Delivery Guide for Implementing a Single Point of Access for Patients with Aortic Stenosis

November 2023
Executive Summary

Aortic stenosis (AS) is one of the most common valvular heart diseases. If left untreated, patients with severe AS have a poor prognosis. While all patients with severe AS deserve appropriate and timely treatment, many experience delays in the referral and treatment pathways, risking poor outcomes.

A key step to improving treatment pathways is a single point of access (SPA). While some UK heart centres have implemented a SPA, the degree of success has varied, and many centres have yet to adopt this approach.

To aid more widespread implementation of successful SPA processes, specialists from heart centres across England and Wales came together to discuss the challenges to SPA implementation and agree good practices to ensure an efficient and successful SPA.

The team identified six key steps to implementing a SPA:

1. Establish a clinical pathway team
2. Set up a single email address for referrals
3. Appoint an AS co-ordinator
4. Agree triage protocols
5. Communicate to all stakeholders
6. Audit outcomes

Who should read this guide?

This guide is intended to be of interest to clinicians and heart centres aiming to optimise referral and treatment pathways for patients with severe AS.

Purpose of this guide

This guide describes six key steps to implementing a SPA process. It also provides good practice examples from University Hospitals Bristol and Weston NHS Foundation Trust; Morriston Hospital, Swansea; James Cook University Hospital, Middlesbrough; and South London Cardiac Operational Delivery Network.
Introduction

Aortic stenosis (AS) is one of the most common causes of valvular heart disease. In the UK, around 300,000 adults aged 55 years or older are estimated to have severe AS. If untreated, these individuals have a poor prognosis, particularly once symptomatic. The 5-year mortality rate of severe symptomatic AS has been estimated at 88%, worse than for many cancers.

Detecting and treating severe symptomatic AS before the onset of left ventricular dysfunction improves survival and quality of life. The introduction of transcatheter aortic valve implantation (TAVI) as a complementary treatment option to surgical aortic valve replacement (SAVR) has resulted in a considerable increase in the number of patients with severe AS undergoing intervention over the past decade. While this is good news for patients, the ongoing increase in demand will challenge the capacity of health services.

The pathway from referral of severe AS through to intervention should ideally take around 8 weeks; however, in most centres, this target is currently unrealistic. Four key steps in the pathway require improvement:

1) Initial identification and assessment in primary and secondary care
2) Rapid access to diagnostics, particularly echocardiography and computed tomography (CT)
3) The referral and triage process in the interventional centre
4) The time from multidisciplinary meeting (MDM) to procedure.

The third step is the subject of this guide and is crucial for optimising the patient experience. Without a single point of access (SPA) for intervention, the pathway is inefficient and potentially more susceptible to bias.

European guidelines recommend that treatment and intervention decisions are made by a collaborative, multidisciplinary heart team. However, large volumes of referrals mean that these teams simply do not have the time to discuss all patients in detail. Therefore, triage of referrals is a key part of the SPA process, and one which this guide will discuss in detail.

Implementing a SPA can be challenging. This guide explores these challenges and, based on the experience of six UK heart centres, sets out the key steps to implementing a SPA process. This guide is complementary to the British Heart Valve Society blueprint and the joint Professional Society guidance for cardiac multidisciplinary meetings.
Challenges to Implementing a Single Point of Access

Resource

Resource is one of the main challenges to implementing a SPA. Limited budgets can make it difficult to obtain funding for a dedicated pathway co-ordinator. Too often, the SPA process relies on the goodwill of staff who take on work over and above their usual role. However, metrics that demonstrate improved outcomes following SPA implementation, or indeed poor outcomes before SPA implementation, can be used to inform stakeholders, encourage change, and build a business case for additional resource.

Culture

Implementing a SPA necessitates a change from a procedure-based pathway to a disease-based pathway. Such cultural changes can be challenging, but inspiration can be drawn from the adoption of cancer care pathways across the NHS. Effective communication is essential from the start, to ensure universal buy-in to the SPA process.

Rather than complementary treatments, SAVR and TAVI can sometimes be treated as competing treatments by surgeons and interventional cardiologists, who may have historical links with a referrer and thus wish to keep patients on their own lists.

Successfully implementing a SPA requires surgeons and cardiologists to work together for the benefit of the patient, and to trust that the person triaging cases is making the right decision.

