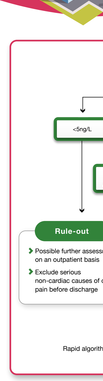
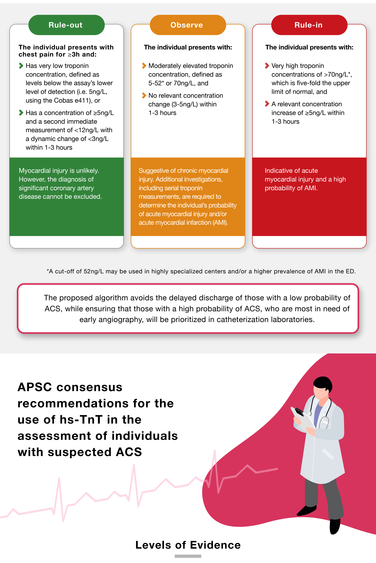
APSC Expert Committee Consensus Recommendations for the Assessment of Suspected Acute Coronary Syndrome (ACS) Using High-Sensitivity Cardiac Troponin T in the Emergency Department

Tan, W.C.J., *et al. Circ J.* Feb 2020;84:136-143

The Asia-Pacific Society of Cardiology (APSC) high-sensitivity troponin T (hs-TnT) consensus recommendations and rapid algorithm were developed to provide guidance for healthcare professionals in the Asia-Pacific region on assessing patients with suspected acute coronary syndrome (ACS) using an hs-TnT assay.



Rapid algorithms using hs-TnT assays to swiftly triage patients with suspected ACS can alleviate the problems of prolonged stays and overcrowding in emergency departments (EDs), which has become a pressing problem in the Asia-Pacific region.



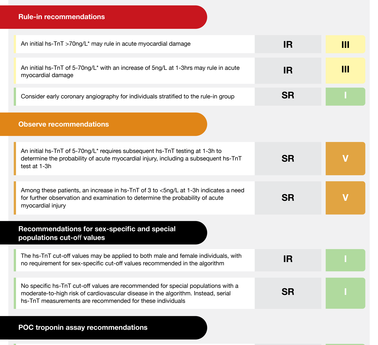
Rapid algorithm for suspected ACS or non-ST-elevation myocardial infarction (NSTEMI) using hs-TnT values.

Rule-out	Observe	Rule-in
The individual presents with chest pain for ≤3h and: Has very low troponin concentration, defined as levels below the assay's lower level of detection (i.e. 5ng/L, using the Cobas e411), or Has a concentration of ≤5ng/L and a second immediate measurement of <12ng/L with a dynamic change of <3ng/L within 1-3 hours	**The individual presents with:** Moderately elevated troponin concentration, defined as 5-52* or 70ng/L, and No relevant concentration change (3-5ng/L) within 1-3 hours	**The individual presents with:** Very high troponin concentrations of >70ng/L*, which is five-fold the upper limit of normal, and A relevant concentration increase of ≥5ng/L within 1-3 hours
Myocardial injury is unlikely. However, the diagnosis of significant coronary artery disease cannot be excluded.	Suggestive of chronic myocardial injury. Additional investigations, including serial troponin measurements, are required to determine the individual's probability of acute myocardial injury and/or acute myocardial infarction (AMI).	Indicative of acute myocardial injury and a high probability of AMI.

*A cut-off of 52ng/L may be used in highly specialized centers and/or a higher prevalence of AMI in the ED.

The proposed algorithm avoids the delayed discharge of those with a low probability of ACS, while ensuring that those with a high probability of ACS, who are most in need of early angiography, will be prioritized in catheterization laboratories.

APSC consensus recommendations for the use of hs-TnT in the assessment of individuals with suspected ACS



Levels of Evidence

Strength	Level	Design
High	Level I	Systematic review (with homogeneity) of Level I studies; or a clinical decision rule with Level I studies from different clinical centres
		Validating cohort study with good reference standards; or clinical decision rule tested within one clinical centre
		Diagnostic findings whose specificity is so high that a positive result rules in the diagnosis; a diagnostic finding whose sensitivity is so high that a negative result rules out the diagnosis
	Level II	Systematic review (with homogeneity) of Level >II diagnostic studies
		Exploratory cohort study with good reference standards; clinical decision rule after derivation, or validated only on split-sample or databases
	Level III	Systematic review (with homogeneity) of IIIb and better studies
		Non-consecutive study; or without consistently applied reference standards
	Level IV	Case-control study, poor or non-independent reference standard
Low	Level V	Expert opinion without explicit critical appraisal, or based on physiology, bench research or "first principles"

Adapted from Levels of Evidence by the Oxford Center for Evidence-Based Medicine

Strength of Recommendation

SR	IR	NR
Strong Recommendation	Intermediate Recommendation	Not Recommended

The following recommendations were developed with the majority of the centers in the Asia-Pacific region in mind. In addition to considering the safety of patients, it also attempts to improve efficiency in healthcare by providing a tool for rapid clinical decision-making in the ED.

Summary of Recommendations

	Strength of recommendation	Level of evidence
Rule-out recommendations		
An initial hs-TnT <5ng/L may rule out acute myocardial injury	SR	I
An initial hs-TnT <12ng/L at 0h and an increase of <3ng/L after 1-3h may rule out acute myocardial injury	SR	I
Consider careful clinical assessment and/or the use of a risk score validated in ACS, alongside hs-TnT values to inform the decision of whether to discharge an individual and/or follow up in the outpatient setting	SR	V
Rule-in recommendations		
An initial hs-TnT >70ng/L* may rule in acute myocardial damage	IR	III
An initial hs-TnT of 5-70ng/L* with an increase of 5ng/L at 1-3hrs may rule in acute myocardial damage	IR	III
Consider early coronary angiography for individuals stratified to the rule-in group	SR	I
Observe recommendations		
An initial hs-TnT of 5-70ng/L* requires subsequent hs-TnT testing at 1-3h to determine the probability of acute myocardial injury, including a subsequent hs-TnT test at 1-3h	SR	V
Among these patients, an increase in hs-TnT of 3 to <5ng/L at 1-3h indicates a need for further observation and examination to determine the probability of acute myocardial injury	SR	V
Recommendations for sex-specific and special populations cut-off values		
The hs-TnT cut-off values may be applied to both male and female individuals, with no requirement for sex-specific cut-off values recommended in the algorithm	IR	I
No specific hs-TnT cut-off values are recommended for special populations with a moderate-to-high risk of cardiovascular disease in the algorithm. Instead, serial hs-TnT measurements are recommended for these individuals	SR	I
POC troponin assay recommendations		
The majority of the POC assays commercially available at present cannot be considered high-sensitivity assays	SR	I
POC troponin assays have not been cleared and should not be used in isolation to rule out acute myocardial injury	NR	I
POC troponin assays that have received a label may be used to rule in potential myocardial injury and to inform decision-making on follow-up examinations with high-sensitivity testing	SR	I

*A cut-off of 52ng/L may be used in highly specialized centers with readily available CT coronary angiography and catheterization facilities and/or higher prevalence of acute myocardial infarction (AMI) in the emergency department (ED).
ACS, acute coronary syndrome; POC, point of care

Reference
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