The assessment of acute chest pain in New Zealand rural hospitals utilising point-of-care troponin

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In response to a Ministry of Health directive, New Zealand District Health Boards have developed emergency department Accelerated Diagnostic Chest Pain Pathways (ACPPs) combining objective scoring, ECG and high sensitivity troponin (hsTn) to facilitate the safe and early discharge of patients who present with suspected cardiac origin chest pain.[1,2]

Much of rural New Zealand lacks timely laboratory based hsTn and instead relies on point-of-care troponin (POCTn), with much lower sensitivity rendering these ACPPs unsuitable for use in these areas.[3,4]

There is no evidence for the use of POCTn in high-risk populations for rural hospital use, although an ACPP incorporating POCTn in a low-risk urban population has been shown to be safe.[5,6] This is being validated in a rural New Zealand General Practice setting.[7]

Adapting these data and consensus guidelines from the Australasian Association of Biochemists we recommend the attached pathway for use in rural areas reliant on POCTn (Fig. 1).[5–10]

The Emergency Department Assessment of Chest Pain (EDACS) and an ECG are used to categorise patients into either 'low-risk' or 'not low-risk' groups.[9,10]

Low-risk (rural general practice and rural hospitals): POCTn is performed at presentation and repeated two hours later. Patients are able to be discharged if both POCTn levels are less than 0.04 ug/L (Abbott i-STAT) or 0.05 ug/L (Alere Triage Cardio–3) with appropriate referral for urgent outpatient risk assessment.[5]

Not low-risk: Patients are admitted to a rural hospital. Two negative POCTn tests performed at presentation and between three and six hours later effectively excludes a myocardial infarction and these patients are referred for inpatient risk assessment.[8,9]

To improve sensitivity, we endorse using a POCTn cut-off below the manufacturer's recommendation.[4,8,11,12] However, in an effort to maintain specificity, a typical rise and fall of troponin is required for a positive test at low but detectable levels.[8] The change in troponin occurs reliably in the hours immediately following a cardiac event but there may be little change between the first and second levels several hours after the onset of chest pain.[13] Therefore, a persistently high troponin without alternate explanation should not be ignored. Qualitative POCTn assays lack sensitivity to exclude myocardial infarction and we do not recommend their use.[14,15]

We expect this pathway to miss less than 1% of major adverse cardiac events (MACE) in keeping with other ACPP.[2,5,16] We recommend further research to validate this pathway, preferably with a newer higher sensitivity POCTn.

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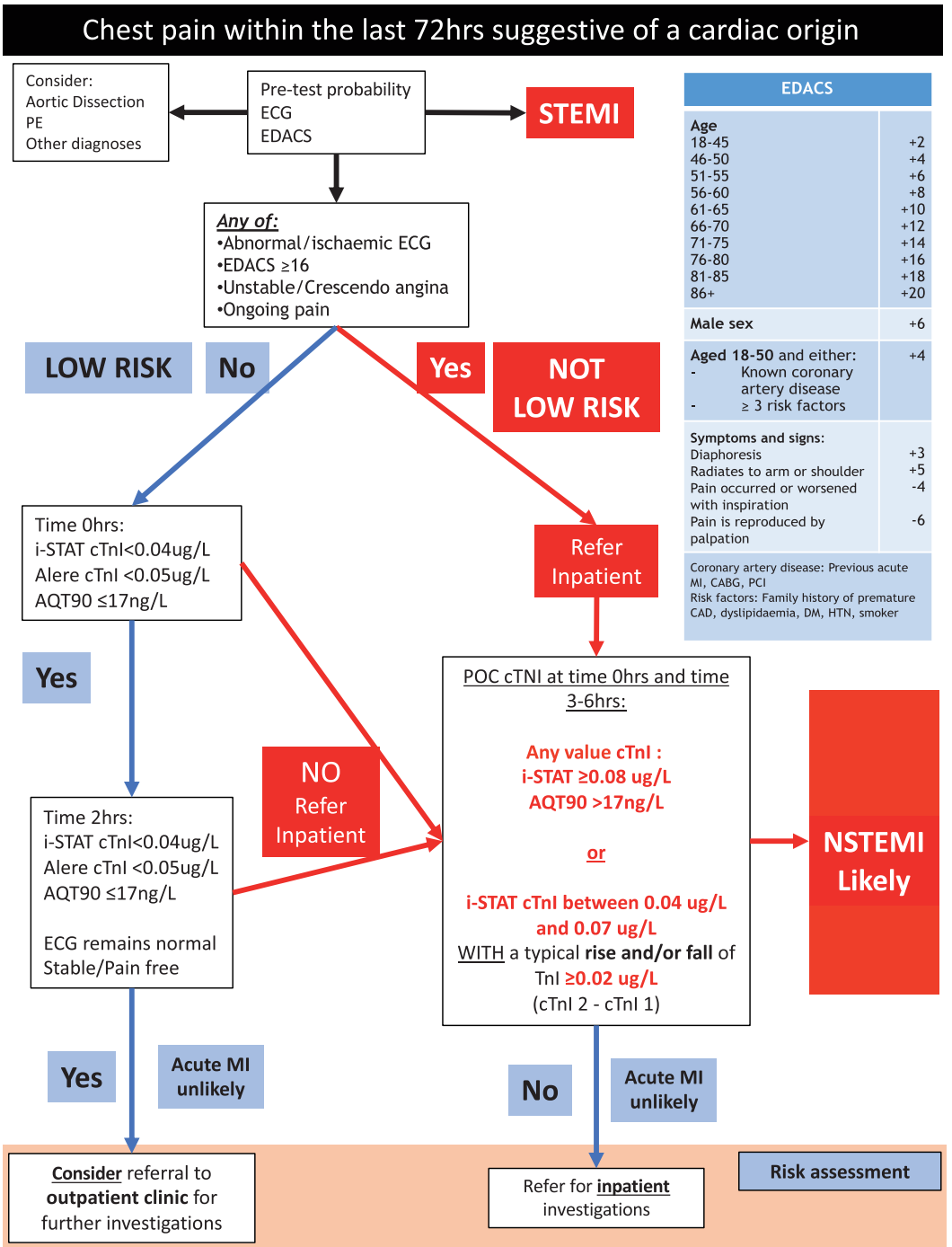
Figure 1. Proposed pathway



Time 0 = time at presentation
i-STAT = Abbott i-STAT cardiac Troponin I
Alere = Alere Triage Cardio3

AQT90 = Radiometer AQT90
EDACS = Emergency Department Assessment of Chest Pain Score

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COMPETING INTEREST
None