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Acute aortic syndrome (aortic dissection)

Statistics

- Incidence 3–16/100 000 per year.
- Men > women 2:1.
- Peak incidence age 50–60y.
- True incidence may be underestimated because mortality can be attributed to another cardiac condition.
- In a city or region of the UK with a population of 2 million people, roughly 140 people per year will die from this acute aortic dissection ([Br Journal Cardiol 2023;30:16](#)).
- Acute aortic dissection accounted for 1542 UK hospital admissions in 2022–23 (out of a total of >6 million) ([BMJ 2024;386:e080870](#)).

Acute aortic syndrome (AAS) is an umbrella term for a number of conditions affecting the aorta. It encompasses:

- Acute aortic dissection (accounts for around three-quarters of AAS ([BMJ 2024;386:e080870](#))).
- Intra-mural haematoma.
- Penetrating aortic ulcer.

This article focuses on the emergency presentation of acute aortic syndrome from a primary care perspective, drawing on a Lancet review and a BMJ Easily Missed article ([Lancet 2023;401:773](#), [BMJ 2024;386:e080870](#)).

This article was updated in January 2025.

1. When to suspect acute aortic syndrome

Think of acute aortic syndrome in patients with:

- Chest, back or abdominal pain.
- Syncope.
- Features of malperfusion, e.g. limb, mesenteric or renal ischaemia.

It is more likely in:

- Males >50y (but can occur in younger patients).
- Those with high-risk features (see below).

Around one-third of patients with AAS will initially be misdiagnosed, which is associated with a doubling of mortality ([BMJ 2024;386:e080870](#)).

2. High-risk presenting features

The aortic dissection detection risk score provides a structured algorithm for assessing AAS risk, and may be used in secondary care as part of the assessment of patients with possible aortic dissection symptoms ([BMJ 2024;386:e080870](#)).

Those without any of the high-risk features below have a low risk of acute aortic syndrome. However, if we suspect acute aortic syndrome in primary care (even without high-risk features), we should arrange urgent transfer to secondary care (999).

Aortic dissection detection risk score (ADD-RS)	
High-risk conditions • Marfan syndrome. • Family history of aortic disease. • Known aortic valve disease. • Recent aortic manipulation. • Known thoracic aneurysm.	Score 1 point for EACH.
High-risk pain features Chest, back or abdominal pain that is described as: • Abrupt in onset. • Severe in intensity. • Tearing or ripping in nature.	Score a total of 1 point if ANY are present.
High-risk examination findings • Pulse deficits. • Systolic BP differential. • Focal neurological deficits <u>with pain</u>. • New murmur of aortic insufficiency <u>with pain</u>. • Hypotension.	Score a total of 1 point if ANY are present.
Scores ≥ 2 indicate higher risk. A score of 0 is low risk and may not need further imaging. For those with a score of 1, the score may be combined with D-dimer testing to increase specificity.	

The Lancet review highlights some additional factors not considered in the

ADD-RS ([Lancet 2023;401:773](#)):

- Medications: quinolones, glucocorticoids, immunosuppressants, cytotoxic medication.
- Some vascular subtypes of Ehlers-Danlos syndrome.
- Obstructive sleep apnoea.
- Certain hereditary cardiovascular malformations such as coarctation and Turner's syndrome.
- Acute limb, renal or mesenteric ischaemia.

3. Management

- Arrange urgent hospital transfer via 999 ambulance.
- Oxygen and advanced life support (if equipped/skilled to provide this) while waiting.
- Complications can include: aortic rupture/death; pericardial effusion/cardiac tamponade; aortic regurgitation; renal, mesenteric or limb ischaemia.

Secondary care treatment

- Type A aortic dissection (ascending aorta or arch): always needs urgent surgical repair.
- Type B aortic dissection (descending aorta): if stable, medical management to reduce BP and/or heart rate. Surgery may be considered if the patient is unstable/experiencing pain or ischaemia.

Long-term management

- Surveillance imaging at 1, 3, 6 and 12m, then annually.
- Control other cardiovascular risk factors with tight blood pressure control (systolic <120mmHg).
- Screen relatives if appropriate (secondary care will decide this).



Acute aortic syndrome

- High-risk features for acute aortic dissection include:
 - Sudden, severe tearing or ripping pain in the chest, back or abdomen.
 - Syncope, hypotension, asymmetry of pulse or BP, focal neurological deficit or new aortic murmur with pain.
 - Signs of ischaemia (mesenteric, limb or renal ischaemia).
- Predisposing conditions include:
 - Marfan syndrome.
 - Family or personal history of aortic disease.
 - Some connective tissue disorders.
 - Obstructive sleep apnoea.
 - Medication: quinolones, glucocorticoids, immunosuppressants, cytotoxic medication.
- Our role in primary care is in recognising acute presentation and arranging urgent (999) transfer to secondary care, and then in long-term management of other cardiovascular risk factors to reduce risk of recurrence.

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