Featured Article

The aortic window: a temporal framework for acute type A aortic dissection

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Background: Acute type A aortic dissection (ATAAD) is a surgical emergency with time-dependent mortality. Surgical outcomes in high-volume centers are excellent, yet population-level outcomes remain catastrophic. This gap reflects a systems failure in recognition, diagnosis, and coordination rather than surgical inadequacy, and no formal time-based pathway currently governs care from emergency presentation to surgery.

Methods: Current epidemiology, international guidelines, registry evidence, and national audit data were synthesized, together with the structure of established time-critical pathways in ST-elevation myocardial infarction, stroke, major trauma, and sepsis, and multidisciplinary and patient-and-public input, to derive a temporal framework for ATAAD. The framework is advanced as a hypothesis for formal international consensus validation rather than an empirically validated standard.

Results: The proposed framework, the aortic window, is a phased pathway from emergency-department (ED) arrival to first surgical incision, structured as RACE (four acute phases: REACH, ALERT, CONVEY, ESCALATE) and RESTORE (recovery and lifelong surveillance), and operationalized through a named activation protocol. ED-to-incision time is the principal whole-system endpoint, chosen because it captures pre-diagnosis delay that diagnosis-anchored metrics exclude. Process and outcome measures are defined at case level with scheduled network review, aligned to established national audit registries. Implementation is staged and incorporates an education and run-in period before performance assessment.

Conclusions: The aortic window reframes ATAAD as a system-level, time-critical emergency amenable to the organizational solutions that improved outcomes in other time-dependent conditions. The proposed targets require prospective evaluation but provide a structured, measurable basis for coordinated pathway improvement.

Keywords: Acute type A aortic dissection (ATAAD); time-critical pathway; regionalization; quality improvement; clinical audit

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Introduction

Established lethality, absent temporal structure

Acute type A aortic dissection (ATAAD) is a surgical emergency. Early recognition applies to suspected acute aortic syndrome generally; the acute surgical pathway from confirmation to first incision is type-A specific. ATAAD has an estimated incidence of 3–6 per 100,000 annually in high-income countries (1,2). In the UK and Ireland, approximately 4,000 people experience aortic dissection each year, of whom around half die; the Oxford Vascular Study indicates that this incident burden is projected to double by 2050, driven by demographic ageing (2-4). Without treatment, mortality is dramatic: 22.7% die by six hours, 50% by 24 hours, 68.2% by 48 hours (5). Registry data from International Registry of Acute Aortic Dissection (IRAD) show 48-hour mortality of 23.7% in non-surgically managed cases versus 4.4% in surgically managed cases (*Figure 1*) (6). Median emergency-department (ED)-to-diagnosis interval is 4.3 hours (7).

The paradox: why population outcomes remain poor

Surgical outcomes are excellent. Risk-adjusted mortality in high-volume centers approaches 4–5%. Yet population-level outcomes remain catastrophic. This gap does not reflect surgical inadequacy; it reflects a systems failure in diagnosis, recognition, and coordination. Japanese data report 65% pre-hospital mortality despite high computed tomography (CT) availability (8), indicating structural failure before arrival. In the UK, delays reflect inconsistent prioritization alongside resource constraints (9). Diagnostic delays persist. Transfer pathways lack coordination. These early system failures are preventable (10).

ATAAD spans emergency and acute medicine, radiology, cardiology, anesthesia, critical care, and cardiac and vascular surgery. No specialty owns the pathway. No formal time targets exist. No mandated designation of receiving centers. No systematic audit. Without organizational structure, care is reactive: individual clinicians make individual decisions at each step. Delays compound silently. Lessons are not learned because failures are not measured.

