2009;7:2035-41). In patients with suspected UEDVT, D-dimer has been evaluated as contributing to the diagnosis in only one series of 52 consecutive patients (Merminod T et al, Blood Coagul Fibrinolysis 2006;17:225-6). Clinical probability has been evaluated in patients with UEDVT and the confirmed incidence of UEDVT has been about 12%, 20%, and 70% in patients with low, intermediate and high clinical probability of UEDVT (Constans J et al, Thromb Haemost 2008:99:202-7). However, a combination of D-dimer testing and clinical probability has not been evaluated in patients with possible UEDVT and such an algorithm, if effective, would be useful in that the large majority of patients evaluated for UEDVT with ultrasonography alone, do not have the condition. The purpose of this study was to test the safety and feasibility of a diagnostic algorithm in patients with clinically suspected UEDVT. The study took place in 16 hospitals in Europe and the United States and consisted of 406 inpatients and outpatients with suspected UEDVT. The diagnostic algorithm consisted of sequential applications of a clinical decision score, Constans clinical decision score, that incorporated presence of localized pain, unilateral edema, and the possibility of any other diagnosis, as well as D-dimer testing and ultrasonography. Patients were classified as likely or unlikely to have UEDVT. In those with an unlikely score and normal D-dimer levels UEDVT was considered excluded. All other patients had (repeated) compression ultrasonography to evaluate for UEDVT. The primary outcome was the 3-month incidence of symptomatic UEDVT and pulmonary embolism in patients with a normal diagnostic work-up. In 390 of the 406 patients (96%) the algorithm was feasible and completed. In 87 patients (21%), an unlikely score combined with normal D-dimer levels to exclude UEDVT. Superficial venous thrombosis and UEDVT were diagnosed in 54 (13%) and 103 (25%) patients, respectively. There were 249 patients with a normal diagnostic work-up including those with protocol violations who were then followed for 3 months. One patient developed UEDVT during follow-up, for an overall failure rate of the diagnostic algorithm of 0.4% (95% CI, 0.0%-2.2%).

Comment: Although the study was not powered to show the safety of various sub-strategies to exclude UEDVT, such as the Constans score alone or D-dimer levels alone; if confirmed by other studies, the algorithm presented would appear to have the potential to improve the efficiency of diagnosis of upper extremity DVT by eliminating the use of a large number of ultrasound studies ultimately proving to be negative.