Lack of Support/Understanding from Referrers

Referrers are a key stakeholder for a SPA; therefore, their ongoing engagement is crucial to maintain an efficient process. A barrier to their support can be their perceived lack of involvement in the decision-making process for the patients they refer. Thus, heart centres must involve referrers in the SPA process from its initiation and listen to their views and concerns. Referrers should understand how to refer patients, whom to contact with queries, and be kept up to date with patients’ clinical management plans.
Six-step Approach to Implementing a Single Point of Access

1. Establish a Clinical Pathway Team

The commitment and support of the clinical pathway team (and the wider organisation) is pivotal for the success of a SPA. Trust and respect between team members is vital; all should be confident that they are working together towards a common goal, for the benefit of the patient. They should all be actively involved in meetings related to implementing the SPA from the outset, to help ensure buy-in to the process.

The clinical pathway team (see Figure 1) should comprise both core and co-opted members. The core members should be a TAVI cardiologist, a cardiac surgeon, a clinical nurse specialist, the AS co-ordinator, and an imaging cardiologist. Co-opted members can be drafted into the team as required and could include a care-of-the-elderly clinician, an anaesthetists/intensivist, the referrer, a vascular surgeon or vascular radiologist and the catheter laboratory lead/manager.

Figure 1: Clinical Pathway Team

Together, their patient-focused approach will ensure high quality care for patients whose predominant pathology is severe AS, from initial referral through to investigation, treatment, and follow-up.
2. Set up a Single Email Address for Referrals

This dedicated email address should serve as a single point of contact for all new AS referrals. A clear, explanatory email address is recommended (e.g., structural_heart@hospital_name). Emails should be monitored daily by the AS co-ordinator (see step 3), who should forward queries to the relevant person as required. Communication back to the referrers should come from this email address, to help to reinforce the SPA pathway.

Some organisations may also choose to use this email address for communicating with patients as well as referrers.

An electronic portal, if available, could perform the same function as the single email address.

3. Appoint an AS Co-ordinator

The AS co-ordinator should be the first and single point of contact for referrers and patients from the referral date onwards. They will monitor the referral email address and will be responsible for all patient administration, as well as generating regular waiting list reports and communicating changes to clinical management plans. They will ensure that all patients progress through the pathway as efficiently as possible.

In some centres with an active SPA process, the AS co-ordinator does not have a medical background and is purely focused on pathway co-ordination. In other centres, the AS co-ordinator is a specialist nurse, who is also involved in triaging the referrals (see step 4). Examples of both models are provided in the vignettes section.

It is essential that cover is built into the co-ordinator post to ensure a continuous service during annual leave.

4. Agree Triage Protocols

Effective and efficient triage is essential to minimise the workload at MDMs. For many patients, the intervention recommendation (SAVR, TAVI or neither) is straightforward; therefore, detailed discussion at an MDM is unnecessary and time consuming. The focus of MDMs should be those patients for whom the decision is more complex.

To minimise delays in the triage process, a common basic data set is required for all patients referred to the heart centre. This data set can be agreed locally but is likely to include patient age, important co-morbidities, frailty, and echocardiographic parameters. Where a data set is incomplete, the AS co-ordinator should request the additional information from the referrer.

Triage protocols are required for outpatient (semi-) elective referrals, inter-hospital transfers and patients admitted directly to the interventional centre. Triage for outpatient referrals may be carried out by the AS co-ordinator, an experienced clinician, or a specialist nurse, depending on a centres
agreed protocols (see vignettes for examples). However, triage for inter-hospital transfers and direct admissions who need to be considered for urgent inpatient intervention always requires senior clinician input (interventional cardiologist with/without cardiac surgeon), as these patients are, by definition, more complex. The AS co-ordinator needs to be made aware of all patients being considered for intervention to ensure all are included in the audit (step 6).

European guidelines on mode of intervention for patients with AS are based primarily on age and surgical risk. In line with these recommendations, an initial age-based approach to triage can be applied for outpatients without anatomical or clinical complexities and for whom the diagnosis of severe AS is certain (Figure 2). A benefit of such an approach is that age cut-offs for triage can be modified easily should guidelines change in the future.

![Diagram of patient flow through the aortic MDM](image)

Figure 2: Patient flow through the aortic MDM vii,viii
5. Communicate to all Stakeholders

The SPA process has multiple stakeholders (see Table 1), all of whom need to trust and support the SPA for it to succeed. For this, effective communication is essential.