How other emergencies closed the gap: structured temporal pathways

In ST-elevation myocardial infarction (STEMI) (door-to-balloon ≤90 min), stroke (door-to-needle ≤60 min), major trauma [scene-to-operating room (OR) ≤60 min], and sepsis (antibiotics ≤60 min), formal designation of centers and time targets preceded measurable outcome improvement across comparable time-critical emergencies (*Table 1*). These pathways succeeded not through new technology or changed surgical technique, but through organizational change: defining clear temporal targets calibrated to mortality curves, designating specific centers with requisite capacity, implementing time-based audit, and creating accountability loops.

The mechanism is organizational, not technological. A time target creates behavioural alignment. Audit measures create accountability. Audit data drive improvement. This cycle has worked consistently across different emergencies, different countries, and different health systems. ATAAD requires the same organizational approach.

National Health Service (NHS) England's Acute Aortic Dissection Toolkit (2021, revised 2022) is the most substantial national quality-improvement effort to date. Its seven principles establish organizational architecture, clinical governance, multi-disciplinary coordination, and regional aortic networks. However, the operational layer—time targets, mandated Primary Aortic Centre designation, and time-anchored performance benchmarks—remains to be specified. This paper supplies that operational framework.

Methods

This is a concept paper; the "Methods" describe how the framework was derived rather than a primary clinical study. The framework was derived from current epidemiology, international guidelines, registry evidence, and national audit data, representing a synthesis of multidisciplinary discussion among cardiothoracic and vascular surgeons, aortic cardiologists, and patient representatives. It is advanced as a hypothesis for formal international consensus validation.

Patient and public involvement (PPI) informed framework development. Patient representatives, engaged through The Aortic Dissection Charitable Trust, informed the framework's emphasis on timely diagnostic disclosure, survivor support, family and cascade screening, and lifelong surveillance. This contribution is presented as stakeholder input to framework design, not as evidence for the proposed time targets.

