

been shown to reduce unconscious bias and improve health outcomes for First Nations peoples [13,68].

2.2. Initial ECG Assessment

Recommendations

Recommendation	Strength of recommendation	Certainty of evidence
In people presenting with chest pain or other symptoms suggestive of ACS, record and assess an ECG for evidence of ACOMI within 10 minutes of first clinical contact.	Consensus	
In people with suspected ACS, record and assess additional ECGs if symptoms persist, change, or recur, or there is diagnostic uncertainty. For those with ongoing ischaemic symptoms and an inconclusive standard 12-lead ECG, record and assess further ECGs with right-sided and/or posterior leads.	Consensus	
In people with ongoing ischaemic symptoms or haemodynamic compromise or new ischaemic findings on ECG, continuous cardiac monitoring and defibrillator availability is recommended while assessment for ACOMI continues.	Strong	Low

Evidence supporting the recommendations

The priority is to identify people with ACOMI as soon as possible to expedite reperfusion. Urgent reperfusion can save viable myocardium and reduce morbidity and mortality.

Recording and interpreting the ECG is the most important initial investigation and should be performed within 10 minutes of clinical contact for all people presenting with chest pain or other symptoms of ACS [70]. As ECGs in people with ACOMI can show different patterns (Figure 4), they should be examined by a clinician experienced in ECG interpretation. In remote areas, an established process that enables rapid ECG interpretation is required if an experienced clinician is unavailable on site [71].

If ACOMI is not initially identified, the ECG should be further examined for features associated with higher likelihood of evolving to ACOMI or signs of myocardial

ischaemia (section 2.2.2 High-risk ECG findings; 2.2.3 Other signs of myocardial ischaemia on ECG; and Figure 4). If available, pre-hospital ECGs or ECGs recorded during previous presentations should be compared to assess for new or dynamic changes.

If features of ongoing ischaemia are present or people are stratified as high risk, close clinical and continuous monitoring of cardiac rate and rhythm with 3–5 lead electrodes of an ECG monitor should be initiated to assist early recognition of arrhythmias or cardiac arrest (section 2.4 Risk Assessment and Clinical Decision Pathways for Suspected ACS) [72]. The indications for continued monitoring should be reviewed regularly.

For people with an initial non-ischaemic ECG, resolved symptoms and initial troponin concentration equal to or below the sex-specific 99th percentile, continuous cardiac monitoring is not required (section 2.3 Biomarkers and 2.4 Risk Assessment and Clinical Decision Pathways for Suspected ACS). However, repeated ECGs should be performed either at prescribed intervals (e.g. hourly), when repeated troponin samples are collected or as guided by changes in a person’s symptoms or clinical condition.

2.2.1. ECG findings of acute coronary occlusion myocardial infarction

STE is the key ECG criterion required to institute a reperfusion strategy for people with signs or symptoms of myocardial ischaemia (Figure 4A) [73]. STE is not specific to ACOMI and may occur in other disease states, both cardiac and non-cardiac [74]. Cardiac conditions with STE without acute coronary occlusion include pericarditis, left ventricular hypertrophy (LVH), left ventricular aneurysm, left bundle branch block (LBBB), right ventricular pacing, Takotsubo or other cardiomyopathies and Brugada patterns. Non-cardiac STE conditions include normal variant STE (early repolarisation), pulmonary embolism, hyperkalaemia, hypothermia and raised intracranial pressure.

In the clinical context of myocardial ischaemia, STE should be assumed to represent ACOMI until excluded.

Recognised ECG patterns of acute coronary occlusion myocardial infarction

Comparison of ECGs with coronary angiogram results have revealed multiple ECG patterns of ACOMI beyond traditional STE criteria [22,75,76]. Recognition of the following patterns improves ECG sensitivity for acute coronary occlusion and should prompt consideration of ACOMI warranting reperfusion (Figure 4) [77]. This may require supplemental lead ECGs to interrogate electrically subtle or silent areas of the heart such as the inferior, basal, posterior and right ventricular walls (Table 4). Notable ECG findings include:

- High lateral MI manifesting with STE in non-contiguous leads due to occlusion of the first diagonal branch of the left anterior descending coronary artery (Figure 4B) (referred to as the “South African flag sign”) [78,79].