

Economic evaluation of myocardial perfusion scintigraphy for the diagnosis and management of angina and myocardial infarction: probabilistic analysis

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Abstract:

Background and aim

Coronary heart disease (CHD), secondary to coronary artery disease (CAD) is the commonest cause of death in the UK. Decision making about how to diagnose and manage CAD is surrounded by uncertainty. One main cause of uncertainty comes from parameters values used in the economic evaluations, which has not been adequately addressed yet. The aim of this study is to run Probabilistic Analysis on an economic evaluation model on the use of Single Photon Emission Computed Tomography myocardial perfusion scintigraphy (MPS) for diagnose and management of CAD using two different software available and compare its results.

Methods

Strategies involving MPS with and without Stress Electrocardiography (sEGC), and Coronary Angiography (CA), were compared to diagnostic strategies that did not involve MPS for the diagnosis and management of coronary heart disease. Decision Tree Model for the diagnosis decision and Markov Model for the management of patients with suspected CAD were developed using two different software instruments: Data Treeage–Excel and Excel–Crystal Ball. Data to populate the model were obtained from a series of systematic reviews. Monte Carlo Simulations were run and Cost-Effectiveness Acceptability Curves developed.

Preliminary Results

Simulations from one of the instruments were more time consuming maybe due to the particular links between software used in the models. No different results were obtained from both instrument alternatives. At medium risk of CAD MPS strategies tended to dominate those that did not involve MPS. If Decision Maker is willing to pay (WTP) less than £100 per QALY the strategy ECG-MPS-CA has higher

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probability of being optimal; at £3000 WTP per QALY it is highly likely that SPECT-CA strategy would be considered optimal.

Conclusion

The use of MPS appears to be optimal for diagnosis of CAD but more probabilistic and deterministic SA is needed, particularly for a wider range of prevalence of CAD.