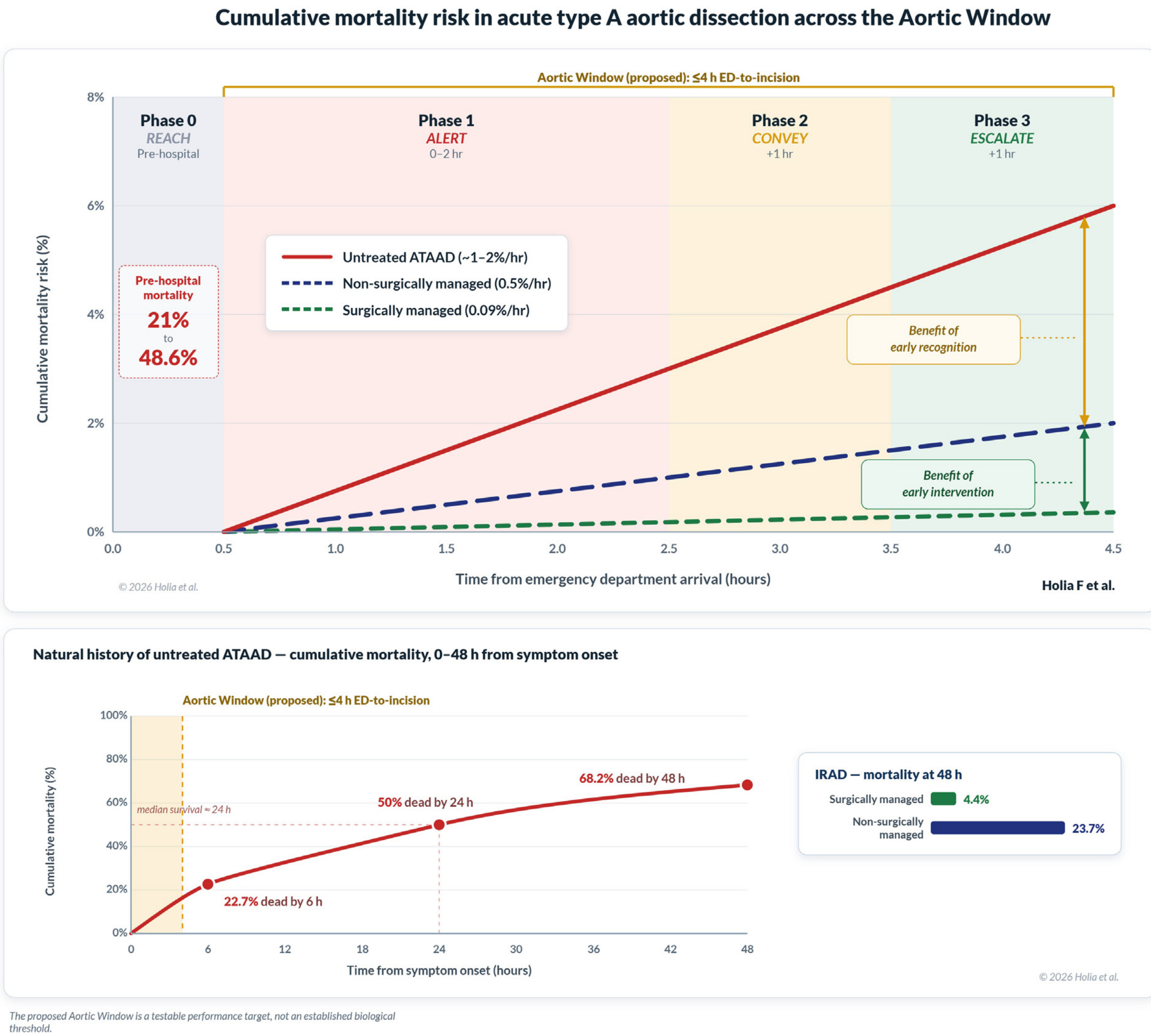

Figure 1 Cumulative mortality risk in ATAAD across the aortic window. Upper panel: schematic cumulative mortality from ED arrival across the four acute phases (REACH, ALERT, CONVEY, ESCALATE) of the proposed ≤4-hr aortic window, contrasting untreated dissection with non-surgically and surgically managed courses; per-hour rates shown are illustrative modelling assumptions used to depict the divergence attributable to early recognition and early intervention, not measured event rates. The CONVEY target is transfer activation within 60 minutes of diagnostic confirmation; the indicative phase duration is shown for schematic simplicity, and total transport time is network-specific. Lower panel: natural history of untreated ATAAD from symptom onset, with cumulative mortality of 22.7% by 6 hrs, approximately 50% by 24 hrs, and 68.2% by 48 hrs; the inset shows IRAD 48-hour mortality for surgically (4.4%) versus non-surgically (23.7%) managed patients. The proposed aortic window is a testable performance target, not an established biological threshold. ATAAD, acute type A aortic dissection; ED, emergency-department; hr, hour; IRAD, International Registry of Acute Aortic Dissection.

Results

The aortic window and the RACE-RESTORE framework

A temporal framework addresses ATAAD from symptom onset through lifelong surveillance. The framework has two components: RACE and RESTORE. RACE designates the four time-critical acute phases: REACH (pre-hospital), ALERT (diagnosis), CONVEY (transfer), and ESCALATE (operating theatre). RESTORE addresses post-operative recovery and lifelong aortic surveillance.

The aortic window is a 4-hour operational window from

Table 1 Structured temporal frameworks in time-critical emergencies

Condition	Temporal framework	Core time target	Designated centers	Registry/audit
STEMI	Primary PCI pathway	Door-to-balloon ≤90 min	Heart Attack Centers	NICOR/MINAP
Acute ischemic stroke	Hyperacute stroke/ mechanical thrombectomy	Door-to-needle ≤60 min	Hyperacute Stroke Units	SSNAP
Major trauma	Major Trauma Network	Scene-to-OR ≤60 min (direct pre-ALERT)	Major Trauma Centers	TARN
ATAAD (proposed)	RACE-RESTORE/aortic window	ED-to-first-incision ≤4 hours	Primary Aortic Centers	NICOR + SCTS (proposed)

