

**What are the optimal parameters for a test that would improve the diagnostic accuracy for indeterminate thyroid nodules? A cost-effectiveness analysis**

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**INTRODUCTION:** 20% to 25% of thyroid nodule biopsies are classified as indeterminate and require diagnostic lobectomy. However, only approximately 20% of these lesions are malignant. Improvement in the preoperative classification of indeterminate nodules could reduce unnecessary diagnostic lobectomy. We hypothesized that an adjunctive test with a sufficiently high sensitivity and specificity to improve the diagnostic accuracy for indeterminate thyroid nodules would be cost-effective.

**METHODS:** Cost-effectiveness analysis was performed to determine threshold parameters of accuracy and cost for adjunctive diagnostic testing in indeterminate nodules. A Markov decision model was developed based on a reference case. Costs, treatment outcomes, and their probabilities were identified based on literature review. Outcomes were weighted to yield quality-adjusted life years (QALYs). Sensitivity analysis was used to examine the uncertainty of probability, cost, and utility estimates.

**RESULTS:** The incremental cost-effectiveness ratio for the adjunctive test strategy was \$7,954/QALY gained reflecting a gain of 0.047 QALYs at an additional cost of \$394. The diagnostic test strategy was cost-effective if the cost of the test was less than \$5,980. The noninvasive testing strategy was cost-saving if the cost of the test was less than \$3,700. The test was not cost-effective if the specificity was less than 64.5% or if the cost of diagnostic lobectomy was less than \$2,540.

**CONCLUSIONS:** There is great interest in the development of adjunctive testing for indeterminate thyroid nodules to reduce unnecessary surgery. In order to lead to cost-saving improvement in quality of life, such a test with a sensitivity of 99% and specificity of 75% must cost less than \$3,700.

**The clinical and economic impact of preoperative risk optimization in patients undergoing elective aortic surgery**

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**INTRODUCTION:** The financial outcomes of endovascular abdominal aneurysm (EVAR) and open abdominal aneurysm repair (OPEN) have been incompletely investigated. The purpose of this study is to identify the impact of cardiovascular risk optimization in abdominal aortic aneurysm (AAA) patients and describe the resultant financial impact on the health care system.

**METHODS:** Analysis was performed reviewing all patients who underwent an elective AAA repair between 2004 and 2007. Clinical endpoints included postoperative complications (myocardial infarction, stroke, renal failure, bleed, pneumonia, urinary tract infection, wound infection) and 30-day mortality. The financial endpoint was total hospital cost associated with the procedure.

**RESULTS:** A total of 401 cases were identified, 43% (n = 173) EVAR and 57% (n = 228) OPEN. Multivariate analysis demonstrated that preoperative statin use was protective for the occurrence of complications (odds ratio, 0.401; confidence interval, 0.162–0.995; P=0.014) regardless of EVAR or OPEN. Stratified by statin use, the statin cohort had significantly reduced complications and mortality despite a higher SVS risk score (Table). Financially, statin therapy translated to a cost savings per patient (EVAR \$3 205.50 ± 1 632.8, OPEN \$3 792.9 ± 2 141.7; P < 0.05) resulting in a total savings equaling \$772,274.40. These findings are irrespective of preoperative lipid profile, smoking status, beta blockade, and antiplatelet therapy.

	Statin	Control	P value
n	181	216	N/A
EVAR (%)	49.1	37.0	N/A
SVS risk score	7.5±0.3	6.4±0.3	<0.01
Complication (%)	4.4	11.1	0.01
Death (%)	0.0	5.0	<0.01
Total cost, EVAR	\$33,237 ± 1041.6	\$36,442 ± 1274.4	0.05
Total cost, OPEN	\$18,647 ± 1230.9	\$22,440 ± 1571.7	0.05

**CONCLUSIONS:** Preoperative statin therapy is associated with a lower morbidity and mortality, decreased resource utilization, and a less costly AAA repair procedure. This study is the first to describe the financial impact of statin therapy and underscores the impact of risk optimization to the health care system.

**An assessment of race and insurance status on access to surgical care**

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**INTRODUCTION:** The goal of this study is to determine the effect of race and insurance status on access to care for surgical diseases.

**METHODS:** All patients undergoing cholecystectomy, hernia repair, and colectomy between 1999 and 2007 were assessed for admission status, insurance status, race, comorbidities, and outcomes. Admission status was dichotomized as elective referral versus emergency referral (admit from the emergency department [ED] or scheduled admission following ED visit). Univariate analysis, multivariate regression modeling, and tests for secular trends were performed.

**RESULTS:** There were 4,972 patients; 1,352 (27%) were African American and 349 (7%) were uninsured. Significant differences in emergency referral were seen for race and insurance status (table); however, there was no difference in insurance status by race. For each procedure, African Americans were more likely to have emergency referral (p<0.0001), and the proportion of African Americans with emergency referral increased over the study (28% to 38%; p<0.04), whereas insurance status remained stable. Multivariable model of predictors of emer-