# High-Sensitivity Troponin Testing in Primary Care Settings

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Current Australian guidelines recommend that patients with suspected AMI should activate emergency medical services to enable transport to the nearest appropriate health care facility for urgent assessment. The indications to use hs-TnT in the management of acute coronary syndrome in the primary care setting are limited.

## WHAT IS TROPONIN?

Cardiac Troponin T (cTnT) and Troponin I (cTnI) are specific cardiac structural proteins. The cTn assays are highly specific for cardiac tissues but they do not indicate the mechanism for the injury. cTn elevations are not specific for acute coronary syndrome and can be seen in non-cardiac conditions such as pulmonary embolism, chronic renal failure etc. (See appendix 1).

cTnT will start to rise 3-4 hours after injury and can stay elevated for 7 to 10 days. Within the normal healthy population, 99% of people will have a Troponin T level less than 14 ng/L when a high-sensitivity assay for TnT (hs-TnT) is used.

## TROPONIN AS A MARKER FOR MYOCARDIAL INFARCT

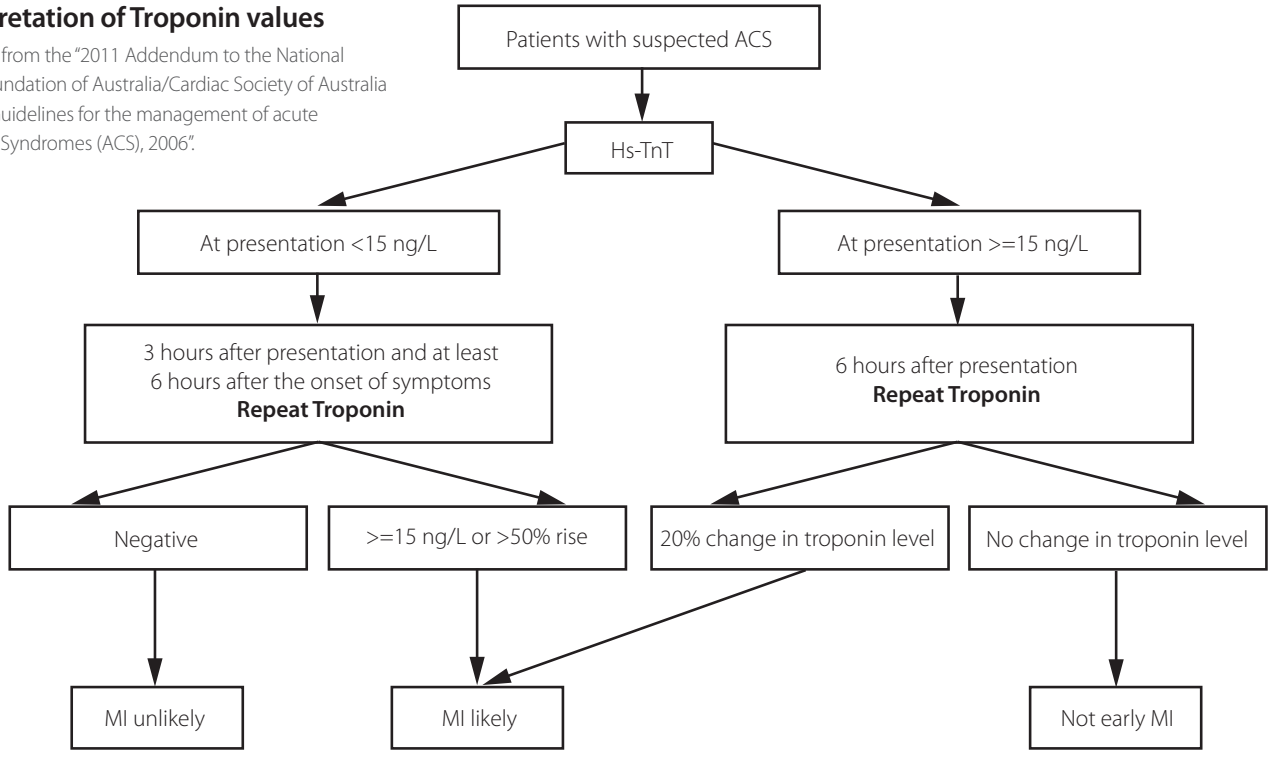
cTnT and cTnI are the preferred biomarkers for assessing myocardial injury and the dynamics of troponin levels (rise and/or fall over time) are central to the universal definition of acute myocardial infarction (AMI):

