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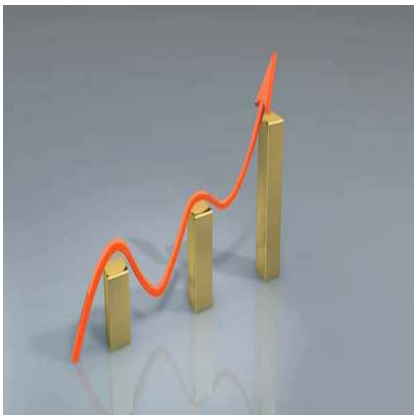
Echocardiography Quality Initiatives Promote Value-Based Care Delivery



Ensuring appropriate use of cardiovascular (CV) imaging is an increasingly important aspect of medical decision-making and care delivery. Given the continuing escalation of U.S. healthcare expenditures, choosing "the right test for the right patient at the right time" has never been more relevant.

While appropriate use criteria (AUC) for CV imaging have been published, compliance in practice has been incomplete, with persistent high rates of inappropriate use. This study aimed to show the efficacy of a continuous quality improvement (CQI) initiative to favourably influence the appropriate use of outpatient transthoracic echocardiography and single-photon emission computed tomographic (SPECT) myocardial perfusion imaging (MPI) in a large cardiovascular practice.

Methods

The Adult Cardiology Division of the Sanger Heart & Vascular Institute (SHVI) comprises >65 cardiologists in 15 offices in the 31-county region encircling Charlotte, North Carolina. SHVI has a multisite echocardiography laboratory and a multisite cardiac nuclear imaging laboratory where an average of 60,000 echocardiographic studies and 15,000 stress MPI studies are performed annually.

In this prospective study, a multiphase CQI initiative was implemented, and its impact on ordering patterns for outpatient transthoracic echocardiography and SPECT MPI was assessed. The study involved only SHVI cardiologists and did not include advanced care providers or noncardiology providers.

Between November and December 2010, a baseline analysis of the application of AUC to indications for outpatient transthoracic chocardiographic studies (n = 203) and SPECT MPI studies (n = 205) was performed. Clinical information was obtained by chart review. For MPI, a hierarchical determination of appropriateness was used. Studies were classified into four categories based on current guidelines: appropriate, inappropriate, uncertain, or unclassified. Unclassified studies were those for which no matching scenario could be identified in the guidelines.

The CQI initiative was then initiated with these key components: (1) Clinician education, including didactic lectures and case-based presentations with audience participation; also the fundamental principles behind appropriate use guidelines were reviewed.(2) System changes in ordering processes, with redesigned image ordering forms; each form is a single page listing all appropriate indications as classified by the AUC, with check-box options for ordering; and (3) peer review and feedback, with clinicians receiving individualised reports of their results benchmarked to the performance of the group as a whole. A follow-up analysis was then performed between June and August 2012, with categorisation of indications for transthoracic echocardiographic

studies (n = 206) and SPECT MPI studies (n = 206).

Results

Echocardiographic and MPI data were analysed separately. At baseline, 73.9% of echocardiographic studies were categorised as appropriate, 16.7% as inappropriate, 5.9% as uncertain, and 3.4% as unclassified. The most common inappropriate indications for testing were (1) infrequent premature atrial contractions or infrequent premature ventricular contractions without other evidence of heart disease and (2) routine surveillance of ventricular function with known coronary artery disease (CAD) and no change in clinical status or cardiac examination.

Similarly, for SPECT MPI studies 71.7% were categorised as appropriate, 18.5% as inappropriate, 7.8% as uncertain, and 1.9% as unclassified. Separate analysis of the two most important categories, appropriate and inappropriate, demonstrated a significant improvement after the CQI initiative, with a 63% reduction in inappropriate echocardiographic studies (18.5% vs 6.9%, P = .0010) and a 46% reduction in inappropriate SPECT MPI studies (20.5% vs 11.1%, P = .010). The most common inappropriate indications (90% of all inappropriate studies) were (1) low-risk symptomatic patients, (2) post-percutaneous intervention in patients with stable symptoms or asymptomatic <2 years after intervention, and (3) perioperative evaluation for noncardiac surgery.

Conclusions

This study demonstrates the effective and persistent positive impact of a CQI initiative to reduce inappropriate ordering of cardiovascular imaging. Initiatives such as this will be important for the delivery of value-based medical care in the future.

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