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| **2F — Troponin test** |
| **Summary of Intervention** |
| Troponin blood testing should be used to diagnose acute myocardial infarction. It should only be used in cases where a clinical diagnosis of acute coronary syndrome or myocarditis is suspected or for prognostic purposes when pulmonary embolism is confirmed. |
| **Number of interventions in 18/19** |
| **575,375** |
| **Proposal** |
| In order to rule out suspected acute coronary syndrome (moderate or high risk of myocardial infarction) in people presenting with acute chest pain, NICE recommends early rule out using high-sensitivity troponin tests. High‑sensitivity troponin assays were developed to detect troponin in the blood at lower levels than non-high sensitivity troponin assays. Using the high-sensitivity assays as part of an early rule-out protocol can reduce time to discharge. Guidance on early rule out of NSTEMI using high-sensitivity troponin assays recommends a 2-test strategy, typically on admission and at 3 hours. However, the committee concluded that there was insufficient evidence to recommend a specific test strategy and agreed that early rule‑out protocols should be chosen according to local preference. High-sensitivity troponin measurements should not be considered in isolation but interpreted alongside the clinical presentation, the time from onset of symptoms, the 12-lead resting ECG, pre-test probability of NSTEMI, the possibility of chronically elevated troponin levels in some people and that 99th percentile thresholds for troponin I and T may differ between sexes. If ACS is not suspected, high-sensitivity troponin test should not be used.  For people at low risk of myocardial infarction only perform a second, high sensitivity troponin test if the first troponin test at presentation is positive.  Diagnosis of myocardial infarction is the detection of a rise and/or fall of cardiac troponin with at least one value above the 99th percentile of the upper reference limit and at least one of the following:  — symptoms suggesting myocardial ischaemia  — new / presumed new significant ST‑segment‑T wave (ST‑T) changes or new left bundle branch block (LBBB)  — development of pathological Q waves on the ECG  — imaging evidence of new loss of viable myocardium or new regional wall motion abnormality  — identification of an intracoronary thrombus by angiography.    The appropriate use of high-sensitivity troponin testing should reduce the need for further investigation, result in shorter stays in hospital and overall result in cost-savings (if used in an early rule out clinical protocol). According to this recommendation, if acute coronary syndrome is suspected in a primary care setting, a referral should be made for prompt investigation and treatment.  **This guidance applies to adults and children.** |
| **Rationale for Recommendation** |
| NICE guidelines recommend that the initial assessment for a person presenting with chest pain and suspected acute coronary syndrome in hospital is a 12-lead resting ECG and a blood sample for high-sensitivity troponin I or T. NICE guidance considers high‑sensitivity troponin tests to be those that have a coefficient of variation of 10% or less at the 99th percentile (the upper limit of the reference population), and are able to detect cardiac troponin in at least 50% of the reference population. Research suggests that troponin tests used for indications other than suspected acute coronary syndrome are rarely associated with cardiac disease, cause unnecessary investigations and increase length of hospital stay. Troponin also has a role in the diagnosis of suspected myocarditis and for diagnosis and monitoring of chemotherapy related myocardial damage. Troponin tests are useful prognostically but not diagnostically in cases of pulmonary embolism (PE) as markers of right ventricular dysfunction. Troponin levels are elevated in up to half of patients who have a moderate to large PE and are associated with clinical deterioration after PE. Troponin elevations usually resolve within 40 hours following PE, in contrast to the more prolonged elevation after acute myocardial injury. |
| **References** |
| 1. NICE guidance: Myocardial infarction (acute): Early rule out using high sensitivity troponin tests (Elecsys Troponin T high-sensitive, ARCHITECT STAT High Sensitive Troponin-I and AccuTnI+3 assays) <https://www.nice.org.uk/guidance/dg15>.  2. NICE Guidance: Chest pain of recent onset: assessment and diagnosis (CG95). <https://www.nice.org.uk/guidance/cg95>.  3. NICE Costing Statement: https://www.nice.org.uk/guidance/dg15/ resources/costing-statement-pdf-49213.  4. NICE adoption support resource: <https://www.nice.org.uk/guidance/dg15/resources/adoption-support-resource-insights-from-the-nhs-6905227937> chapter/Introduction.  5. The Universal Definition of MI: Thygesen K, Alpert JS, Jaffe AS et al. (2012) https://www.ahajournals.org/doi/full/10.1161/CIR.0b013e31826e1058.  6. Al-Maskari M, Al-Makhdami M, Al-Lawati H, Al-Hadi H, Nadar SK. Troponin Testing in the Emergency Department: Real world experience. Sultan Qaboos Univ Med J. 2017;17(4):e398–e403. doi:10.18295/squmj.2017.17.04.004.  7. Cardiac troponin I elevation in acute pulmonary embolism is associated with right.  8. ventricular dysfunction. Meyer T, Binder L, Hruska N, Luthe H, Buchwald AB. J Am Coll Cardiol. 2000 Nov 1;36(5):1632-6. |