Table 1: SPA Stakeholders

<table>
<thead>
<tr>
<th>SPA Stakeholders</th>
<th>SPA Stakeholders</th>
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<tbody>
<tr>
<td>Patient</td>
<td>Anaesthetist</td>
</tr>
<tr>
<td>Relatives</td>
<td>Catheter laboratory staff</td>
</tr>
<tr>
<td>General practitioner</td>
<td>Intensivist</td>
</tr>
<tr>
<td>Referring cardiologist</td>
<td>Recovery ward staff</td>
</tr>
<tr>
<td>Interventional cardiologist</td>
<td>Theatre team</td>
</tr>
<tr>
<td>Cardiac surgeon</td>
<td>Rehabilitation team</td>
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<tr>
<td>AS co-ordinator</td>
<td>Pre-habilitation team</td>
</tr>
<tr>
<td>Clinical nurse specialist</td>
<td>Local budget holder</td>
</tr>
<tr>
<td>Imaging cardiologist</td>
<td>Resource Manager</td>
</tr>
<tr>
<td>Allied specialists (e.g., care-of-the-elderly clinicians, oncologists)</td>
<td>Commissioning group</td>
</tr>
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This step ensures that patients and referrers are kept up to date with the care pathway, especially timelines. The owner of this step is the AS co-ordinator. Communication should come from the referral email address to reinforce the pathway.

6. Audit Outcomes

Auditing is a valuable tool to improve the quality of care and outcomes for patients. As such, a heart centre should frequently (ideally monthly) audit its performance against national benchmarked indicators (both transcatheter and surgical) for AS, including key clinical outcomes and waiting times.

In addition, heart centres should assess their SPA process by analysing:

- The proportion of patients assigned to each triage route (Figure 2, groups 1–4)
- The outcomes of MDM discussions (SAVR, TAVI or no treatment)
- The overall proportions of patients referred to the heart centre undergoing SAVR, TAVI or no treatment

Patient-reported outcome measures (PROMs) and patient-reported experience measures (PREMs) are increasingly being used to assess patients’ healthcare experiences and drive patient-
centred, value-based healthcare." If currently unable, all heart centres should aspire to collect and audit PROMs and PREMs in the future.

**Vignettes**

We acknowledge Edwards Lifesciences and InterComm International Ltd for providing the resource for case study collation and write up which has enabled the development of this delivery guide.

**University Hospitals Bristol and Weston NHS Foundation Trust**

The UHBW model is underlined by the belief that a substantial proportion of patients can be appropriately triaged directly to SAVR or TAVI clinic assessment without discussion at a full MDM. This model has evolved in response to service pressure (approximately 350 TAVIs per annum) and based on a shared trust between SAVR and TAVI teams that puts optimal patient outcome at the centre of decision making.

UHBW’s triage system centres on an agreed protocol between the cardiology and cardiothoracic teams, whereby age, previous sternotomy, co-morbidity, and clarity of diagnosis are the main determining factors. The structural heart valve nurse (SHVN) team is the first point of triage. Severe AS referrals for intervention are copied to the SHVN team email address by consultants’ secretaries.

The SHVN team independently triage referrals into four categories:

1. Discussion in a full AS MDM
2. Direct review in a surgical clinic
3. Imaging review and discussion in a mini-MDM with a TAVI operator
4. Other – request further investigations (usually a TAVI CT scan), review by non-cardiac team (e.g., oncology/renal/care-of-the-elderly)

Only around 15-20% of patients are discussed in the full AS MDM; these typically involve cases where:

1. The indication is unclear, or the outcome is uncertain
2. There is clinical equipoise between SAVR and TAVI

The full MDM lasts for one hour per week and comprises two aortic cardiothoracic surgeons, two or three TAVI operators, a TAVI fellow, an echo consultant cardiologist, a care-of-the-elderly consultant with a special interest in cardiology and, on an ad-hoc basis, vascular and anaesthetic opinions.

Where the SHVN team identify TAVI as an appropriate treatment for the patient, the case is discussed, and imaging reviewed with a TAVI operator at the mini-MDM which lasts for 2 hours per
week. If the operator deems TAVI is most appropriate, the patient is placed on the waiting list, and an outcome letter is sent to the patient advising that a clinic review will be scheduled to confirm suitability. If the TAVI operator is unclear if TAVI is most appropriate, they either refer the patient for a face-to-face surgical clinic or full MDM review, or seek specialist opinion (e.g., oncology/care-of-the-elderly/imaging/vascular).

The outcomes of all MDMs are recorded on an electronic system. Timely SAVR/TAVI audit data are key to ensuring the appropriateness of this decision-making process.

**Morriston Hospital, Swansea**

All elective referrals are emailed to the dedicated AS email address, with weekly referral triage by a consultant cardiologist and a consultant cardiac surgeon.

