2. Assessment and Diagnosis

2.1. Assessment of People with Suspected ACS

Assessment of ACS incorporates the following:

- ECG findings
- clinical findings from history and physical examination
- troponin testing.

These observations are combined to either diagnose or inform risk assessment which will guide the location and timing of further investigations, management, and appropriate follow-up. Rapid identification of people with ACS is crucial as many treatments are time sensitive and earlier intervention improves outcomes. However, only a minority of people presenting with acute chest pain to the emergency department (ED) will have a final diagnosis of ACS [38,39].

Among those presenting with acute chest pain to the ED in whom ACS is suspected, <5% will have STEMI, 5–10% NSTEMI, 5–10% UA, 15–20% other cardiac conditions, and 50–60% non-cardiac conditions [39–42]. While a definitive diagnosis may be made at index presentation, most diagnoses will be of a non-cardiac condition or remain unclear and may require further follow-up to complete assessment as an outpatient [16].

For this reason, risk assessment for ACS is the key initial goal, rather than achieving a rule in or rule out diagnosis relating to ACS which may not be possible in many people (section 2.4 Risk Assessment and Clinical Decision Pathways for Suspected ACS).

The hierarchy of assessment in suspected ACS is as follows:

1. Identify people with ACOMI (STEMI and STEMI equivalents).
2. Identify people with NSTEMI.
3. Identify people with UA at high risk for 30-day MACE.
4. Identify people with underlying CAD in whom ACS is not confirmed.

Assessment for people with suspected ACS within an ED setting is described in the following sections.

Specific guidance for people presenting in regional/remote and primary care settings is given in section 2.10 Primary Care and Regional and Remote Presentations.

2.1.1. Initial assessment summary

The first steps in the assessment of people presenting to a healthcare setting with symptoms suspicious for ACS include the following (see practice points for setting considerations):

- Vital sign measurements including blood pressure, heart rate, respiratory rate and peripheral oxygen saturation should be recorded.
- An ECG should be reviewed by a clinician experienced in ECG interpretation to examine for evidence of ACOMI within 10 minutes of presentation (section 2.2 Initial ECG Assessment).
- If a diagnosis of ACS is considered likely, further investigations including troponin testing should be performed (section 2.3 Biomarkers and section 2.4 Risk Assessment and Clinical Decision Pathways for Suspected ACS).
- Promptly identify people with ACOMI suitable for urgent reperfusion.
- People without clinical symptoms of ACOMI but with ECG evidence of cardiac ischaemia, and/or people who are otherwise stratified as high risk of index MI or 30-day MACE (section 2.4.1 Clinical decision pathways), should have continuous cardiac monitoring.
- In people who are symptomatic and/or haemodynamically compromised, ECGs should be performed at (a minimum of) 15-minutes intervals until the symptoms have resolved.
  a. Additional ECGs should be performed if symptoms recur, there are changes in character or a change in their clinical condition.
- If there is no evidence of ACOMI on ECG, a targeted history and physical examination should be performed and differential diagnoses considered, particularly time critical emergencies including ruptured aortic aneurysm, pulmonary embolism, or pneumothorax (Table 2) [43,44].
  a. A chest X-ray may be useful in identifying some other causes, including pneumonia or pneumothorax, and to assess for cardiac size or evidence of cardiac failure. Acquiring a chest X-ray should not delay urgent reperfusion. This guideline does not apply to these other time-critical emergencies [43,44].

Table 2 Differential diagnoses of acute chest pain.

Cardiac: ACS	AMI, unstable angina.
Cardiac: Other	Stable angina, myopericarditis, tachyarrhythmia, hypertensive emergencies, severe aortic stenosis, Takotsubo cardiomyopathy, cardiac trauma.
Pulmonary	Pulmonary embolism, pneumothorax (including tension), infection (pneumonia, bronchitis), pleuritis.
Vascular	Aortic dissection, expanding aortic aneurysm, sickle cell crisis.
Gastrointestinal	Oesophagitis, reflux, spasm, rupture, peptic ulcer disease, pancreatitis, cholecystitis and biliary disease.
Other	Musculoskeletal disease (including costochondritis, trauma), anxiety disorder, infectious disease (including herpes zoster).

Abbreviations: ACS, acute coronary syndromes; AMI, acute myocardial infarction.