ATAAD, acute type A aortic dissection; ED, emergency-department; MINAP, Myocardial Ischaemia National Audit Project; NICOR, National Institute for Cardiovascular Outcomes Research; OR, operating room; PCI, percutaneous coronary intervention; RACE, REACH-ALERT-CONVEY-ESCALATE; RESTORE, recovery and lifelong surveillance; SCTS, Society for Cardiothoracic Surgery; SSNAP, Sentinel Stroke National Audit Programme; STEMI, ST-elevation myocardial infarction; TARN, Trauma Audit and Research Network.

emergency department arrival to first surgical incision. This expert-informed proposed standard represents the minimum time required to complete necessary steps under ideal but achievable conditions. It is advanced as a prospective, testable hypothesis rather than a biological or statistical threshold. The target is calibrated to the early mortality slope shown in *Figure 1*, positioning the operational window within the period when the survival curve remains steep.

Activation: Code Aorta

Translation of the framework into local practice is operationalized through a predefined, named activation protocol, termed a "Code Aorta" (analogous to established code STEMI and code Stroke protocols). Once acute aortic syndrome is suspected or confirmed according to locally agreed criteria, the Code Aorta triggers parallel notification of emergency medicine, radiology, the aortic/cardiac surgical service, anesthesia, perfusion, blood bank, critical care, theatre coordination, and retrieval services. In a five-hospital before/after study, a comparable named-activation protocol was associated with shorter times to diagnosis, to transfer, and to the operating room, and lower 30-day mortality (11); the observational design does not establish causation, so the model is proposed for prospective local evaluation.

RACE: the four time-critical phases

Figure 2 illustrates the complete framework. Here, each phase is explained, along with the actions required, and the temporal targets.

Phase 0 (REACH, pre-hospital)

Recognition of acute aortic syndrome as a differential diagnosis in acute chest, back, or interscapular pain initiates the pathway. Definitive paramedic diagnosis is uncommon; Phase 0 delivers suspicion-triggered pre-ALERT and, where criteria are met, Code Aorta activation. Standardised recognition should be triggered by characteristic pain with any high-risk feature: abrupt or tearing onset, a pulse deficit or inter-arm blood-pressure differential, syncope, a focal neurological deficit, a new diastolic murmur, or known connective-tissue disease or family history of dissection. These maps to high-risk markers of the Aortic Dissection Detection Risk Score (12).

Recognition must explicitly extend beyond chest pain to atypical presentations, including syncope without pain, stroke or limb ischemia from malperfusion, and hypotension from tamponade, since a pain-keyed protocol risks reproducing the ~28% misdiagnosis rate (13,14).

Phase 1 (ALERT, 0–2 hours)

CT angiography is first-line in 2024 European Association for Cardio-Thoracic Surgery (EACTS)/The Society of Thoracic Surgeons (STS) (15) and European Society of Cardiology (ESC) (16) guidance, mirrored in 2022 American College of Cardiology/American Heart Association (ACC/AHA) recommendations (17), and warrants priority equivalent to primary percutaneous coronary intervention (PCI) (18). The Aortic Dissection Detection Risk Score, D-dimer, and bedside echocardiography support imaging prioritization and reduce misdiagnosis. Out-of-hours CT and radiology capacity are rate-limiting.

Temporal target: CT acquisition within 120 minutes of

Figure 2 The aortic window: the RACE-RESTORE framework for ATAAD. RACE designates the four time-critical acute phases within the proposed ≤4-hour aortic window (ED arrival to first incision): REACH (Phase 0, pre-hospital suspicion-triggered pre-ALERT), ALERT (Phase 1, CT angiography within 120 minutes of ED arrival), CONVEY (Phase 2, transfer activation within 60 minutes; transport time network-specific), and ESCALATE (Phase 3, theatre preparation to first incision). A named activation protocol (Code Aorta) triggers the parallel multidisciplinary cascade. RESTORE designates the post-operative companion phases that lie outside the acute window: Recovery (Phase 4) and lifelong Aortic Surveillance (Phase 5). Time targets are evidence-informed provisional standards pending international consensus validation. ATAAD, acute type A aortic dissection; CT, computed tomography; CTA, computed tomography angiography; ED, emergency-department; MDT, multidisciplinary team; RACE, REACH-ALERT-CONVEY-ESCALATE; RESTORE, recovery and lifelong surveillance.

emergency department arrival.

