

## Troponin fact sheet for Primary Care

### What is Troponin?

c-Troponin T and c-Troponin I are specific cardiac structural proteins. If there is myocyte injury Troponin will be released. It does not indicate the mechanism of the myocyte injury.

High sensitivity Troponin assays allow precise measurement at very low concentrations. High sensitivity assays are the biomarkers of choice. All Bristol Trusts use high sensitivity Troponin T (hs Troponin T) and therefore this document only relates to hs Troponin T.

hs Troponin T will start to rise 3-4 hours after injury and can stay elevated for up to 2 weeks. Within the normal healthy population 99% of people will have a hs Troponin T <14ng/l

### Troponin as a marker of Myocardial Infarction

A Diagnosis of a Myocardial Infarction (MI) requires careful clinical evaluation, particularly of chest pain characteristics and risk assessment together with accurate ECG interpretation. It is important not to interpret an elevated hs Troponin T in isolation. It only indicates an MI if the clinical presentation also supports this diagnosis.

A consensus statement by European Society of Cardiology, American College of Cardiology Foundation, American Heart Foundation and World Heart Federation in 2011 defined an MI as; "A rise and/or fall in cardiac troponin with at least one value above the 99th centile upper reference limit (14ng/l) in the context of symptoms or clinical evidence of myocardial ischaemia."

### When should I request a Troponin test in the community?

In general, the indications to use hs Troponin T in a primary care setting are limited.

Its primary role is to rule out an MI and therefore patients presenting with such symptoms should be assessed in secondary care (see NICE guideline CG95). It offers no role in diagnosing angina.

**Acute cases (<72 hours) with high probability of an MI should be admitted to hospital without delay.**

The main use of hs Troponin T testing in primary care is in a patient who is presenting late after symptoms and who has a low probability of having had an MI.

All requests for hs Troponin T should include a contact number and clinical history so that abnormal results can be phoned to the referrer or passed to out of hours with the appropriate history.

## Interpretation of Troponin values in Primary Care

### Normal (hs Troponin T < 14ng/l)

A result of <14ng/L more than 6 hours after symptoms rules out MI.

### Possible MI (hs Troponin T 14-30 ng/l)

**The laboratory will phone abnormal results to the referring doctor or their deputy as a matter of urgency.**

Although the hs Troponin T is raised the clinical implications are less well established when levels are between 14-30ng/l. Interpretation will rely on the clinical context;

- The clinician will need to review the history, risk factors, examination findings and ECG to establish the probability of a recent MI.
- If the patient has a history consistent with an Acute Coronary Syndrome (ACS) within the last 72 hours they should have been admitted but if still at home admission should be arranged.**
- If the history does not suggest ACS and the patient is stable with a low risk of MI a second sample is suggested.
- The second sample must be no sooner than 3 hours after the first.
- A rise or fall in the hs Troponin T will point to an acute diagnosis and possible MI. The patient should be admitted if the change in level is > +/- 7 ng/L (see flowchart).
- A stable level suggests a more chronic picture and an alternative diagnosis.

It should be remembered that non MI causes of a raised hs Troponin T may also require admission (e.g. PE) or further investigations within the community (e.g. Troponin negative cardiac chest pain).

### Probable MI (hs Troponin T > 30 ng/l)

**The laboratory will phone abnormal results to the referring doctor or their deputy as a matter of urgency.**

A hs Troponin T above 30 ng/l is more likely to be consistent with an MI.

