

Marked Variability in the Patterns of Care and Health Outcomes Among Patients Evaluated for Suspected Obstructive Coronary Artery Disease: Results From a Healthcare Claims Database Study of 12,129 Patients

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Introduction: Over 10 million low-risk, non-diabetic Americans with signs and symptoms of suspected obstructive CAD undergo diagnostic testing, including MPI, CTCA, and/or stress ECHO. Because these tests have different functional characteristics, a patient's initial study may have significant implications for subsequent cost of care and health outcomes.

Hypothesis: We hypothesized that there is marked variation in the patterns of care for the evaluation of patients with suspected obstructive CAD, resulting in marked heterogeneity in cost of care and subsequent health outcomes.

Methods: We utilized a large, national healthcare database to examine outcomes among non-diabetic adults undergoing stress ECHO, MPI, or CTCA between 2007-2010. The index date was defined by the first cardiac diagnostic test, and claims were observed one-year prior to and following this date. Patients were eligible if they had no history of CAD at baseline, and we collected data on inpatient, outpatient, and pharmacological claims. Generalized linear models were used to evaluate the relationship between the index test and subsequent health events and expenditures, while controlling for age, gender, geographic region, year, Charlson comorbidity score, 6 major comorbid conditions, and baseline healthcare utilization.

Results: Among 12,129 beneficiaries who met inclusion criteria, stress MPI was the most frequently performed initial test (56%), followed by stress ECHO (41%) and CCTA (3%). Mean age was 53 years, 38% were women, and 85% had a baseline Charlson score of 0. Total average healthcare costs during follow-up for patients evaluated with stress MPI, ECHO, and CTCA were \$9,206, \$6,794, and \$9,605, respectively ($p < 0.001$). In adjusted analyses, compared with patients initially evaluated with stress MPI, patients evaluated with stress ECHO accrued \$2,142 (95% CI, \$1,600 to \$2,684) less in total healthcare expenditures during follow-up and \$1,954 (95% CI, \$1,572 to \$2,336) less in CAD-related expenditures. Expenditures were similar in the comparison of CTCA to MPI. Major adverse cardiovascular events were uncommon (2.4%), and this risk was significantly lower in patients initially undergoing stress ECHO compared to MPI (aOR 0.57, $p < 0.001$).

Conclusion: In conclusion, low-risk patients newly evaluated for CAD experience significant variability in subsequent healthcare expenditures and MACE, with patients undergoing MPI incurring statistically higher costs of care and risk of adverse events as compared to patients undergoing stress ECHO. Though we adjusted for several clinical characteristics, the significant variability, particularly between stress ECHO and MPI, warrants additional studies incorporating clinical databases to better understand how initial diagnostic test choices may influence important downstream events and patients' overall experience of care.

Reference: Ladapo J, Seare JG, Iorga SR, et al. Marked Variability in the Patterns of Care and Health Outcomes Among Patients Evaluated for Suspected Obstructive Coronary Artery Disease: Results From a Healthcare Claims Database Study of 12,129 Patients. *Circ Cardiovasc Qual Outcomes*. 2013;6:A348.