Phase 2 (CONVEY: transfer activation ≤60 min; transport time network-specific)

Diagnostic confirmation triggers transfer to a designated Primary Aortic Centre via a pre-agreed standardised pathway. The receiving centre initiates theatre preparation before patient arrival. Transfer is a sequence of operationally distinct, individually measurable steps—retrieval-team mobilization, patient packaging and loading, transport, and handover—which may be the rate-limiting components of the pathway. Organized interfacility transfer is not associated with excess 30-day surgical mortality (19,20). A national interdisciplinary Delphi consensus has defined the components of safe inter-hospital transfer for acute aortic syndrome and recommended their integration with existing national pathways; it proposes specialist-center arrival within four hours of local-hospital referral, a benchmark distinct from the ED-to-incision measure used here (21).

Temporal target: transfer activation within 60 minutes of CT confirmation. Total transport duration is geography-dependent, is not fixed by this framework, and is captured as a locally audited interval; performance for transferred patients is reported separately from direct presentations.

Phase 3 (ESCALATE, +1 hour)

Theatre preparation, team assembly, and consent proceed in parallel. First incision is the endpoint. Required actions:

aortic surgeon and perfusion activation, blood-bank release, anesthetic and theatre readiness, cell salvage and rapid-infuser set-up, and neuromonitoring. Without a defined escalation protocol, uncoordinated specialist activation may compound delay. Out-of-hours availability of perfusion and specialist theatre nursing is a principal rate-limiter and must be resourced explicitly (10).

Total aortic window: ≤4 hours from ED arrival to first incision

ED-to-incision as the whole-system endpoint

ED arrival to first incision is the principal operational endpoint, because the objective is to reduce total potentially modifiable pre-surgical mortality rather than delay after a diagnosis has been made. Diagnosis-to-incision conditions on survival to diagnosis: it excludes diagnostic delay and cannot capture deaths before confirmation or before surgical referral. Spontaneous mortality begins at symptom onset and is compounded by delayed recognition, so an ED-anchored clock is required to render total system performance auditable. Both stages matter: median ED-to-diagnosis time is 4.3 hours, followed by a further interval from diagnosis to intervention (7).

The observed surgical cohort may not represent every patient who experiences ATAAD, particularly those with severe malperfusion, who have substantially worse postoperative outcomes. The extent to which pre-diagnosis or preoperative attrition selects among surgical survivors is inadequately quantified and is not an established explanation for variation in surgical mortality. ED-to-incision therefore serves as the headline whole-system measure; diagnostic-confirmation-to-incision is a mandatory companion measure alongside the full set of component intervals.

RESTORE: the post-acute companion framework

Beyond the 4-hour acute window, two post-operative phases address recovery and long-term outcomes.

Phase 4 (recovery, post-operative)

Post-operative hemodynamic optimization, clinical assessment with selective imaging for suspected malperfusion, medication initiation, cardiac rehabilitation, and multidisciplinary team coordination.

Phase 5 (aortic surveillance, lifelong)

Lifelong multidisciplinary team (MDT)-coordinated surveillance addresses hereditary aortopathy, cascade and family screening, and survivor morbidity (neurological injury, paraplegia, malperfusion sequelae, renal impairment, and psychological burden). Identification of heritable disease extends screening to first-degree relatives via national genomic medicine services.

