High Sensitivity Troponin-T Assay (Troponin-T HS)

General Points

- The new high sensitivity Troponin T (Troponin-T HS or Trop-T HS) assay replaced the old assay in July 2010.

- The service and interpretation of results were reviewed in December 2010, and these are some of the updated points, to encourage the appropriate use and interpretation of the increased analytical sensitivity of this assay.

- Troponin-T HS ≥14 ng/L is still used to indicate the increased probability of myocardial damage.

- Acute myocardial damage highly unlikely if Troponin-T HS <14 ng/L 12 hours after the onset of chest pain. In low risk patients (TIMI<4) without ECG changes or ongoing pain, a value of <14ng/L 6 hours after onset of pain can be used for early discharge. A referral should be made to the chest pain nurses if the history was suggestive of angina.

- Troponin-T HS ≥ 100 ng/L is usually indicative of acute myocardial damage in an appropriate clinical context.

- For Troponin-T HS values between 14 – 99 ng/L, OR where there is doubt over the diagnosis, it is recommended to re-measure the Troponin-T HS 6 hours later.

- An increase of less than 20 % in Troponin-T HS for any time period excludes recent acute myocardial damage.

- An increase of >100% in Troponin-T HS makes ACS more likely.

- Increases of 20 – 100 % in Troponin-T HS may be due to non-cardiac illness and the clinical context should be considered.

- Many patients with a peak Troponin-T HS level of less than 100ng/L will have a final diagnosis other than acute coronary syndrome.

- Troponin-T HS can be chronically elevated in patients with renal failure or heart failure. An acute rise can be seen in many illnesses other than acute coronary syndrome such as PE, sepsis, myocarditis, arrhythmia.

- A Troponin-T value on the old assay of 0.10 μg/L is equal to 100 ng/L on the new assay.

For patients arriving at ED follow the guide below on page 3
For patients arriving at MAU/CDU follow the guide below on page 4
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Automated comments that will appear on reports:

For Troponin-T HS < 14 ng/L
Please note Troponin-T HS results are reported in ng/L NOT µg/L.
Low Risk Result
This Troponin-T HS result excludes myocardial infarction if sample taken > 12 hours after last significant pain.
If sample taken between 6 - 12 hours after pain, myocardial damage unlikely in low risk patients with a normal ECG.
For further information visit the RDH Pathology Website.

For Troponin-T HS 14 - 99 ng/L
Please note Troponin-T HS results are reported in ng/L NOT µg/L.
Intermediate Risk Result
Suggest re-measure Troponin-T HS after 6 hours of the initial sample to determine if damage acute.
Increases in Troponin-T HS < 20 % excludes a recent myocardial infarction. Patients with myocardial infarction usually have an increase of >100%.
Increases of 20 – 100 % may be due to non-cardiac illness and the clinical context should be considered.
Conditions other than myocardial infarction can also elevate Troponin-T HS including other cardiovascular disease, severe infection, PE and renal failure.
For further information visit the RDH Pathology Website.

For Troponin-T HS ≥ 100 ng/L
Please note Troponin-T HS results are reported in ng/L NOT µg/L.
Following cardiac chest pain this Troponin-T HS level is consistent with myocardial damage. Refer to CCU guidelines.
Conditions other than myocardial infarction can also elevate Troponin-T HS including other cardiovascular disease, severe infection, PE and renal failure.
Interpret results with the clinical presentation.
For further information visit the RDH Pathology Website.

Other notes :-

1) Any Troponin less than 10 to be reported as <10 ng/L.
ASSESSMENT OF SUSPECTED ACUTE CORONARY SYNDROME IN THE E.D. WITHOUT ST ELEVATION/NEW LBBB

**SUSPECTED CARDIAC PAIN**

- **of > 15 minutes duration in adults**
  - Review ambulance ECG
  - ECG (within 10 minutes)
  - Bloods (IP, Trop T, FBC)
  - Aspirin and GTN
  - TIMI score

- **Admit immediately if any of:**
  - ST depression >0.5mm
  - New T wave inversion >1mm
  - Ongoing cardiac CP
  - Haemodynamic instability
  - Trop T ≥ 14 (if known)

- **“MONA” as necessary**
  - LMWH/clopidogrel/bblock

**TIMI SCORE**

- **Age > 65** 1
- **3+ risk factors (BP,DM,FH/lipids/smoker)** 1
- **Known coronary stenosis > 50%** 1
- **On aspirin in last 7 days** 1
- **Severe cardiac pain in last 24hrs** 1
- **ST depression > 0.5mm** 1
- **Trop T ≥ 100 or ≥ 14 with >20% rise** (if known and sample after 6 hours) 1

**Principles:**
- Call cardiac outreach 8am-8pm
- Discuss any atypical/abnormal findings (murmur/LVF etc)
- Seek senior advice if unsure
- Review patient, repeat ECG after 15 mins
- If patient still in ED, hourly ECG and repeat Trop T 6 hrs after first sample looking for a >20% rise

- **>6 hours from last pain**
  - And Trop T (>12 hrs post pain) < 14
  - And no new ECG changes
  - Refer to CDU/Cardiac Outreach (8am-8pm) or MAU (8am-8pm)

- **>12 hours from last pain**
  - And Trop T (>12 hrs post pain) < 14
  - And no new ECG changes
  - Refer to MAU/Cardiac Outreach (8am-8pm) or MAU (8am-8pm)

- **Discharge from cardiac aspect**
  - Advice and GP letter
  - Cardiac Outreach follow-up: bleep 8am-8pm red box 8pm-8am

**Discharge from cardiac aspect**

- **Refer to MAU/Cardiac Outreach (8am-8pm) or MAU (8am-8pm)**
- **Refer to CCU:** Cardiac Outreach (8am-8pm) or MAU (8am-8pm)

New proposal from July 19 2010
Cardiology/ED Derby Hospitals NHSFT
Non ST-elevation ACS on MAU/CDU
Cardiac chest pain >15 mins, no ST elevation/LBBB

Bloods including CK and TnT
ECG hourly for 3 hrs (min 2 ECGs) and pre-discharge

Aspirin +/- β-blocker, nitrates

ECG normal and TIMI < 4
Check CK TnT on admission and 6hrs later
A third TnT (12 hours after onset of pain) is only necessary if TnT2 was taken less than 12 hours after pain and is between 14 - 100

Low risk

ETT ideally as IP
Home if normal
Review meds if - 
D/W cardio if +
(?admit/OP Ix)

Intermediate risk

New ECG changes/ TnT rise
-Enoxaparin
-Clopidogrel
-D/W cardiology ? angio
-Move to high risk if ongoing pain/ECG changes
Others: IP ETT

High risk

Enoxaparin
Clopidogrel
If suitable for PCI
- IP angiogram
- Tirofiban** if ST depression or T wave inversion +
TnT>100 and ongoing pain

ST depression >1mm
Or AMI <1/12
Or clinical instability
Other change inc T wave inv

* Consider treating as high risk before bloods available.
** Not if first CK known to be>1000, unless ongoing pain.
This is a guide– use clinical judgement, record reasons
Refer to Yellow handbook for further information

If ongoing ischaemia/ clinical instability, D/W Cardiology
?Emergency PCI

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