Multidetector computed tomography for coronary artery disease screening in asymptomatic populations: an evidence-based analysis

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Citation

Authors' objectives
The Ontario Health Technology Advisory Committee asked the Medical Advisory Secretariat to complete an evidence-based health technology review of the effectiveness and cost-effectiveness of fast scanners for new indications, specifically cardiac imaging. This evidence-based health technology assessment systematically reviewed the published literature on multidetector computed tomography (MDCT) angiography (with contrast) as a diagnostic tool for coronary artery disease (CAD), and applied the results of the assessment to health care practices in Ontario.

Authors' conclusions
Screening the asymptomatic population for CAD using MDCT does not meet World Health Organization criteria for screening; hence, it is not justifiable. Coronary artery calcification measured by MDCT is a good predictor of future cardiovascular events. However, MDCT exhibits only moderately high sensitivity and specificity for detection of CAD in an asymptomatic population. If population-based screening were implemented, a high rate of false positives would result in increased downstream costs and interventions. Additionally, some cases of CAD would be missed, as they may not be developed, or not yet have progressed to detectable levels. There is no evidence for the impact of screening on patient management. Cardiovascular risk factors are positively associated with the presence of coronary artery calcification and cardiovascular events; however, risk factor stratification to identify high-risk asymptomatic individuals is unclear given the current evidence-base. Safety of MDCT screening is also an issue because of the introduction of increased radiation doses for the initial screening scan and possible follow-up interventions. No large randomized controlled trials of MDCT screening have been published, which indicates an important area of future research. Lastly, the policy implications for MDCT screening for CAD in the asymptomatic population are significant. There is no evidence on the long-term implications of screening, and the potential impact on the resources of the health care system is considerable.

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