INAHTA Brief Issue 2016/030

Title Point-of-Care Troponin Testing in Patients With Symptoms Suggestive of Acute Coronary Syndrome: A Health Technology Assessment

Agency CADTH (Canadian Agency for Drugs and Technologies in Health)
Suite 600, 865 Carling Avenue, Ottawa, Ontario, K1S 5S8, Canada
Telephone: 613-226-2553; Electronic: requests@cadth.ca; www.cadth.ca

Reference Vol 5 no 1b, ISSN: 1927-0129
https://www.cadth.ca/sites/default/files/pdf/OP0519_POC_Troponin_Report.pdf

Aim

The aim of this health technology assessment (HTA) is to inform decision-making about the appropriate use of point-of-care (POC) cardiac troponin (cTn) testing. The policy question of whether to adopt POC troponin testing in specific settings has been raised in Canadian jurisdictions. This HTA will address these questions by evaluating the diagnostic accuracy, clinical utility, and cost-effectiveness of POC cTn testing in patients presenting with acute coronary syndrome (ACS). The economic evaluation will determine the cost per quality-adjusted life-year (QALY) gained with POC cTn compared with central laboratory cTn testing or no POC cTn testing.

Conclusions and Results

Our findings concur with observations from other systematic reviews that an ideal POC assay for the diagnosis of acute myocardial infarction does not yet exist and, despite improvement in turnaround time and length of hospital stay, there is no strong evidence of improvement of clinical outcomes compared with cTn testing by a central laboratory. In the absence of a central laboratory, POC cTn testing may be of additional benefit compared with standard care without troponin testing. In rural centres and remote locations, the use of POC cTn testing may lead to improved patient care, as cTn testing results — in addition to the clinical assessment of the patient — may help prevent unnecessary transfers to hospital, thereby allowing patients to remain in their communities for follow-up and care. This may result in other benefits, such as reduced out-of-pocket costs and familial disruptions, and ensuring the transfer of only those patients who require it. The results from our clinical review must be interpreted with caution, given the limited quality of the included studies and the short-term follow-up times reflected in the outcomes analyzed. Generally, POC cTn testing strategies were found to be less effective and less expensive compared with standard of care, regardless of context. However, there are plausible variations in diagnostic accuracy that change the cost-effectiveness from cost-saving to cost-incurring. Generally, the weak evidence base for effectiveness and costs limited the scope of this economic evaluation.

Overall, given the limitations with the data and the inconsistency in diagnostic test accuracy estimates, the usefulness of POC cTn testing in settings with access to central laboratories may be limited. However, in settings with no access to a central laboratory, such as in rural health care centres or remote settings, POC cTn testing may be useful because of the potential to help reduce the unnecessary transfer of patients to larger centres.

Recommendations

In settings with no immediate access to central laboratory testing, POC cTn testing for patients presenting with symptoms of ACS is recommended. In settings with immediate access to central laboratory testing, POC cTn testing for patients presenting with symptoms of ACS is not recommended.

Methods

A peer-reviewed literature search strategy was employed to identify published literature in: MEDLINE (1946–) with In-Process records and daily updates via Ovid; Embase (1974–) via Ovid; the Cochrane Library (2015, Issue 1) via Wiley; and PubMed. No filters were applied to limit the retrieval by study type. Grey literature was identified by searching the *Grey Matters* checklist. Studies were included if they met the selection criteria, and a quality assessment was conducted. The diagnostic accuracy of POC cTn testing was assessed based on the ability of POC cTn testing to predict acute myocardial infarction. The clinical utility of POC cTn testing was based on findings about the benefits and risks resulting from test use. Meta-analysis was not possible because of clinical and methodological heterogeneity. A review that includes a narrative synthesis and summary of study findings was conducted.

An economic evaluation was conducted. A decision-tree model was developed to simulate what could happen to patients from chest pain presentation at the emergency department or doctor's office until one year after their episode. The analysis assumed a payer's perspective. A one-year time horizon was used for the economic analysis. A cost-effectiveness analysis was conducted in which costs were measured in dollars and the outcome was measured in QALYs.

Further Research/Reviews Required

The evidence on the clinical utility of POC cTn testing was limited, and the studies that were identified did not have sufficient power to detect clinically important effects, such as mortality. Additional research on the use of POC cTn testing in rural health care centres or remote settings would have been informative. The economic model was limited by imprecise diagnostic accuracy estimates and limited cost data.

Written by:

CADTH.