Discussion

Implementation: from framework to practice

Primary Aortic Centre designation

ATAAD surgery is already concentrated in tertiary cardiac centers across most health systems, so designation formalizes an existing configuration rather than creating one. A Primary Aortic Centre is an established cardiac surgical unit meeting achievable criteria: 24-hour cardiac surgical cover with dedicated aortic dissection expertise, a standing network transfer agreement, and a named coordinator for incoming dissections. Designation can be adopted incrementally, network by network, beginning with the centers that already receive most regional cases.

Concentration of acute type A dissection surgery in higher-volume centers is supported by national volume-outcome data, with lower-volume surgeons and institutions experiencing approximately double the risk-adjusted operative mortality of highest-volume providers (22). Regionalization entails a recognized trade-off: designation may lengthen transfer intervals for regional referrals while concentrating operative expertise; this benefit is judged to outweigh the marginal transfer delay, which structured pathways render survivable (19,20). Networks should set a minimum case load appropriate to their geography rather than adopt a single universal threshold.

Performance and audit

The three headline process measures (ED-to-CT, CT-to-transfer, ED-to-first incision) can be drawn from existing national cardiac surgical registries rather than a new dataset. A short, fixed indicator set (*Table 2*) keeps the burden low. Timing data are captured for every eligible case, with formal review at a pragmatic interval—typically monthly for acute process measures and quarterly for outcome measures. Where missed or delayed diagnosis already triggers clinical-governance or medico-legal review, the framework adds only a structured time-based component, so delays are counted and learned from rather than lost.

Adoption must respect local workforce capacity and equitable geographic access. Because the framework reuses

Table 2 Performance measurement and audit indicators

Domain	Indicator	Target/measurement	Cadence
Process (RACE)	Symptom onset to confirmation	Time interval	Per case; monthly review
Process (RACE)	ED arrival → CT acquisition (Phase 1)	≤120 minutes	Per case; monthly review
Process (RACE)	Diagnostic confirmation → transfer activation (Phase 2)	≤60 minutes	Per case; monthly review
Process (RACE)	ED arrival → first surgical incision (aortic window)	≤4 hours	Per case; monthly review
Process (RACE)	Pre-hospital pre-ALERT (Phase 0)	% of cases	Per case; monthly review
Process (RACE)	Transfer to Primary Aortic Centre	% of cases	Per case; monthly review
Outcome	All-cause mortality	30-day and 1-year	Quarterly review
Outcome	Stroke (in-hospital)	Rate	Quarterly review
Outcome	Paraplegia (in-hospital)	Rate	Quarterly review
Outcome	Neurological recovery	Modified Rankin Scale	Quarterly review
Outcome	Malperfusion (mesenteric, limb)	Rate	Quarterly review
Outcome	Renal replacement therapy	Rate	Quarterly review
Outcome	Unplanned return to theatre	Rate	Quarterly review
Patient/family-reported	Diagnostic disclosure timing	Time from confirmation	Per case; monthly review
Patient/family-reported	Bereaved-family experience & survivor quality of life	VOICES, EQ-5D-5L, HADS	Quarterly review

Tier. Minimum (mandatory in adopting centers): ED arrival to CT, diagnostic confirmation to transfer activation, ED arrival to first incision, transfer to Primary Aortic Centre, all-cause mortality, and in-hospital stroke. Developmental (staged adoption): all remaining process, outcome, and patient- and family-reported indicators. CT, computed tomography; ED, emergency-department; EQ-5D-5L, EuroQol 5-Dimension 5-Level; HADS, Hospital Anxiety and Depression Scale; RACE, REACH-ALERT-CONVEY-ESCALATE; VOICES, Views of Informal Carers-Evaluation of Services.

existing centers, registries, and transfer pathways, its incremental cost is modest. Given high case-fatality and substantial life-years lost per avoidable death, even small mortality reductions are likely to be highly cost-effective.

Validation and implementation pathway

(I) Stage 1: international consensus (months 0–6). An international Delphi panel involving cardiac surgeons, emergency physicians, cardiologists, radiologists, and patient representatives will evaluate the proposed 4-hour time target and Primary Aortic Centre designation criteria through three rounds of voting, with consensus defined as >75% agreement.