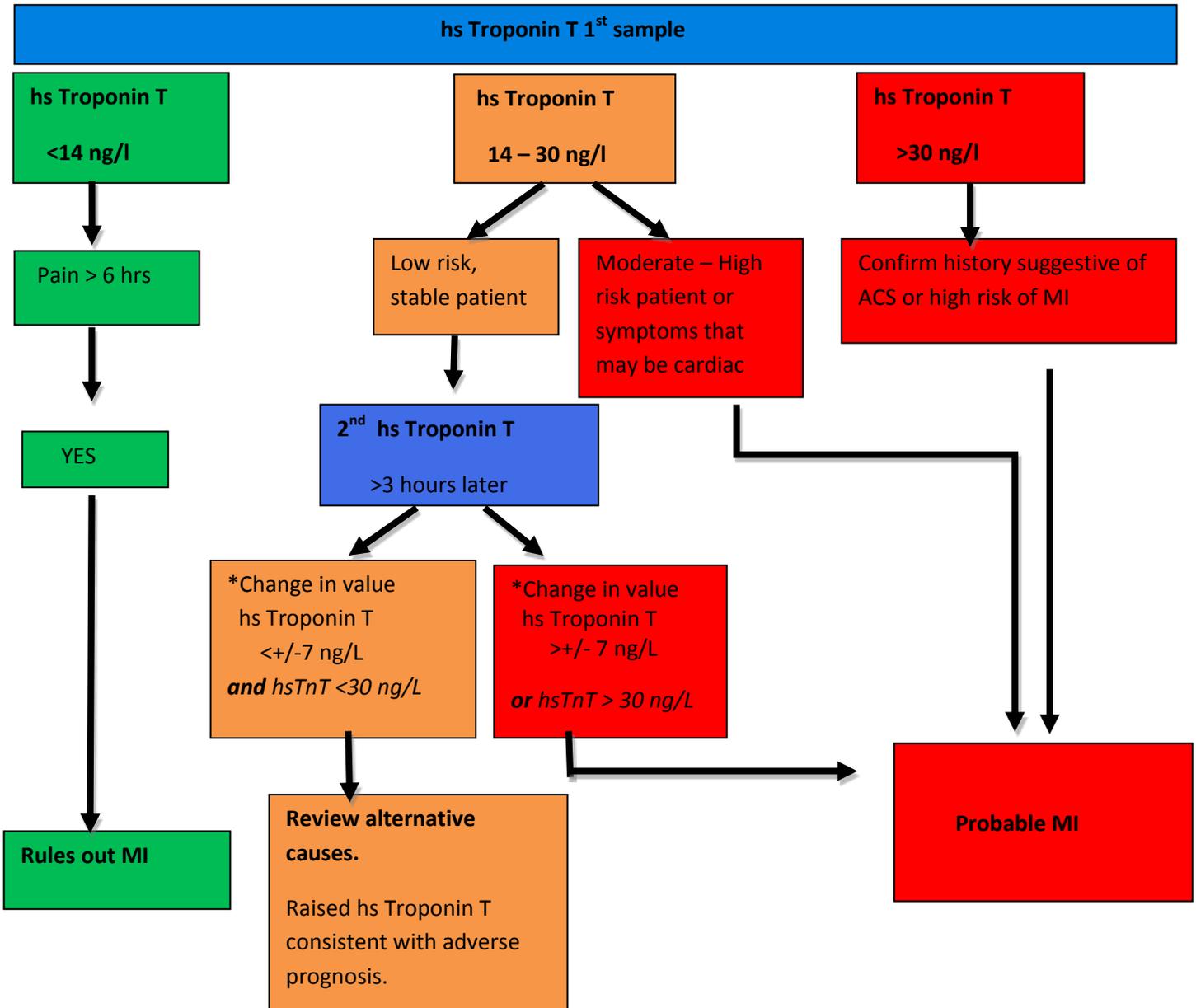
The higher the hs Troponin T level the more likely the patient has had an MI although stable hs Troponin levels marginally above 30 ng/l do occur with alternative pathology.

It should be remembered that non MI causes of a raised hs Troponin T may also require admission (e.g. PE) or further investigations within the community (e.g. Troponin negative cardiac chest pain) .

## Causes of elevated hs Troponin T in the absence of a MI

| Cardiac causes   | Non cardiac causes                |
|--|-----------------------------------|
| Congestive heart failure, acute or chronic                   | PE, severe pulmonary hypertension |
| Stable coronary artery disease                               | Renal failure                     |
| Myocarditis (and endocarditis, pericarditis)                 | COPD                              |
| Tachy- or bradyarrhythmias, or heart block                   | Diabetes                          |
| Hypertension   | Acute neurological event          |
| Cardiac contusion/trauma including surgery, ablation, pacing | Drugs and Toxins                  |
| Aortic dissection  |                                   |
| Aortic valve disease   |                                   |
| Hypertrophic cardiomyopathy                                  |                                   |

**Interpretation hs Troponin T in the community**



\*Change in value relates to either a rise OR fall in hs Troponin T value.

## **References**

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