1. Patients aged 75 years and under are then reviewed in a surgical outpatient clinic for potential SAVR.
2. Patients aged 75 to 80 years are seen jointly by a cardiologist and a cardiac surgeon in a weekly clinic.
3. Patients aged over 80 years who are otherwise well and/or have coronary disease are seen jointly by a cardiologist and cardiac surgeon.
4. All other patients aged over 80, or those that have co-morbidities that preclude SAVR, are seen in a cardiology clinic.

The weekly MDM (face-to-face and virtual) focuses on the 75–80-year age group, for whom there may be equipoise in treatment options, and on those patients for whom the treatment decision is more complex.

Inter-hospital transfers of patients with severe AS are seen by the named cardiologist and cardiac surgeon of the week, and the TAVI team, with these clinicians providing a daily ad-hoc mini-MDM.

For patients undergoing TAVI and SAVR, a monthly ‘Quality and Safety’ dashboard reporting system audits performance against national benchmarked indicators, including key clinical outcomes, and pathway waiting times.

**James Cook University Hospital, Middlesbrough**

Patients considered for aortic valve intervention go through a standard MDM process, except for patients with endocarditis, who are managed through an infective endocarditis MDM, and emergency cases, where same day intervention is required.

A SPA monitored email address with an electronic portal for inpatients is used, and a standardised work-up and dataset is required, tailored to individual patient age and co-morbidities (see below). All investigations and data must be available before the MDM to facilitate the triage process. JCUH
has a bespoke database for clinical data and the results of investigations. CT TAVIs are reported up-front by the TAVI implanters.

Patient triage is carried out by the MDM co-ordinator, who is not involved in clinical care, supported by two structural specialist nurses and the MDM chair. Patients are triaged into three groups:

**Group 1: TAVI outcome by protocol (~24%)**

Patients aged over 79 years with a satisfactory transfemoral (TF) TAVI option and a clear indication for intervention. These patients are seen in the TAVI clinic.

**Group 2: Full MDM discussion (~43%)**

Patients for whom SAVR or TAVI may be an option, and patients with uncertain AS severity (requiring imaging review) or uncertain indication for intervention, and patients who are technically unsuitable for TF TAVI.

**Group 3: SAVR outcome by protocol (~33%)**

Patients aged under 75 years with no high-risk features for surgery. These patients are seen in the surgical clinic.

Weekly MDM meetings are conducted through Microsoft Teams. All referring cardiologists are invited to attend meetings discussing their patients. The MDM comprises a minimum of one surgeon, one TAVI cardiologist and one imaging cardiologist. Input from anaesthetists and care-of-the-elderly specialists are incorporated for selected cases.

Patients in Group 1 and Group 3 are circulated for review but not formally discussed at an MDM. In contrast, patients in Group 2 are discussed fully with a review of all data. Outcomes from these discussions include:

1. **Likely SAVR**: Appointments are scheduled with the surgical clinic.
2. **Likely TAVI**: Appointments are scheduled with the TAVI clinic.
3. **Equipoise**: Joint appointments are scheduled with the TAVI operator and surgeon, facilitating shared decision-making.
4. **Intervention not indicated**: Patient is returned to the referring cardiologist.

**Minimum dataset**

- All patients: information on symptoms, co-morbidities, basic blood tests, echocardiography image reports, and electrocardiogram results.
- Add invasive angiography for patients under 80 years old or with significant angina or acute coronary syndrome.
- Add CT TAVI for patients over 74 years old or at high surgical risk.
- Add pulmonary function tests/arterial blood gases for patients with significant lung disease.
Add Montreal Cognitive Assessment (or an equivalent test) for patients with cognitive dysfunction.

**South London Cardiac Operational Delivery Network**

A condition-based pathway for patients with severe AS (Figure 3) has been established. This pathway integrates two treatment options (SAVR and TAVI) to ensure a multidisciplinary and holistic approach, early decision-making, reduced treatment waiting times and improved patient experience.

*Figure 3: AS Pathway: South London Cardiac Operational Delivery Network*

The pathway involves referral to the aortic valve team via a SPA email address, managed by an administration team, with patients triaged to the appropriate clinic by a specialist nurse.

Where required, the nurse prompts the pathway co-ordinator to follow up investigation results or missing imaging, for example, in time for the patient’s initial consultation.

Although the pathway is age-based, the specialist nurses use their clinical skills to identify patients that may be more suited to joint assessment, rather than just a surgical assessment.
Successful patient flow through the pathway is reliant on teamwork and open dialogue between the surgical and cardiology teams, and reliable administrative support. As a result, a reduction in waiting times and improved patient experience has been observed.