Typical rise and gradual fall in the level of cardiac biomarkers (preferably troponin) with at least one value above the 99th percentile of the upper reference limit (with imprecision <10% at this level) and with at least one of the following:

- Ischaemic symptoms;
- ECG changes indicative of ischaemia (ST-segment elevation or depression); or
- Coronary artery intervention (e.g., coronary angioplasty or coronary bypass surgery).

### Interpretation of Troponin values

Modified from the "2011 Addendum to the National Heart Foundation of Australia/Cardiac Society of Australia and NZ Guidelines for the management of acute coronary Syndromes (ACS), 2006".

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## WHEN SHOULD A TROPONIN TEST BE REQUESTED IN THE COMMUNITY?

In general, the indications to use hs-TnT in the management of acute coronary syndrome in any primary care setting are limited. Current Australian guidelines recommend that patients with suspected AMI should be assessed urgently in the nearest appropriate health care facility. Patients with high probability of an AMI should be admitted to hospital without delay.

## TROPONIN TESTING PROTOCOL QML PATHOLOGY

In the laboratory setting all Troponin requests are automatically treated as URGENT and will be processed accordingly.

***All urgent requests for hs-TnT should include your contact number for business and after hours with your patient's clinical history clearly documented, to ensure that abnormal results can be phoned to the referring doctor or passed to the out-of- hours deputation service with the appropriate history.**

In some instance Doctors request Troponin as a part of their clinical "routine cardiac assessment" in patients with low risk of coronary heart disease. If Troponin requests are for **NON-URGENT** cases, please indicate **"Routine Request"** on the request form.

Please note: As more experience is gained with the use of the high-sensitivity Troponin test, we are seeing moves to shorten the intervals between repeat tests. This is an exciting area of developing diagnosis.

## APPENDIX 1. ELEVATIONS OF CARDIAC TROPONINS WITHOUT OVERT ISCHEMIC HEART DISEASE

- Trauma (including contusion, ablation, pacing, implantable cardioverter defibrillator firings including atrial defibrillators, cardioversion, endomycardial biopsy, cardiac surgery, after interventional closure of atrial septal defects)
- Congestive heart failure – acute and chronic
- Aortic valve disease and hypertrophic obstructive cardiomyopathy with significant left ventricular hypertrophy
- Hypertension
- Hypotension, often with arrhythmias
- Postoperative noncardiac surgery patients who seem to do well
- Renal failure
- Critically ill patients, especially with diabetes, respiratory failure, gastrointestinal bleeding, sepsis
- Drug toxicity e.g., adriamycin, 5-fluorouracil, herceptin, snake venoms, carbon monoxide poisoning
- Hypothyroidism
- Abnormalities in coronary vasomotion, including coronary vasospasm
- Apical ballooning syndrome
- Inflammatory diseases e.g., myocarditis, parvovirus B19, Kawasaki disease, sarcoid, smallpox vaccination, or myocardial extension of bacterial endocarditis
- Post-PCI patients who appear not to have complications
- Pulmonary embolismPE, sever pulmonary hypertension
- Sepsis
- Burns, especially if total surface burn area is >30%
- Infiltrative diseases, including amyloidosis, hemochromatosis, sarcoidosis, scleroderma
- Acute neurological disease, including cerebrovascular accident, subarachnoid bleeds
- Rhabdomyolysis with cardiac injury
- Transplant vasculopathy
- Vital exhaustion

## BILLING & TURNAROUND TIME

This test is Medicare rebatable and results are available on the same day.

## FURTHER INFORMATION

For further information, please contact Dr J Chang or Dr C Appleton **(07) 3121 4444**



Specialist Diagnostic Services Pty Ltd (ABN 84 007 190 043) t/a QML Pathology PUB/MR/848, v3 (Jan-18)