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Coronary Heart Disease Risk Assessment Model for Acute Coronary Syndrome and Stroke

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About CADTH: CADTH is an independent, not-for-profit organization responsible for providing Canada's health care decision-makers with objective evidence to help make informed decisions about the optimal use of drugs, medical devices, diagnostics, and procedures in our health care system.

Funding: CADTH receives funding from Canada's federal, provincial, and territorial governments, with the exception of Quebec.

Questions or requests for information about this report can be directed to **requests@cadth.ca**

Key Messages

- We did not find any studies on the clinical utility of a coronary heart disease risk assessment model to evaluate acute coronary syndrome and stroke risk that met our criteria for this review.
- We identified other references on this topic that may be of interest. They are listed in the report.

Research Question

What is the clinical utility of a coronary heart disease risk assessment model to evaluate acute coronary syndrome and stroke risk?

Methods

Literature Search Methods

A limited literature search was conducted by an information specialist on key resources including MEDLINE, the Cochrane Database of Systematic Reviews, the International HTA Database, the websites of Canadian and major international health technology agencies, as well as a focused internet search. The search strategy comprised both controlled vocabulary, such as the National Library of Medicine's MeSH (Medical Subject Headings), and keywords. The main search concepts were acute coronary syndrome, coronary disease, cardiovascular disease, stroke, biomarkers, and risk assessment. No filters were applied to limit retrieval by study type. Comments, newspaper articles, editorials, and letters were excluded. Where possible, retrieval was limited to the human population. The search was completed on September 27, 2022 and limited to English-language documents published since January 1, 2012. Internet links were provided, where available.

Selection Criteria

One reviewer screened literature search results (titles and abstracts) and selected publications according to the inclusion criteria presented in Table 1. Full texts of study publications were not reviewed.

Table 1: Selection Criteria

Criteria	Description
Population	Adults aged 40 years and older or adults less than 40 years of age with at least 1 risk factor for acute coronary syndrome or stroke (e.g., familial hypercholesterolemia, South Asian ethnicity)
Intervention	Coronary heart disease risk assessment model (also known as coronary artery disease predictive algorithm, test for unstable cardiac lesions) based on several biomarkers related to endothelial damage and unstable cardiac lesions (i.e., interleukin-16, FAS, Fas ligand, hepatocyte growth factor, cutaneous T-cell-attracting chemokine, eotaxin, monocyte chemotactic protein-3, hemoglobin A1c, high-density lipoprotein-cholesterol)

Criteria	Description
Comparator	No screening for acute coronary syndrome or stroke risk, current routine screening for cardiac indications, risk tools that use global risk factors (e.g., Framingham risk score), or high-sensitivity C-reactive protein test
Outcomes	Clinical utility (e.g., time to treatment, incidence of heart attack and stroke, quality-adjusted life-years, hospitalizations, mortality, long-term disability, quality of life)
Study designs	Health technology assessments, systematic reviews, randomized controlled trials, non-randomized studies

Results

No relevant health technology assessments, systematic reviews, randomized controlled trials, or non-randomized studies were identified regarding the clinical utility of a coronary heart disease risk assessment model to evaluate acute coronary syndrome and stroke risk.

References of potential interest that did not meet the inclusion criteria are provided in Appendix 1.

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References

Health Technology Assessments

No literature identified.

Systematic Reviews

No literature identified.

Randomized Controlled Trials

No literature identified.

Non-Randomized Studies

No literature identified.

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Appendix 1: References of Potential Interest

Non-Randomized Studies

Model Development and/or Validation Studies

1. Premyodhin N, Fan W, Younus M, Harrington DS, Wong ND. Novel biomarker panel measuring endothelial injury identifies patients at risk of coronary artery syndrome and discordance with low-density lipoprotein cholesterol. *Coron Artery Dis*. 2022 Jan 1; 31(1): e51-e58. PubMed
2. Younus M, Fan W, Harrington DS, Wong ND. Usefulness of a coronary artery disease predictive algorithm to predict global risk for cardiovascular disease and acute coronary syndrome. *Am J Cardiol*. 2019 Mar 1; 123(5): 769-775. PubMed
3. Nolan N, Tee L, Vijayakumar S, et al. Analytical performance validation of a coronary heart disease risk assessment multi-analyte proteomic test. *Expert Opin Med Diagn*. 2013 Mar; 7(2): 127-36. PubMed
4. Cross DS, McCarty CA, Hytopoulos E, et al. Coronary risk assessment among intermediate risk patients using a clinical and biomarker based algorithm developed and validated in two population cohorts. *Curr Med Res Opin*. 2012 Nov; 28(11): 1819-30. PubMed

Alternative Population – Physicians

5. Solomon MD, Tirupsur A, Hytopoulos E, et al. Clinical utility of a novel coronary heart disease risk-assessment test to further classify intermediate-risk patients. *Clin Cardiol*. 2013 Oct; 36(10): 621-7. PubMed