All patients younger than 80 years old who are being considered for TAVI are discussed at an MDM. Older patients must meet the criteria listed below to be accepted for TAVI without formal MDM discussion. Around 30% of patients being considered for TAVI meet these criteria. Patients for whom there is uncertainty about the best treatment are discussed at an MDM.

1. Clinical factors
   - Age ≥80 years
   - Symptoms consistent with severe AS
   - Operating consultant opinion that the patient has confirmed indication and is suitable for TF-TAVI

2. Echocardiographic factors
   - Tricuspid aortic valve
   - Mean aortic valve gradient >40 mmHg
   - Absence of other significant valve disease

Patients with greater than moderate mitral regurgitation, mitral stenosis, or tricuspid regurgitation require MDM discussion.

3. CT criteria
   - CT TAVI review indicating favourable valve, coronary and peripheral access for TF-TAVI
   - Valve sizing has been performed

4. Coronary criteria
   - No significant proximal coronary disease observed on CT imaging or invasive angiogram

5. Electrocardiographic criteria
   - Absence of significant conduction disease that indicates a high risk of pacing (PR >250 ms, right bundle branch block, trifascicular block)
# Summary of Good Practice Points

<table>
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<tr>
<th>Six-step approach component</th>
<th>Key good practice points</th>
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| Establish a clinical pathway team | • The clinical pathway team comprises of core and co-opted members  
• Patient-focused approach to ensure high quality care for patients from initial referral through to investigation, treatment, and follow-up |
| Set up a single email address for referrals | • Dedicated email address serving as a single point of contact for all new AS referrals  
• Daily monitoring of emails by AS co-ordinator to enable the resolution of queries |
| Appoint an AS co-ordinator | • AS co-ordinator is the first and single point of contact for referrers and patients from the referral date onwards  
• AS co-ordinator manages patients effectively through the pathway including all patient administration, generating regular waiting list reports, and communicating changes to clinical management plans |
| Agree triage protocols | • Effective and efficient triage protocols for outpatient (semi-)elective referrals, inter-hospital transfers and self-presenters  
• Initial triage for outpatient referrals may be carried out by the AS co-ordinator, an experienced clinician, or a nurse specialist, depending on a centre’s agreed protocols  
• Senior clinician input (interventional cardiologist +/- cardiac surgeon) required for triage of inter-hospital transfers and direct admissions  
• AS co-ordinator to include all patients going through triage in the audit (step 6) |
| Communicate to all stakeholders | • Keep patients and referrers up to date with the care pathway, especially timelines  
• AS co-ordinator to reinforce the pathway through communication from the referral email address |
| Audit outcomes | • Heart centre to frequently audit its performance against national benchmarked indicators (TAVI and SAVR), including key clinical outcomes and waiting times  
• Assess process by reviewing the proportion of patients discussed at an MDM compared with the proportion being triaged directly to SAVR or TAVI  
• Analyse outcomes of MDM discussions (SAVR, TAVI, no treatment) |
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ix First steps in PROMs and PREMs collection in Wales as part of the prudent and value-based healthcare agenda - PMC (nih.gov)

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**High Volume Low Complexity Programme and elective recovery**

With demand for hospital treatment outstripping capacity prior to COVID-19, the demands of delivering care during a pandemic led to significant backlogs and longer waits for patients.

There is a significant need to improve the productivity and resilience of services, many of which are still disrupted by the consequences of the pandemic and impacted by ongoing operational pressures. Waiting times vary considerably across different parts of the country, but also between individual hospital trusts in the same system. In 2020, GIRFT established the High Volume Low Complexity (‘HVLC’) programme with the NHS London Region to address these challenges.

The HVLC programme promotes productivity through optimised delivery of services.

**About GIRFT and the GIRFT Academy**

Getting It Right First Time (‘GIRFT’) is an NHS programme designed to improve the quality of care within the NHS by reducing unwarranted variation. By tackling variation in the way services are delivered across the NHS, and by sharing best practice between trusts, GIRFT identifies changes that will help improve care and patient outcomes, as well as delivering efficiencies such as the reduction of unnecessary procedures and cost savings.

The GIRFT Academy has been established to provide easily accessible materials to support best practice delivery across specialties and adoption of innovations in care.

Importantly, GIRFT Academy is led by frontline clinicians who are expert in the areas they are working on. This means advice is developed by teams with a deep understanding of their discipline.

**GIRFT Academy has also published other guidance, pathways and case studies which are available via FutureNHS. These are available at:** [Cardiology - Getting It Right First Time - FutureNHS Collaboration Platform](#)

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