Title	Systematic Review Update: 64-Slice or Higher Computed Tomography Angiography in the Investigation of Patients with Suspected Coronary Artery Disease
Agency	HSAC, Health Services Assessment Collaboration
	Health Sciences Centre, University of Canterbury, Private Bag 4800, Christchurch 8140, New Zealand; Tel: +64 3 345 8147, Fax: +64 3 345 8191; hsac@canterbury.ac.nz, healthsac.net
Reference	HSAC Report 2009; 2(12). ISBN 978-0-9864551-7-9 (Online). ISSN 1178-5748 (Online)

Aim

To summarize the recent evidence pertaining to the clinical effectiveness of 64-slice, or higher, computed tomography angiography (CTA) as an alternative to invasive coronary angiography (ICA) in investigating patients with suspected coronary artery disease (CAD).

Conclusions and results

This report systematically reviewed the evidence for 64-slice CT angiography as a triage tool to identify significant stenosis (≥50%) in patients presenting with suspected CAD. In general, the pooled results of this meta-analysis update demonstrated the high diagnostic accuracy of 64-slice CTA in patients with suspected CAD. The included trials showed remarkable consistency in the sensitivity and NPV, considered the most important measures for this technology within this context. The base case meta-analysis (ie, studies with equivocal test results omitted excluded) at the patient-level, indicated a sensitivity of 98.2%, specificity of 81.6%, PPV of 88.9%, NPV of 96.8%, and overall diagnostic accuracy of 91.6%. Pooled diagnostic performance results at the vessel and segment level supported the patient-level findings. In all vessels, the pooled sensitivity was 95.0%, specificity 85.2%, PPV 69.4%, NPV 97.9%, and diagnostic accuracy 87.7%. At the individual artery level, overall diagnostic accuracy appeared to be slightly higher in the left and right coronary artery and slightly lower in the left anterior descending and circumflex. There has been considerable enhancement in temporal and spatial resolution of CTA over the past few years, and these improvements appear to have contributed to the fact that CTA now preserves a high rate of evaluable patients.

Methods

This systematic review update was based on a health technology assessment performed in the United Kingdom (UK) by Mowatt and colleagues (2008). A systematic method of literature searching and selection was employed in preparing this review update, with searches limited to English language material published from December 2006 onwards. The reference lists of key papers were searched to identify any peer-reviewed evidence that may have been missed in the literature search. The search identified 1438 citations. After applying study selection criteria, 28 studies were included for review. The included studies were quality assessed using the NHMRC diagnostic levels of evidence and a modified version of the QUADAS tool. Data were extracted onto specifically designed data extraction forms, and a summary of the study characteristics and calculated diagnostic performance (ie, sensitivity, specificity, positive predictive value [PPV], negative predictive value [NPV] and overall diagnostic accuracy) were provided in the results section. Results were also meta-analyzed and pooled sensitivity, specificity, PPV, NPV, and diagnostic accuracy results were presented at the patient, vessel, and segment level.

Written by Dan Paech, HSAC, Australia