

ORAL PRESENTATION

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Stress myocardial perfusion cardiac magnetic resonance imaging vs. coronary CT angiography in the diagnostic work-up of patients with stable chest pain: comparative effectiveness and costs

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Background

To determine the comparative effectiveness and costs of coronary CT angiography (CCTA) and stress cardiac magnetic resonance imaging (CMR) for diagnosing coronary artery disease (CAD).

Methods

A Markov micro-simulation model for 60-year-old patients with stable chest pain was developed, analyzing the perspective of the United States (US), United Kingdom (UK), and the Netherlands (NL).

CCTA, CMR, and CCTA+CMR (CCTA, if positive followed by CMR) were considered and compared to direct catheter-based angiography (CAG) and no testing. The strategies were considered both as conservative strategy (patients with mildly-positive test results are not referred for CAG), and as invasive strategy (all patients with positive test results are referred for CAG). Outcome measures included lifetime costs, quality-adjusted life years (QALY), and radiation exposure.

Results

Differences in effectiveness (QALYs) across diagnostic strategies were very small (range 0.001-0.016). For 60-year old men and women with a pre-test probability of 30% (and up to 70-90%, depending on the country considered), the CCTA, CMR, and CAG strategies were dominated, because the CCTA+CMR-conservative strategy was

slightly more effective, and less expensive. Compared to the CCTA+CMR-conservative strategy, the CCTA+CMR-invasive strategy was slightly more costly and slightly more effective. The CCTA+CMR-invasive strategy was cost-effective for the US and NL, but not for the UK. When patients with false-negative test results were assumed to remain false-negative for 3 years, differences between strategies increased, and the CCTA-invasive strategy became cost-effective for UK and NL.

Conclusions

Quality-adjusted life expectancy was similar across strategies. The CCTA+CMR strategy was cost-effective up to a pre-test probability of 70-90%, depending on the country. Above these thresholds, the CMR-strategy was cost-effective.

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