**IN BRIEF** A Summary of the Evidence

Point-of-Care Troponin Testing When Symptoms Suggest Acute Coronary Syndrome

**Key Messages**

- Use point-of-care (POC) troponin testing for patients with suspected acute coronary syndrome (ACS) (myocardial infarction [MI] or unstable angina) if immediate access to a central laboratory is not possible.
- Use laboratory troponin testing if a central laboratory is immediately available.

**Context:**

ACS occurs when the blood supply to the heart is suddenly reduced. It includes MIs with or without ST segment elevation on an electrocardiogram (ECG) and unstable angina. Cardiac troponin levels in the blood increase when an insufficient blood supply leads to the death of heart cells. Measuring these levels is a sensitive test for the detection of heart muscle damage and is recommended when patients present with symptoms that suggest they may be experiencing a heart attack. However, cardiac troponin levels can be elevated in other non-cardiac conditions, so the results must be taken together with a clinical assessment and ECG findings before a diagnosis can be made.

**Issue:**

Troponin is typically measured by central laboratory testing; however, central laboratories are not always available — particularly in rural hospitals and remote settings. POC cardiac troponin testing has the potential to improve patient care in these settings, reducing unnecessary and often expensive transfers to hospitals if patients are unlikely to be experiencing ACS, and allowing them to receive care in their community. A review of the clinical utility, diagnostic accuracy, and cost-effectiveness of POC troponin testing in different settings will assist decision-makers who are considering implementing POC troponin testing.

**Technology:**

POC testing is a care model that moves the test analysis to the patient and allows for testing without access to a central laboratory. POC cardiac troponin tests offer short turnaround time for biomarker detection, typically providing results within 10 to 20 minutes, compared with the recommended turnaround time of an hour for central laboratory testing. As a result, POC troponin testing could potentially expedite care in the emergency department, improving patient flow and reducing emergency room congestion. There are several POC troponin devices available in Canada that test for one or both types of cardiac troponin: I and T. POC devices can be hand-held or desktop devices and some measure an array of biomarkers, including troponin.

**Methods:**

CADTH conducted a health technology assessment (HTA) on the clinical and cost-effectiveness of POC troponin testing in patients with symptoms suggestive of ACS. The Health Technology Expert Review Panel developed recommendations on the use of POC troponin testing based on the evidence presented in the HTA report.

**Results:**

This systematic review on the diagnostic accuracy of POC cardiac troponin tests in patients with symptoms suggestive of ACS shows that currently available POC troponin tests provide lower sensitivity and negative predictive value (NPV), and higher specificity and positive predictive value (PPV) than central lab methods. There was wide variability of the reported data on the diagnostic performance for the POC troponin devices. In general, in settings where central laboratories are available, POC troponin testing tends to shorten turnaround time (time from blood draw to the result), length of stay (in emergency department or hospital), and time to decision compared with central lab. It is uncertain whether these changes are clinically significant, as the use of POC troponin did not statistically change mortality rates or severe adverse events compared with the central lab in up to one year of follow-up. Patient quality of life was similar in those who were tested using POC troponin devices and those
who were tested using central lab. Evidence on the clinical utility
of POC troponin testing in settings with no central laboratory
was limited, but the data suggest that referrals to an emergency
department can be reduced by use of POC troponin testing, and
that use in ambulance settings may be beneficial.

The economic evaluation investigated the cost-effectiveness
of POC troponin compared with central laboratory testing.
The model included costs for the testing strategies and
resource utilization costs. POC troponin testing strategies
were less effective compared with central laboratory testing
for patients who presented to the emergency department with
symptoms suggestive of ACS. When POC troponin testing was
compared with no troponin testing (standard care with clinician
assessment), the POC testing strategy was less effective
and cost less. The model results varied significantly with the
estimates of diagnostic accuracy for both central laboratory and
POC devices. Within plausible ranges of sensitivity and specificity,
POC devices (both hand-held and desktop) varied from less
costly to more costly, and less effective to more effective.

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