(II) Stage 2: pilot testing (months 6–24). Five regional networks (UK, USA, Europe, Asia-Pacific, Australia) implement RACE-RESTORE in designated Primary Aortic Centers. Each pilot begins with a 3–6-month implementation, education, and simulation run-in—establishing the Code Aorta protocol, mapping local transfer routes, confirming theatre/perfusion and retrieval escalation, training staff, and implementing data capture—during which core measures are collected for baseline and training purposes only. Core measures thereafter: ED-to-CT time, CT-to-transfer time, ED-to-incision time, 30-day mortality. Success criterion: ≥80% of centers achieve temporal targets, applied from the end of the run-in.

(III) Stage 3: evaluation (months 24–30). Independent health economic analysis assesses cost-effectiveness, feasibility, and outcomes. Barriers to adoption are identified and documented. The framework, including the run-in duration and performance thresholds, is refined if targets prove unachievable.

(IV) Stage 4: wider adoption (month 30 onwards). Results are published. Additional networks adopt the framework incrementally. Annual performance reporting through cardiac surgical registries (NICOR,

STS, EACTS).

(V) Failure criteria: if <50% of centers achieve ED-to-incision time targets in pilot phase, the framework is redesigned or time targets are revised. The framework does not advance to wider adoption until the pilot phase achieves ≥80% compliance.

Conclusions

ATAAD kills because it is not treated in time. Surgical outcomes in high-volume centers are excellent, but population outcomes remain poor. The problem is the absence of an organized pathway, not the limits of surgery. Other time-critical emergencies solved this by setting time targets, designating centers, and auditing performance.

The aortic window applies the same approach to the aorta. As a temporal framework, it sets a measurable target from ED arrival to first incision, activated through a named protocol, delivered in designated centers, and audited through existing registries. It requires no new technology and no new operation, only that care be organized around time, as it already is for myocardial infarction, stroke, and trauma.

The aortic window is also intended as shared language: a common term for emergency physicians, radiologists, cardiologists, and surgeons across different countries and health systems to name the same clock, the same targets, and the same standard of care. A field that describes time the same way can measure and compare its performance and improve together.

This is a proposal, not a proof, and its targets must be validated before adoption. But the direction is clear and the tools already exist. The task now is not to show that dissection is lethal, which is established, but to organise care so that outcome no longer depends on where a patient presents and how quickly they are recognized.

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References

1. Hagan PG, Nienaber CA, Isselbacher EM, et al. The International Registry of Acute Aortic Dissection (IRAD): new insights into an old disease. JAMA 2000;283:897-903.
2. Howard DP, Banerjee A, Fairhead JF, et al. Population-based study of incidence and outcome of acute aortic dissection and premorbid risk factor control: 10-year results from the Oxford Vascular Study. Circulation 2013;127:2031-7.
3. Howard DP, Sideso E, Handa A, et al. Incidence, risk factors, outcome and projected future burden of acute aortic dissection. Ann Cardiothorac Surg 2014;3:278-84.
4. Benedetto U, Sinha S, Dimagli A, et al. Decade-long trends in surgery for acute Type A aortic dissection in England: A retrospective cohort study. Lancet Reg Health Eur 2021;7:100131.
5. Mészáros I, Mórocz J, Szlávi J, et al. Epidemiology and clinicopathology of aortic dissection. Chest 2000;117:1271-8.
6. Harris KM, Nienaber CA, Peterson MD, et al. Early Mortality in Type A Acute Aortic Dissection: Insights From the International Registry of Acute Aortic Dissection. JAMA Cardiol 2022;7:1009-15.
7. Harris KM, Strauss CE, Eagle KA, et al. Correlates of delayed recognition and treatment of acute type A aortic dissection: the International Registry of Acute Aortic Dissection (IRAD). Circulation 2011;124:1911-8.
8. Yamaguchi T, Nakai M, Yano T, et al. Population-based incidence and outcomes of acute aortic dissection in Japan. Eur Heart J Acute Cardiovasc Care 2021;10:701-9.
9. Getting It Right First Time. Vascular Surgery: GIRFT Programme National Specialty Report. London: NHS Improvement; 2018. Available online: https://gettingitrightfirsttime.co.uk/wp-content/uploads/2018/02/GIRFT_Vascular_Surgery_Report-March_2018.pdf
10. Gilbey T, Milne B, Agarwal S, et al. Time critical

