High Sensitivity Cardiac Troponin T assay

SEALS have changed the standard cardiac biomarker from the contemporary 4th generation Troponin I to a high sensitivity Troponin T (hs-cTnT) assay which has superior analytical and diagnostic sensitivity. The following information and algorithm is provided to assist clinicians interpret results and inform clinical decision making.

1. **Clinical presentation**
   Hs-cTnT assays should only be performed if clinically indicated with evidence of clinical features suggesting an Acute Coronary Syndrome (ACS).

2. **Interpreting Results**
   - To ensure clinical specificity for diagnosis of Acute Myocardial Infarction, serial testing is essential to distinguish an acute from a chronic elevation of hs-cTnT.
   - Patients with Acute Myocardial Infarction have an elevated hs-cTnT and a rise and/or fall pattern.
   - Elevated levels of high sensitivity Troponin should always be interpreted in the context of clinical presentation and assessment.

3. **Significance of elevated baseline hs-cTnT**
   - Patients with stable coronary artery disease and elevated baseline hs-cTnT (14-100ng/L) have increased cardiovascular mortality and heart failure over 5 years, but NOT increased myocardial infarction.¹

   *The use of hs-cTnT has revealed the occurrence of myocardial injury in many conditions in which it was not previously detected. This does not challenge the tissue specificity of troponin but rather underscores that myocardial injury may result from a variety of mechanisms. Clinical diagnosis of acute myocardial infarction remains dependent both on elevated levels of troponin and on clinical data that support ischaemia as the cause. A rising or falling pattern of troponin values is helpful in discriminating acute injury from chronic causes.*

4. **Causes of hs-cTnT elevation in the absence of overt ischemic heart disease** (*no rise and fall pattern*)
   - renal failure
   - congestive heart failure
   - pulmonary embolism
   - severe pulmonary hypertension
   - hypertrophic cardiomyopathy
   - tachy- or bradyarrhythmias, or heart block
   - cardiac trauma / surgery/ ablation / pacing
   - stroke or subarachnoid haemorrhage
   - myocarditis / pericarditis
   - critically ill patients, especially with respiratory failure or sepsis
   - burns
   - infiltrative diseases, e.g. amyloidosis
   - aortic dissection
   - extreme exertion

High Sensitivity Troponin T (hs-cTnT) Flow Chart

Clinical features suggesting an Acute Coronary Syndrome
*High sensitivity Troponin T (hs-cTnT) sampling on presentation and 6 hours after the baseline sample*

Baseline hs-cTnT (on presentation)

>100ng/L

Myocardial infarction

Admit monitored cardiology bed

14-100ng/L

Yes

No

<14ng/L

Repeat hs-cTnT 6 hours after baseline sample 30% increase on baseline

Clinical Assessment

**NOTE:**

- For patients who present 6 or more hours after chest pain a single hs-cTnT <14ng/L is considered to be negative - no further testing is required.

- A 3 hour hs-cTnT (after the initial) can be performed at the discretion of the treating physician to rule in ACS, but not to rule out ACS.