Costing statement: Myocardial infarction (acute): Early rule out using high-sensitivity troponin tests
Implementing the NICE guidance on 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) (DG15)

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1 **Introduction**

1.1 This costing statement considers the resource implications of NICE diagnostic guidance on ‘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)’ (NICE diagnostic guidance 15).

1.2 A costing statement has been produced for this diagnostic guidance as variation in clinical practice across the country means users should consider and assess the impact locally.

1.3 The guidance states that: the Elecsys Troponin T high-sensitive assay and ARCHITECT STAT High Sensitive Troponin-I assay are recommended as options for the early rule out of non-ST-segment-elevation myocardial infarction (NSTEMI) in people presenting to an emergency department with chest pain and suspected acute coronary syndrome. The assays are recommended for use with ‘early rule-out protocols’, which typically include a blood sample for cardiac troponin I or T taken at initial assessment in an emergency department and a second blood sample taken after 3 hours.

1.4 The commissioners for this service are Clinical Commissioning Groups and the providers are secondary care hospitals with emergency care departments.

2 **Patient numbers affected**

2.1 People presenting at emergency departments with chest pain are normally given an electrocardiogram (ECG). It was reported that in 2012/13 an ECG was given at 615,210\(^1\) A&E attendances in

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England. And there were 239,445\(^2\) emergency admissions for chest pain, 66,304\(^3\) for acute myocardial infarction (of which it is estimated that 60% have NSTEMI and 40% have ST-segment elevation myocardial infarction (STEMI)\(^4\)) and 30,542\(^5\) for unstable angina in England. Therefore it is estimated that at least 336,291 emergency admissions in England each year could receive an ECG for suspected acute myocardial infarction and enter the relevant care pathway, which equates to 605 per 100,000 population.

### 2.2

It is estimated that for 47\(^6\) of these 605 admissions, the ECG will show ST-segment elevation and these people will be diagnosed with STEMI. The remaining 558 will have no ST-segment elevation and will have high-sensitivity troponin testing as part of early rule-out protocols to establish if they could have non-ST-segment elevation myocardial infarction (NSTEMI)\(^7\) or whether it can be ruled out.

### 2.3

It is not known how many people would have normal troponin levels and would have NSTEMI ruled out. Where NSTEMI has been ruled out, assuming the person does not have another condition requiring they stay in hospital, such as unstable angina, the person can be discharged. A proportion of people tested with high-sensitivity troponin will have raised troponin levels and need further diagnostic testing to establish whether they have NSTEMI or another condition.

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\(^4\) According to the Myocardial Ischaemia National Audit Project (MINAP) annual public report for England and Wales (October 2013); 40% of admissions with a final diagnosis of myocardial infarction had STEMI and 60% had NSTEMI.


\(^6\) According to the Myocardial Ischaemia National Audit Project (MINAP) annual public report for England and Wales (October 2013); 40% of admissions with a final diagnosis of myocardial infarction had STEMI and 60% had NSTEMI. Therefore it is estimated that 47 admissions will show STEMI (40% applied to the number of emergency admissions for acute myocardial infarction for a population of 100,000).

\(^7\) It is anticipated that all patients will move to high-sensitivity troponin testing, however expert opinion suggests the timing may be delayed due to existing contractual agreements.

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causing raised troponin levels. The number with raised troponin levels but no MI is unknown. It is estimated around 72\(^8\) of the 558 people given high-sensitivity troponin testing as part of early rule-out protocols would be diagnosed with NSTEMI.

3 Resource impact

3.1 The comparator is non-high sensitivity testing and involves taking an initial blood test at presentation and a second blood test 10-12 hours after symptom onset. The increased sensitivity of high-sensitivity troponin tests allows testing to be done over a shorter timeframe. Early rule-out protocols are likely to involve an initial blood test at presentation to an emergency department and a second blood test approximately 3 hours later. It is assumed that people requiring a second blood test are admitted to hospital due to the practicality of ensuring people spend less than 4 hours in an emergency department.

3.2 Non-high sensitivity testing has the potential for an overnight stay, whereas high-sensitivity troponin testing when used as part of early rule-out protocols provides more opportunity for same day emergency care. The cost of using the tests is anticipated to be similar.

3.3 It is anticipated that admission for chest pain will come under healthcare resource group (HRG) code EB01Z: Non-Interventional Acquired Cardiac Conditions. For this HRG code there is a best practice tariff of £673 for same day emergency care, and when length of stay is 1 day or more, a tariff of £460\(^9\) (the standard non-elective tariff is £577\(^10\)). This incentivises providers to manage patients on a same day basis and allows more efficient use of hospital beds.

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\(^8\) This is based on the estimated number of emergency admissions with a primary diagnosis of NSTEMI (see notes 2 and 4).

\(^9\) Payment by Results national tariff 2014/15, best practice tariffs, same day emergency care.

\(^10\) Payment by Results national tariff 2014/15, admitted patient care & outpatient procedures.

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3.4 Implementation of this guidance is anticipated to deliver savings to providers from a reduction in the length of stay of people presenting at an emergency department with chest pain.

3.5 The tariff paid will depend on local circumstances. Commissioners and providers should work together to agree local payment variations where applicable\textsuperscript{11}.

4 Conclusion

4.1 The Elecsys Troponin T high-sensitive assay and ARCHITECT STAT High Sensitive Troponin-I assay are recommended for early ‘rule out’ of NSTEMI. The increased sensitivity provides the opportunity for same day emergency care. This may help providers achieve the best practice tariff for same day emergency care.

4.2 Implementation of this guidance should lead to more effective use of NHS resources. This is because people may be discharged from hospital after a shorter period of time, meaning hospital beds are not occupied inappropriately waiting for test results.

4.3 The tariff paid will depend on local circumstances. Commissioners and providers should work together to agree local payment variations where applicable.

\textsuperscript{11} Annex 4A: Additional information on currencies with national prices. Some providers have already implemented best practice in ambulatory emergency care and are able to manage patients outside of the traditional hospital bed base. The BPT is specifically designed for those providers that are not so well advanced. It will be important to make sure that those already delivering best practice are not disadvantaged by the BPT. Therefore, organisations may agree local payment variations that either encourage development of pathways outside of the admitted setting or ensure adequate reimbursement for acute providers that have already established such care models.

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