diagnoses and transfers of patients with acute type A aortic dissection in the UK: national audit of current practice. Anaesthesia 2024;80:248-58.
11. Maroto LC, Ferrera C, Cobiella J, et al. Improvement of Early Outcomes in Type A Acute Aortic Syndrome After an Aorta Code Implementation. Ann Thorac Surg 2024;117:770-8.
12. Nazerian P, Mueller C, Soeiro AM, et al. Diagnostic Accuracy of the Aortic Dissection Detection Risk Score Plus D-Dimer for Acute Aortic Syndromes: The ADvISED Prospective Multicenter Study. Circulation 2018;137:250-8.
13. Pape LA, Awais M, Woznicki EM, et al. Presentation, Diagnosis, and Outcomes of Acute Aortic Dissection: 17-Year Trends From the International Registry of Acute Aortic Dissection. J Am Coll Cardiol 2015;66:350-8.
14. Hiratzka LF, Bakris GL, Beckman JA, et al. 2010 ACCF/AHA/AATS/ACR/ASA/SCA/SCAI/SIR/STS/SVM guidelines for the diagnosis and management of patients with Thoracic Aortic Disease: a report of the American College of Cardiology Foundation/American Heart Association Task Force on Practice Guidelines, American Association for Thoracic Surgery, American College of Radiology, American Stroke Association, Society of Cardiovascular Anesthesiologists, Society for Cardiovascular Angiography and Interventions, Society of Interventional Radiology, Society of Thoracic Surgeons, and Society for Vascular Medicine. Circulation 2010;121:e266-369.
15. Authors/Task Force Members, Czerny M, Grabenwöger M, et al. EACTS/STS Guidelines for Diagnosing and Treating Acute and Chronic Syndromes of the Aortic Organ. Ann Thorac Surg 2024;118:5-115.

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16. Mazzolai L, Teixido-Tura G, Lanzi S, et al. 2024 ESC Guidelines for the management of peripheral arterial and aortic diseases. Eur Heart J 2024;45:3538-700.
17. Writing Committee Members, Isselbacher EM, Preventza O, et al. 2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines. J Am Coll Cardiol 2022;80:e223-e393.
18. Royal College of Radiologists; Royal College of Emergency Medicine. Diagnosis of thoracic aortic dissection in the emergency department. London: Royal College of Radiologists; 2025. Available online: https://www.rcr.ac.uk/our-services/all-our-publications/clinical-radiology-publications/diagnosis-of-thoracic-aortic-dissection-in-the-emergency-department/
19. Usui M, Yoshino H, Akutsu K, et al. Interfacility Transfer and Mortality in Patients With Type A Acute Aortic Dissection- Analysis of the Tokyo Acute Aortic Super-Network Database. Circ Rep 2025;8:193-200.
20. Goldstone AB, Chiu P, Baiocchi M, et al. Interfacility Transfer of Medicare Beneficiaries With Acute Type A Aortic Dissection and Regionalization of Care in the United States. Circulation 2019;140:1239-50.
21. Staniszewska A, Gaba K, Patterson B, et al. Consensus statement on the interhospital transfer of patients with acute aortic syndrome: TRAVERSING Delphi study. Emerg Med J 2024;41:153-61.
22. Chikwe J, Cavallaro P, Itagaki S, et al. National outcomes in acute aortic dissection: influence of surgeon and institutional volume on operative mortality. Ann Thorac Surg 2013;95:1563-9.